



donum semanticum

DONVM SEMANTICVM

OPERA LINGVISTICA ET LOGICA IN HONOREM BARBARAE PARTEE A DISCIPVLIS
AMICISQVE ROSSICIS OBLATA

Под редакцией

Петра Аркадьева Ивана Капитонова
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при участии

Павла Руднева

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Настоящий сборник посвящен юбилею Барбары Холл Парти — выдающегося лингвиста, одного из основоположников формальной семантики, в течение двух десятилетий преподававшей формальную семантику российским лингвистам. Барбара Парти оказала огромное влияние на развитие лингвистики в России и активно способствовала «наведению мостов» между российской и западной лингвистическими традициями. В сборник включены работы по семантике и грамматике, написанные российскими коллегами, друзьями и учениками Барбары Парти.

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Abbreviations

1	First person	GEN	genitive
2	Second person	I	noun class I
3	Third person	II	noun class II
AA	animate attributive	III	noun class III
ABL	ablative	IN	in
ABS	absolute	INF	infinitive
ACC	accusative	INS	instrumental
ACT	active	IPF	imperfective
AFF	affective	IRR	irrealis
AGR	agreement	IV	noun class IV
ALL	allative	LOC	locative
AOBL	oblique attributive	M	masculine
AOR	eorist	N	noun
ATTR	attributive	NDIR	non-directed
AUX	auxiliary	NEG	negative
CNT	count	NEUT	neuter
COM	comitative	NH	non-human
COP	copula	NOM	nominative
CVB	converb	OBL	oblique
D	determiner	P	adposition
DAT	dative	PA	active participle
DEF	definite	PFV	perfective
DEM	demonstrative	PFX	prefix
DU	dual	PL	plural
EL	elative	POSS	possessive
ERG	ergative	PRED	predicative
F	feminine	PRS	present
FUT	future	PRT	particle

PST	past	TOP	topic
PTCP	participle	TR	transitive
REFL	reflexive	V	verb
SG	singular	VBE	existential verb
SUPERS	superessive	VEXP	experiential verb

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Предисловие

Дорогая Барбара!

Мы поздравляем тебя с днем рождения и дарим эту книжку.

Здесь собраны самые разные статьи лингвистов из России, где ты жила и работала много лет. Нас объединяет то, что мы все считаем себя хотя бы в некоторой степени твоими учениками — учениками Барбары, просто Барбары — другой ведь тут нет.

И одновременно, как это часто принято в России, и как это естественно и непринужденно получилось у тебя — твоими друзьями, друзьями Барбары.

Мы все сидим за большим лингвистическим столом и поднимаем бокалы за твое здоровье. А ты — пробуешь приготовленные нами блюда. Мы старались, чтобы тебе они показались и знакомыми, и новыми.

Наверно, сама лингвистика способствует сближению людей. Лингвистические проблемы такие сложные, что их естественно решать вместе, в больших и маленьких проектах, понимая, что каждый новый язык и новый взгляд на материал увеличивают шансы на успех. У тебя было несколько лингвистических проектов в России, но и каждый твой курс — тоже был проект, в рамках которого учились студенты новых и новых поколений. И так было почти двадцать лет, это много, потому что среди слушателей твоего прошлогоднего курса есть такие, которым только двадцать: когда ты начинала преподавать в Москве, их еще не было на свете :).

Это — про прошлое. Но вот перед тобой целая книжка статей, а значит, у прошлого есть будущее: есть глубокий след этих проектов и курсов, он виден здесь и будет виден и дальше в самых разных наших лингвистических занятиях и потом, в работах наших учеников.

За тебя, Барбара!

Будь здорова и счастлива и приезжай почаще. Мы тебя очень ждем.

Барбара Парти — задача наведения

МОСТОВ

Вера Исааковна Подлеская

Фулбрайтовский стипендиат 2005 года Барбара Холл Парти, заслуженный профессор лингвистики и философии Массачусетского университета в Амхерсте — один из основоположников и главных действующих лиц формальной семантики, влиятельного направления современной лингвистики.¹ Мировую известность Барбаре Парти принесли ее работы по лингвистическим приложениям логического аппарата Ричарда Монтегю, по развитию идеи композициональности и описанию семантики языковых выражений различной сложности на базе принципа композициональности, работы по семантике квантификативных выражений и многие другие. (Избранные работы Барбары Парти собраны в юбилейном сборнике Partee 2004). Благодаря Барбаре — человеку выдающегося общественного и учительского темперамента — Массачусетский университет, в котором она преподает уже более тридцати лет, отмечен на профессиональной лингвистической карте как центр изучения формальной семантики. Признание и признательность лингвистического сообщества получили и свое официальное выражение: Барбара Парти — член Национальной академии наук США, член Американской академии искусств и наук, она избиралась президентом Американского лингвистического общества. Барбара Парти — лауреат премии Макса

¹ Впервые опубликовано в журнале Российский вестник Программы Фулбрайта, №6, Москва, 2005, 31–32.

Планка, многих других международных наград, член редколлегии ряда лингвистических журналов и множества общественных комитетов и комиссий, в частности, в 1985–1986 годах она возглавляла лингвистическую секцию («панель») в CIES (Fulbright).

В своей автобиографии (Partee 2005) Барбара написала, что считает своей миссией «наведение мостов». Профессиональные и человеческие мосты, которые она построила и продолжает строить благодаря своей неукротимой созидательной энергии, оказываются очень прочными, а главное — строятся именно в том месте, где они особенно нужны. Будучи одной из первых учениц Ноама Хомского (в 1965 году она защитила в MIT диссертацию как синтаксист, с дополнительной специализацией «математика»), Барбара поставила своей задачей синтез логической теории (грамматики Монтегю), лингвистической семантики и синтаксиса. Выдающиеся теоретические достижения в этом направлении сопровождались и педагогическими новациями: одной из первых Барбара начала читать курс математики для лингвистов. Этот курс впоследствии лег в основу ее знаменитого учебника математики для лингвистов (Partee 1978) и соответствующих глав в книге (Partee, ter Meulen & Wall 1990). Немало трудов вложила Барбара и строительство мостов между Старым и Новым Светом. Тесные творческие и личные отношения связывают её с лингвистами Нидерландов и Чехии: в ознаменование многолетних совместных исследований в 1992 году Барбаре Парти была присвоена степень почетного доктора математики и физики Карлова университета в Праге, в 1995 году — звание почетного члена Пражского лингвистического кружка, в 2002 году она была избрана иностранным членом Нидерландской королевской академии наук и искусств.

В последнее десятилетие Барбара строит мост между российской и американской лингвистикой. Еще во время учебы в колледже Барбара впервые занялась русским языком (Барбара с отличием закончила Swarthmore College в 1961 г., ее основной специализацией была математика, а двумя дополнительными — русский язык и философия). Это давнее сближение с Россией много лет спустя срифмовалось с важным личным событием — в 1997 году Барбара вышла замуж за российского математика Владимира Борисовича Борщева. Начиная с 1996 года, Барбара почти ежегодно в весеннем семестре читает в Москве курс формальной семантики: в 1996 году — в МГУ, в 1998–2001 и 2003–2004 годах — в РГГУ и 2005 году — и в РГГУ, и в МГУ (в 2000 и 2005 годах — в качестве Фулбрайтов-

ского профессора). В 2001 году Барбаре Парти была присуждена степень почетного доктора РГУ.

На материале таких традиционно трудных узлов русской грамматики, как посессивные конструкции и конструкции с генитивом при отрицании Барбара совместно со своими российскими коллегами пытается сблизить теоретические позиции формальной семантики и позиции московской семантической школы. Формальная семантика усилиями Барбары постепенно перестает быть «заморским продуктом» в российской университетской программе. Весной этого года силами московских учеников Барбары была впервые проведена конференция «Формальная семантика в Москве». Конечно, Барбара была и душой этой конференции, и ее организационным центром.

За последние годы для московских лингвистов Барбара стала не только коллегой и другом, но и благотворителем: ценой ее усилий и личных вложений в РГУ создана и постоянно расширяется общественная библиотека лингвистической литературы. Начало этой библиотеке в 2000 году положили книги, купленные Барбарой на средства, выделяемые стипендиатам программой Фулбрайт для поддержки библиотек принимающих институтов. Но Барбара не остановилась на этом, стала вкладывать в это благородное дело собственные немалые средства, агитировать своих американских коллег присылать в Москву авторские экземпляры своих работ, помогать с подпиской на американские и европейские журналы. В 2005 году Барбара вновь имела возможность использовать фулбрайтовский ресурс для пополнения московской общественной лингвистической библиотеки. Сегодня среди благодарных читателей книжек с экслибрисом «Из библиотеки Барбары Парти» — и профессора, и студенты.

В сентябре 2004 года по случаю выхода Барбары Парти на пенсию ее коллеги по Массачусетскому университету составили генеалогическое древо ее учеников (<http://www.umass.edu/linguist/partee-phd-genealogy/>). Базовый уровень этого древа — 39 имен тех лингвистов, которые защитили диссертации под ее руководством, узлы более глубоких уровней — ученики учеников. На момент составления в дереве было 176 узлов (при максимальной глубине уровня — 4). Думаю, что очень скоро в узлах начнут появляться русские имена.

P.S. Эта заметка была написана десять лет тому назад. За эти годы «мосты», выстроенные Барбарой, соединили немало личных и профес-

сиональных точек на карте. К слушателям ее курсов в МГУ и РГГУ присоединились студенты Высшей школы экономики. Немало российских студентов-лингвистов учится теперь в университетах Европы и Америки. Многие из них благодарны Барбаре не только как учителю, но и как автору изысканных по стилю и мощных по своей убедительности рекомендаций: на поддержку младших коллег Барбара по-прежнему щедро тратит свое время и мастерство. Да, жизнь складывается так, что теперь мы видимся реже, но мосты построены, и очень хочется верить в интенсивное многополосное движение.

Negative events: Evidence from Lithuanian

Peter Arkadiev

To Barbara with love and thanks
for much more than introducing me
to formal semantics.

As a starting point of this article I take the following observation by Stockwell, Schachter & Partee (1973: 250–251):¹

“[T]here are certain cases where a negation of an event may, loosely speaking, itself be an event, e.g. *not paying taxes, not getting up early, not going to church, not eating dinner, not thinking clearly* (semantically, the “event” seems to be the breaking of a habitual or expected pattern of activity).”

The scare quotes in the quotation above seem to be due to the well-known philosophical debate regarding the possibility of “negative events” or “negative

¹ This article is an outcome of an investigation whose results have been presented at the Workshop on the Typology of the Perfect at the Institute of Linguistic Studies in Saint-Petersburg (April 2013), at the 46th Annual Meeting of the Societas Linguistica Europaea in Split (September 2013), and at the research seminar of the Philological Faculty of Vilnius University (April 2013). I thank all my Lithuanian consultants and the participants of the above events, especially Axel Holvoet, Timur Maisak, Rolandas Mikulskas, Jurgis Pakerys and Ruprecht von Waldenfels, for their feedback, as well as Sabine Iatridou and Sergey Tatevosov for an enlightening discussion. None of the above colleagues bears responsibility for any shortcomings of this paper. In particular, the formal analysis is presented here for the first time, and any errors or inconsistencies thereof solely belong to the author. The research has been supported by the Russian Foundation for the Humanities, grants Nos. 12-34-01345 and 14-04-00580.

facts”, see Horn (1989: 51–55) for a historical overview, which is concluded by the following statement:

“The question of whether there are negative events cannot be answered directly, by invoking the evidence of natural language, especially in the absence of a consensus as to what counts as an event.” (Horn 1989: 55)

This short paper aims at providing linguistic evidence for the existence of negative events, coming from the interaction of negation with perfect in Lithuanian, a Baltic language, which has not hitherto received enough attention from theoretical linguists (see Arkadiev, Holvoet & Wiemer 2015). The argument will be both empirical and theoretical, invoking recent proposals concerning the semantics of the perfect (Nishiyama & Koenig 2010) crucially relying on the notion of event, which, as it seems, has become fairly uncontroversial in the last decades (see, *inter alia*, Ramchand & Svenonius 2014 for a discussion of the status and representation of events in grammar, and references therein).

Lithuanian has complex morphology with rich inflection in both nominals and verbs, the latter distinguishing four synthetic tenses (present, simple past, habitual past, future); there is also a Slavic-style system of deriving telic (“perfective”) verbs from atelic (“imperfective”) verbs primarily by means of prefixes. This system is hardly as productive and regular as the corresponding Slavic one and does not interact with tense in any significant way. For an overview of the verbal system of Lithuanian, see Ambrazas (1997: 220–376), and Arkadiev 2011, 2012 and references therein specifically on the question of aspect.

In addition to the synthetic tenses, Lithuanian has periphrastic constructions consisting of the auxiliary verb *būti* ‘be’ fully inflected for tense and person and the past active participle of the lexical verb inflected only for the agreement in number, gender and (nominative) case with the subject of the clause. These constructions are called “perfect” or “resultative” (see Geniušienė & Nedjalkov 1988) and generally denote a state resulting from a previous event. This state may be the **target state** (Parsons 1990: 235) of the event denoted by the verb phrase, as in (1); in this case the construction expresses the resultative meaning proper, restricted to telic verbs denoting a change of state in their subject. Alternatively, the state denoted by the perfect construction may be more abstract and relate to the property of the subject arisen due to its mere participation in the event (cf. Parsons’ **resultant state**), as in (2); in general

this is the only interpretation of the perfect available with lexical verbs not denoting a change of state of the subject.

- (1) **Es-u** **apsireng-us-i** nauj-a suknel-e.
 AUX-PRS.1SG put.on.oneself-PST.PA-NOM.SG.F new-INS.SG.F dress-INS.SG
 ‘I have put on my new dress.’ (the speaker is wearing her dress at the moment of speech)
- (2) Tai turbūt geriausi-as anekdot-as, kok-į **es-u**
 that perhaps best-NOM.SG.M joke-NOM.SG what-ACC.SG.M AUX-PRS.1SG
girdėj-ęs.
 hear-PST.PA.NOM.SG.M
 ‘This is perhaps the best joke I’ve (ever) heard.’ (LKT)

The use of the perfect in Lithuanian is more restricted than the use of its English counterpart. First, the restrictions on the resultative proper use of the perfect are more stringent in Lithuanian, such a use being largely unattested with verbs denoting the change of state of a participant other than the syntactic subject. Second, Lithuanian does not have the so-called “universal” or “inclusive” use of the perfect (cf. e.g. Iatridou, Anagnostopoulou & Izvorski 2001); it is not possible to express a durative situation lasting up to the reference time by means of the perfect in Lithuanian. Thus, only (4a) with the present tense form can serve as a felicitous translation for English (3).

- (3) I **have been working** at the University for 2 years already.
- (4) a. Universitet-e **dirb-u** jau dvej-us met-us.
 university-LOC.SG work-PRS.1SG already two-ACC.PL.M year-ACC.PL
 ‘=(3)’
- b. #Universitet-e **es-u** **dirb-ęs** dvej-us
 university-LOC.SG AUX-PRS.1SG work-PST.PA.NOM.SG.M two-ACC.PL.M
 met-us.
 year-ACC.PL
 ‘I have worked at the university for two years [and now I don’t work there].’

Examples like (7) with the negation on the auxiliary (henceforth “higher negation”) are used when the speaker denies the relevance of the situation denoted by the verb phrase, e.g. asserting the lack of experience of participating in the relevant event. By contrast, examples like (8) with the negation attached to the participle of the lexical verb (“lower negation”) are used to assert the result of not having participated in the event; thus, (8) denotes the state of the speaker resulting from her not having slept for 36 hours. Importantly, the two constructions differ with respect to the types of adverbials they co-occur with and their scope; higher negation freely admits adverbials of universal quantification like *niekada* ‘never’ or *gyvenime* ‘in the lifetime’, denoting the time span of the perfect state. However, such adverbials are rarely if at all attested in sentences with lower negation; here various durational adverbials are found, and what they take in their scope is not the perfect state but rather the negated event: in (8) it is “not sleeping” that lasted for 36 hours.²

The “duality” of negation in the periphrastic perfect illustrated above is a fully systematic phenomenon in Lithuanian, amply attested in the existing corpora and recognized by native speakers. Below I give several further examples illustrating the sometimes subtle contrast between the higher and the lower negations.

- (9) Nei vien-o blog-o komentar-o apie j-uos
 nor one-GEN.SG.M bad-GEN.SG.M comment-GEN.SG about 3-ACC.PL.M
ne-s-u **skaiči-us-i**.
 NEG-AUX-PRS.1SG read-PST.PA-NOM.SG.F
 ‘I have not read a single bad comment about them.’ [<http://tinyurl.com/mqxrtyt>,
 accessed 4 March 2015.]

In (9) the existence of any event of reading is denied, highlighted by the use of the universal quantifier *nei vienas* ‘not a single’; although the situation in (10) is superficially similar, here the speaker uses the lower negation to assert her being in the state of not having read some books and imply that not having read them is a fact important for the current discourse. From the data at hand

² It has to be acknowledged that in (8) the temporal adverbial indicates not only the duration of the non-sleeping event, but also the duration of the perfect state as well; examples like (8) could be argued to constitute the only cases when Lithuanian perfect appears to have the “universal” meaning. However, such an interpretation is most likely to arise pragmatically: normally, for the resultant state of the non-occurrence of the event to hold, the event should not occur during the time span of this state. There are examples, however, when this pragmatic implication is overridden, see (19) below.

it appears that this kind of discursive highlighting of the negative event by overtly marking it as such is one of the primary uses of the construction with the lower negation in Lithuanian.

- (10) Nors yra keli-os knyg-os, kuri-ų dar
 though be.PRS.3 several-NOM.PL.F book-NOM.PL which-GEN.PL yet
es-u ne-skaiči-us-i.
 AUX-PRS.1SG NEG-tead-PST.PA-NOM.SG.F
 ‘Though there are several books [by that author] which I have not yet read.’
 [<http://tinyurl.com/Lyvn7s7>, accessed 4 March 2015.]

In the following examples with the verb *mokytis* ‘study’ we observe a similar contrast: in (11) with the higher negation it is denied that the subject has an experience of purposefully studying a craft, while in (12) the fact ‘did not study in the 3rd grade’ is asserted and its consequences are discussed.

- (11) Ši-o amat-o j-is **nėra** specialiai
 DEM-GEN.SG.M craft-GEN.SG 3-NOM.SG.M NEG+AUX.PRS.3 specially
mok-ęs-is...
 learn-PST.PA.NOM.SG.M-REFL
 ‘He has not specially studied this craft...’ (LKT)

- (12) Teko su juo atskirai padirbėti ir labai daug, visus metus, kad galėtų baigti
 ketvirtą,
 nes **buv-o ne-si-mok-ęs** treči-oje
 since AUX-PST.3 NEG-REFL-learn-PST.PA.NOM.SG.M third-LOC.SG.F
 klas-ėje.
 grade-LOC.SG
 ‘We had to work with him separately and for a long time, for the whole year, in order for him to be able to finish the fourth grade, since he had not studied in the third grade.’ (LKT)

Of course, in many cases there is very little if any truth-conditional difference between the upper and the lower negations, and both constructions can sometimes be used in the same contexts, like in (13) and (14).

- (13) Taurag-ès rajon-o savivaldyb-è dar **nėra**
 Tauragė-GEN.SG district-GEN.SG municipality-NOM.SG yet NEG+AUX.PRS.3
gražin-us-i 2 milijon-ų lit-ų iš
 return-PST.PA-NOM.SG.F 2 million-GEN.PL litas-GEN.PL from
 pasiskolint-ų 6 milijon-ų lit-ų.
 borrowed-GEN.PL 6 million-GEN.PL litas-GEN.PL
 ‘The municipality of the Tauragė district has not yet returned 2 million litas
 from the 6 million loan.’ [<http://tinyurl.com/kt6ckwv>, accessed 7 March 2015.]
- (14) Tačiau ministr-ė dar yra **ne-gražin-us-i** 218
 however minister-NOM.SG yet AUX.PRS.3 NEG-return-PST.PA-NOM.SG.F 218
 tūkst. lit-ų paskol-os.
 thousand litas-GEN.PL loan-GEN.SG
 ‘However the minister has not yet returned the 218 thousand litas loan.’ [<http://tinyurl.com/lgerbys>, accessed 7 March 2015.]

The difference between the two constructions of the negated perfect in Lithuanian can be informally summarized as follows: the higher negation involves the denial of the result of an event (and normally implies the non-occurrence of the event itself), while the lower negation makes an assertion about the state resulting from the non-occurrence of an event. In other words, the morpho-syntactic position of negation iconically reflects the mutual scope of negation and perfect:

higher negation: NEG > PERF

lower negation: PERF > NEG

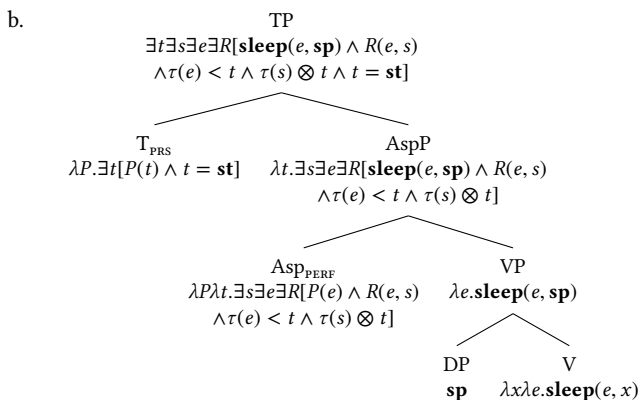
Below I will attempt to present a tentative compositional account of the difference between the higher and the lower negations in the Lithuanian perfect. I analyse the meaning of the Lithuanian perfect in line with the proposal by Nishiyama & Koenig (2010) that the perfect introduces an unspecified state whose identity is supplied by the context. However, since the Lithuanian perfect is arguably more restricted with respect to the possible interpretations of the perfect state than the English perfect, I hypothesize that the Lithuanian perfect introduces also a contextually specified relation *R* between the event and the state (akin to the “free relation” invoked in the semantic description of genitive modifiers by Partee & Borschev 1998). Besides that, the fact that the Lithuanian perfect does not have a “universal” reading is captured by specifying that the event denoted by the verb phrase is located before the

reference time, see (15).

$$(16) \quad \llbracket \text{PERF}_{\text{Lith}} \rrbracket = \lambda P \lambda t. \exists s \exists e \exists R [P(e) \wedge R(e, s) \wedge \tau(e) < t \wedge \tau(s) \otimes t]$$

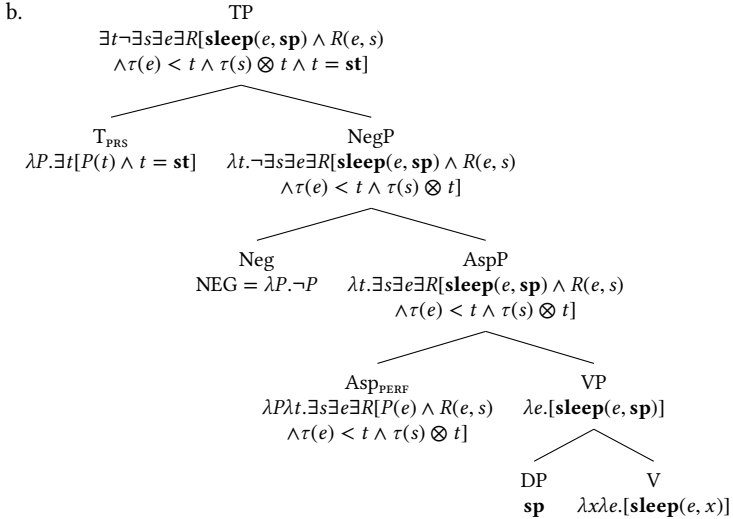
Under such an analysis, the interpretation of the affirmative sentence with the perfect such as (6a) repeated here as (16a), will look like (16b) (**sp** is ‘speaker’ and **st** is ‘speech time’).

- (17) a. Es-u miegoj-us-i.
 AUX-PRS.1SG sleep-PST.PA-NOM.SG.F
 ‘I [female] have slept.’



The corresponding sentence with the higher negation, i.e. (6b) repeated here as (17a), is represented in (17b); I assume that the higher negation is located between Asp and T, thus yielding an intuitively acceptable interpretation that at the reference time (in this case coinciding with the speech time) there is no state related to an event of “my sleeping”; a more sophisticated analysis, e.g. along the lines of Kratzer 1989 is also feasible.

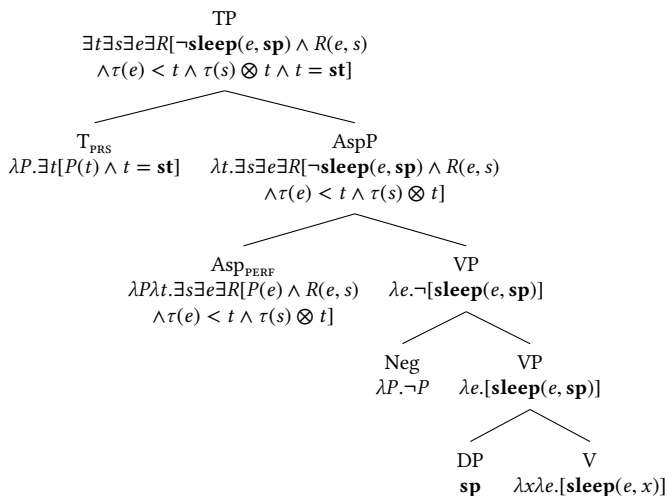
- (18) a. **Ne-s-u** miegoj-us-i.
 NEG-AUX-PRS.1SG sleep-PST.PA-NOM.SG.F
 ‘I have not slept’



The compositional representation of constructions with lower negation such as (6c) repeated below as (18a) is at first glance also fairly straightforward. To account for the intuition that in such sentences the perfect has scope over negation, the negative morpheme has to attach below Asp, as in the tentative representation in (18b).

- (19) Es-u **ne**-miegoj-us-i.
 AUX-PRS.1SG NEG-sleep-PST.PA-NOM.SG.F
 ‘I have not slept.’

(20)



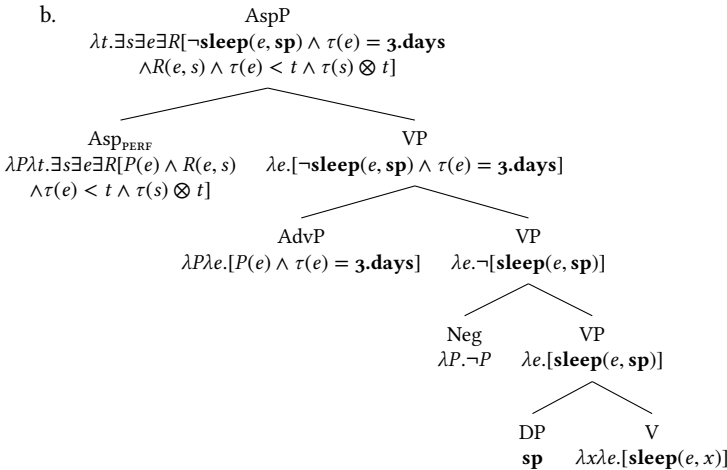
An objection can be raised against the representation in (18b), since the purely logical negation does not in fact yield the adequate semantic interpretation. Indeed, the negated VP in (18b) denotes the set of events complementary to the set of sleeping events whose subject is the speaker, which is evidently too broad an extension (e.g. a sleeping event whose subject is someone else would fall into it). What sentences like (18a) and other similar examples discussed above express, however, is not the result of **any** possible event outside of the extension of the non-negated VP, but rather the result of the non-occurrence of a **contextually expected** event from the extension of the VP (cf. the above quotation from Stockwell, Schachter & Partee 1973 regarding the “breaking of a habitual or expected pattern of activity”, or Higginbotham 2000: 73–74). Therefore, the lower negation cannot be the logical negation pure and simple and should rather instantiate an operator yielding negative events of the type discussed in de Swart & Molendijk 1999 or Higginbotham (2000: 74–75).³ I will not, however, pursue this option here, since, first, the fleshing out of all formal details of the analysis is not my goal, and, second, because the issue of the correct representation of the meaning of linguistic negation and its largely pragmatically determined “flavours” is much broader than the rather modest scope of the present study. To this I will only add that such a “more complex

3 Another potential solution would be the one along the lines of Champollion 2010.

negation” is certainly needed for the fully adequate description of the higher negation as well, since the representation of (17b) yields truth conditions too loose to accurately reflect the meaning of (17a).

However formally represented, the crucial point of the current analysis is that the perfect in Lithuanian can scope over negation, which, given that what the perfect applies to is an event description, implies that negation can operate on “positive” events and yield “negative” events (cf. de Swart & Molendijk 1999). This not only aligns well with the informal intuition about examples like (8), (10), (12) and (14), but finds support in the already mentioned fact that perfects with the lower negation can combine with temporal adverbials indicating the duration of the negative event itself, as in (8) or especially (19a) below, since adverbials of duration take scope over events, and not, for instance, propositions (see e.g. Krifka 1989). The simplified semantic representation of the AspP of (19a) is given in (19b).

- (21) a. O armij-oje **es-u** **ne-miegoj-ęs** tr-is
 and army-LOC.SG AUX-PRS.1SG NEG-sleep-PST.PA.NOM.SG.M three-ACC.PL
 par-as.
 day-ACC.PL
 ‘When I was in the army I [once] did not sleep for three days.’ [http://tinyurl.com/pxb28nh, accessed 9 March 2015.]



Given that the Lithuanian clause contains two sites for the attachment and interpretation of negation, it is not surprising that examples of double negation with the perfect are also attested, cf. (20) and (21), denying the existence of negative event of non-helping or non-coming, respectively, cf. a very schematic semantic representation in (22).

- (22) Niekada **ne-s-u** **ne-padėj-ęs** žmog-*ui*
 never NEG-AUX-PRS.1SG NEG-help-PST.PA.NOM.SG.M person-DAT.SG
 vien dėl to, kad jis yra vienos ar kitos partijos narys.
 ‘It has never been the case that I didn’t help a person just because he was a member of a particular party.’ (LKT)

- (23) Ir dar niekada **ne-buv-o** **ne-atėj-ęs** ar
 and yet never NEG-AUX-PST.3 NEG-come-PST.PA.NOM.SG.M or
 pavėlav-ęs.
 be.late-PST.PA.NOM.SG.M
 ‘And it has never been the case that he didn’t come or was late.’ (LKT)

- (24) $\neg\exists s\exists e.\neg P(e) \wedge R(e, s)$

I hope that the above discussion has demonstrated the relevance of negative events for the morphosyntax-semantics interface of Lithuanian, and has shown that a compositional analysis is both necessary and feasible for an adequate account of these data, although the full presentation of all the details of such an analysis is beyond the scope of this paper. I would like to conclude my article by pointing out that parallel phenomena exist in English as well, though they have not received enough attention in the literature. It has been observed in McCawley (1999: 179) that the English perfect can interact with negation in basically the same two ways as has been shown above for Lithuanian, cf. (23) and (24) and the quotation from McCawley.

- (25) John hasn’t received any encouragement.
 (26) John has [not returned my calls] many times.

“In [(23)], one says that (in the relevant past interval that stretches up to the present) there is no event of John receiving some encouragement; in [(24)], one says that there are many past events of John not returning my calls.” (McCawley 1999: 179)

Thus, according to McCawley, in English the perfect can have scope over negation, in contradiction to, e.g., Janssen (1983: 84), who claimed that “negation always has wider scope than the perfect”. McCawley’s observation is corroborated by Zanuttini (1996: 189–190), de Swart & Molendijk (1999: 19) and de Swart (2012: 773–776); for example, Zanuttini (1996) gives the following pair of examples notable for the clear formal (word order) distinction between the “higher” and the “lower” negations:

- (27) a. Mary **hasn’t** always **paid** taxes. (NEG > PERF > ‘always’)
 b. Mary **has** always **not paid** taxes. (PERF > ‘always’ > NOT)
 (Zanuttini 1996: 189)

In (26) and (27) non-constructed examples with such “split” negated Perfect are given:

- (28) They really love nursery and **have** sometimes **not wanted** to come home!
 [<http://tinyurl.com/mvvyvou>, accessed 11 March 2015.]
 (29) I **have** often **not slept** or **eaten** for 2 days at a time. [<http://tinyurl.com/oxntpop>, accessed 11 March 2015.]

It must be noted, however, that such examples of “split Perfect” are quite rare in modern English: according to BNC (100 mil. words), the strings *have/has sometimes/often/always not* occur 10 times, while the string *has/have not* occurs about 11,000 times.⁴

Finally, as Zanuttini (1996: 189–190) observes, in Italian both the “higher” (25a) and the “lower” (25b) interpretations of negation can only be expressed by a construction with the negation modifying the auxiliary (28a); attaching the negation to the participle of the lexical verb is ungrammatical, cf. (28b).

- (30) a. Maria **non ha** sempre **pagato** le tasse.
 ‘=25a, 25b’ (Zanuttini 1996: 190)
 b. *Maria **ha** sempre **non pagato** le tasse.
 intended ‘=25a’

In sum, though from a purely logical stand the “lower” scope of negation with respect to the perfect, serving as an important piece of evidence for the existence and grammatical relevance of negative events, can well be universal,

⁴ As a side note it is worth observing that examples like (26) and (27) are not even mentioned in a 800-page long study of the English verb phrase by Declerck (2006).

languages differ in whether they have morphosyntactic means to overtly distinguish between these two semantic construals, as well as in the extent to which they employ such means (see Arkadiev 2013 and Arkadiev forthcoming for more cross-linguistic data). Lithuanian presents a clear example of a language where the difference in semantic scope is reflected in the morphosyntax in the most iconic way.

Sources

BNC – British National Corpus, <http://www.natcorp.ox.ac.uk/>

LKT – The Corpus of Modern Lithuanian, <http://tekstynas.vdu.lt>

Pair-list answers in naïve speakers and professional linguists

Asya Achimova, Peter Staroverov, Viviane Déprez and Julien Musolino

3.1 Introduction

Informally collected grammaticality judgments have probably been the most widely used kind of data in generative linguistics. Although such judgments can be pretty robust (Sprouse & Almeida 2010, 2012a, Sprouse, C. T. Schütze & Almeida 2013), disagreements among professional linguists in their judgments of particular sentences have doubtlessly arisen. In such cases, collecting judgments in a formal experimental setting has proven useful (C. T. Schütze 1996, 2009, Kawahara 2011, C. T. Schütze & Sprouse 2014). Moreover, professional linguists have sometimes been reported to differ in their judgments from naïve speakers of the same language (Spencer 1973, Gordon & Hendrick 1997, Culbertson & Gross 2009, Dąbrowska 2010, Gibson & Fedorenko 2010, 2013). This latter kind of disagreement, if upheld, could be particularly worrisome as they carry implications that linguists could have concerned themselves with phenomena that are largely idiosyncratic to their group (as some authors conclude, see e.g. Gibson & Fedorenko 2010, 2013).

However, before such negative conclusions can be drawn, we need to gain a better understanding of the nature of the difference in grammaticality judgments between professional linguists and naïve speakers (C. T. Schütze & Sprouse 2014). This paper compares naïve speakers and linguists in an ex-

perimental study of semantic acceptability judgments for scopally ambiguous sentences. We show that, as a group, naïve speakers and professional linguists give similar judgments. However, it also turned out that some naïve speakers (about 30% in our initial study) were likely to accept scopal interpretations previously judged unacceptable by most linguists. A further investigation of this difference in two follow-up studies, showed first that naïve speakers are more susceptible to task effects than linguists, and second, that they may be more likely to unconsciously accommodate a sentence to a correct one via lexical substitution. When these effects are appropriately controlled for, naïve speakers' judgments become closer to those of linguists. Consequently, this study argues that while naïve speakers and professional linguists have the same grammatical competence, the judgments of the former are more likely than those of the latter to be affected by performance factors (Spencer 1973, Newmeyer 1983, 2007, Devitt 2006). Furthermore, such performance factors may be especially strong when judgments concern subtle semantic distinctions that are bound to particular situations, rather than more straightforward grammaticality ones.

The paper is structured as follows. In Section 3.1.1 we review the literature concerned with naïve speakers' vs. professional linguists' judgments. Section 3.1.2 briefly introduces the linguistic phenomenon used in our study. Section 3.2 describes our Experiment 1, which compares naïve speakers and professional linguists in their judgments of semantic acceptability. Section 3.3 describes two follow-up studies designed to further investigate the nature of the qualitative differences that surfaced between linguists and naïve speakers. Section 3.4 presents the cumulative discussion of the results and our conclusions.

3.1.1 Grammaticality Judgments and the Judgment Providers

In a recent review article C. T. Schütze & Sprouse (2014: 27) cite the choice of a population of judgment providers as “one of the most contentious aspects of judgment data”. Indeed there is a growing literature documenting the differences between professional linguists and naïve speakers in their judgments (Spencer 1973, Gordon & Hendrick 1997, Culbertson & Gross 2009, Dąbrowska 2010). In most of these studies the reported differences between the two groups are qualitative rather than quantitative. While overall naïve speakers as a group behave statistically very similarly to professional linguists,

the patterns of variation by subject diverge. The present study reveals a similar pattern with respect to semantic acceptability judgments.

Two kinds of explanations have been offered for the observed differences between naïve speakers and linguists. First, it has been suggested that linguists could be subconsciously biased towards giving judgments that confirm their own theoretical beliefs (Edelman & Christiansen 2003, Ferreira 2005, Wasow & J. Arnold 2005, Gibson & Fedorenko 2010, 2013). Dąbrowska (2010) addressed this concern in a study of how professional linguists rate island effects. Island effects represent important empirical phenomena extensively investigated within the generative grammar framework. At the same time, the grammatical nature of island effects has been questioned both among generative linguists and among functional linguists alike. In a study that compared island violations ratings by generative linguists with those of functional linguists, Dąbrowska (2010) showed that the generative linguists turned out to rate island violations as more acceptable than the functional linguists did, as if the former were biased *against* their own theoretical conclusions.

Second, differences between linguists and naïve speakers have been attributed to a heightened sensitivity by the former to relevant differences, or a greater capacity to ignore certain irrelevant factors that affect the overall sentence well-formedness (Spencer 1973, Newmeyer 1983, 2007, Devitt 2006). It was observed that linguists can potentially more easily abstract away from individual lexical items, the plausibility of scenarios they are assessing, the complexity of sentences – the factors introducing confounds that can interfere with acceptability judgments in naïve speakers. In short, it would seem that linguists understand better what the task is. Although the linguists' heightened sensitivity can be difficult to prove, there is some existing experimental evidence that provide suggestive support for this type of explanation. Culbertson & Gross (2009) sought to investigate the role of expertise on judgments by looking at how consistent speakers of each group turn out to be. Defining judgment reliability as consistency in responses in different circumstances, regardless of accuracy, they tested professional linguists with substantial experience in syntax, students with at least 1 course worth of experience in generative syntax, and a group of naïve subjects with no experience in cognitive science. A comparison of students who had experience in generative syntax and of another student group who only had experience in other domains of cognitive science was intended to help revealing whether the amount of task-specific knowledge affects the quality of judgments. Subjects were asked to

evaluate sentences from a syntax textbook (Haegeman & Guéron 1999). The analysis shows that speakers with some task-specific knowledge were more consistent in their responses as a group (showed less variability), and hence were more reliable. The authors acknowledge the fact that consistency does not necessarily imply reliability in terms of actual reflection of true syntactic processes. However, they suggest, it seems rather implausible that a group of naïve speakers could have had more accurate judgments than speakers with some level of expertise for no particular reason.

Interestingly, the amount of experience in linguistics did not affect the consistency of judgments in any substantial way. Culbertson & Gross (2009) suggest that the uniformity of judgments is achieved through minimal task specific knowledge, and does not reflect knowledge of linguistic theory. In other words, the divide would lie between speakers who have never performed linguistic judgment tasks as opposed to those who have had some experience participating in such tasks (see also Devitt 2010, Gross & Culbertson 2011 for further discussion). As we will see, the results of the present study go in the same direction. They suggest that linguists are indeed more sensitive to subtle semantic differences than naïve participants, but also show that certain manipulations of the judgment task can make it easier for naïve speakers to detect the relevant linguistic distinctions (see also Fanselow 2007, Grewendorf 2007, Haider 2007).

A final important issue, that we only partially address here, concerns potential distinctions between judgments that are reported in the linguistic literature and judgments by linguists or naïve speakers that are elicited in controlled experiments (Gibson & Fedorenko 2010, 2013, Sprouse & Almeida 2012a). Concerned with this issue, Gibson & Fedorenko (2013) examined a number of case studies; one of these involves superiority violations in multiple *wh*-questions. According to the Superiority condition (Chomsky 1973), in a well formed multiple *wh*-question (direct or embedded) that contains both a subject and an object question, it is the *wh*-subject phrase, i.e. the hierarchically highest phrase that must front and the *wh*-object, i.e. the structurally lowest phrase, that must remain in its original position, as in (1). Cases in which the reverse occurs lead to unacceptability, as in (2) as the Superiority condition is violated.

- (1) Peter knows who bought what.

- (2) *Peter knows what did who buy.
 (3) Peter knows what did who buy where.

However, according to Bolinger (1978) and Kayne (1983), the addition of third *wh*-phrase, such as *where* in (3), is reported to improve the acceptability of such superiority violation. Gibson & Fedorenko (2013) put this claim to an experimental test using embedded questions. They found, contra existing claims in the theoretical literature, that naïve speakers found no differences between sentences like (2) and (3) and proceeded to conclude that naïve speakers data collected in experimental conditions had to be used to avoid possible bias effects that could lead theoretical generalizations astray.

Conclusions of Gibson & Fedorenko (2010, 2013) were later challenged in a number of papers (Culicover & Jackendoff 2010, Sprouse & Almeida 2010, 2012b). Sprouse & Almeida, in particular, questioned the logic of their conclusions arguing that differences found between judgments reported in the literature and data elicited from naïve speakers do not constitute evidence that the latter type of data is the only reliable one. Existing large-scale controlled studies of syntactic judgments have indeed confirmed that the majority of informal judgments reported both in textbooks (Sprouse & Almeida 2012a) and in linguistic journals (Sprouse, C. T. Schütze & Almeida 2013) are reliably replicated experimentally with naïve participants.

The present study compares three groups of speakers judging the asymmetric availability of pair-list answers in identical experimental settings: undergraduate students, Ph.D. candidates in linguistics, and professional linguists with a Ph.D. We show that, overall, judgment patterns are consistent across groups, although individual patterns of variation can emerge. Importantly, we also show that judgments across different groups of speakers can be collectively similar even for sentences whose acceptability has been debated in the literature, as our brief review section of the literature on the relevant linguistic phenomenon attests.

3.1.2 *Subject-object Asymmetries in Wh-/quantifier Interactions*

In their ability to variably license so called *pair-list answers*, or PLAs for short, questions with quantifiers are a prime example of the linguistic complexity that characterizes the interactions of scope bearing elements. Observing that PLAs are only available for questions in which a universal quantifier occurs

in a subject position, as in (4), but not for questions in which the quantifier occurs in an object position, as in (5). May (1985) can outscope *wh*-elements that are fronted above them only under syntactically limited circumstances.

- (4) Which boy did every girl kiss?
 Mary kissed John, Sue kissed Nick, and Helen kissed Michael.
- (5) Which girl kissed every boy?
 *Mary kissed John, Sue kissed Nick, and Helen kissed Michael.

A number of distinct accounts for the rather famous contrast in (4–5) long regarded as a standard case of the subject-object asymmetry have been proposed (May 1985, Chierchia 1993, Beghelli 1997, Agüero-Bautista 2001). While all existing accounts converge in predicting the asymmetry given in (4–5), the various proposed theories diverge in the consequent set of varying empirical predictions they make in regards to modifications of this basic paradigm. Although our experiments focus on the judgments that are common to all accounts, it is important to note that various data points remain controversial in the literature, offering evidence that the judgments data surrounding this particular research question are far from trivial.

The original account in May (1985) treats the asymmetry in (4–5) as a consequence of a general syntactic principle: in (5), the object quantifier fails to outscope the question term, because its LF movement would violate the Path Containment Condition (Pesetsky 1982) by crossing the movement path of the *wh*-item. As shown by Beghelli (1997), however, there are lexical differences among quantifiers in regards to the basic asymmetry: strongly distributive quantifiers like *each* appear to be able to outscope a question term even when they occur in object positions (see also Williams 1988, Szabolcsi 1997a, Agüero-Bautista 2001) as witnessed by their ability to have PLAs in questions like (6). Beghelli takes this to show that *each*, unlike *every*, can raise to the specifier of a designated projection $\text{Dist}(\text{ributive})\text{P}$, located higher than IP, from which it can bind the variables introduced by the *wh*-phrase (Beghelli 1997).

- (6) Which girl kissed each boy? PLA ok.
 $[_{CP} \text{Which girl}]_j [_{\text{DistP}} \text{each boy}]_i [_{IP} t_j [_{\text{kiss}} [_{NP} t_i]]]]]$

For him, on the other hand, weakly distributive quantifiers like *every* that are lexically underspecified for distributivity cannot raise to DistP .

Focusing on the nature of question terms in contrast, Chierchia (1993) suggests that PLAs may be available with an object quantifier in questions with a semantically plural *wh*-term like *who*, but not with a strictly singular question term like *which* in (5). Chierchia further proposes to analyze restrictions on PLAs as a consequence of general binding conditions, and more specifically, as resulting from Weak Crossover effects that prevent the binding of a pronominal variable by a non-c-commanding quantifier. Notably, such effects are suspended with semantically plural pronouns, thus explaining why PLA could be unrestricted with plural questions terms. Similar judgments for *who*-questions are reported in Agüero-Bautista (2001), for whom the ability for a *wh*-phrase to give rise to PLAs depends on restrictions that govern the reconstruction of a question term below the interacting quantifier according to the presuppositional status of a *wh*-phrase, and not its plurality.

Table 3.1 summarizes the empirical predictions of the accounts briefly reviewed above.¹

Subject questions	May (1985)	Beghelli (1997)	Chierchia (1993)	Agüero-Bautista (2001)
Who kissed every girl?	–	–	+	+
Which boy kissed every girl?	–	–	–	–
Which boy kissed each girl?	–	+		+

Table 3.1: Availability of pair-list answers for subject questions with object quantifiers.

As discussed in details in Achimova, Déprez & Musolino (2013) and as shown by Table 3.1, all these accounts agree on the unavailability of PLAs for questions like (5) (*which* interacting with *every*) and also manifest a relative consensus on availability of PLAs for questions like (6) (*which* interacting with *each*). However when it comes to the potentially plurality of *who* and the use of *which* in plural contexts, the predictions diverge. The availability of PLAs to questions with quantifiers thus presents an ideal testing ground for assessing the differences between linguists and naïve speakers. The reported judgments

¹ Plus signs indicate that a PLA is predicted to be possible and minus signs – unavailable.

in this case involve a subtle and complex semantic phenomenon, and manifest both partial convergence and debated discrepancies in the literature.

3.2 Experiment I: Professionals vs. Naive Speakers

3.2.1 Methods

Design The experiment was designed to test whether the predicted subject-object asymmetry exemplified in (4–5) above can be verified for three groups of speakers differing in their level of linguistic training. We kept the question/answer pairs as close as possible to those discussed in the literature. Crossing the factors resulted in a $2 \times 2 \times 2 \times 3$ design: 2 (*quantifier position*: subject vs. object) \times 2 (*answer type*: single vs. pair-list) \times 2 (*wh-type*: *who* vs. *which*) \times 3 (undergraduate students, Ph.D. candidates in linguistics, professional linguists with a Ph.D.).

Participants The undergraduate group contained 33 psychology students who received course credit for their participation. We also tested 32 Ph.D. candidates in linguistics, and 28 professional linguists holding a Ph.D., all native speakers of English. We recruited our subjects through the Linguist List. Professional linguists were also asked whether they were familiar with the literature on *wh*-/quantifier interaction and pair-list answers. The level of familiarity with the topic did not affect the ratings to target items in the experiment ($p = 0.55$).

Materials and procedure Each trial consisted of a questions/answer pair. The task was to determine whether that particular answer was a *possible* answer to the relevant question on a 1–7 scale, where 1 was ‘definitely no’ and 7 ‘definitely yes’. A sample question is given in (7).

- (7) Which driver took everybody home last night?
Tom took Ms. Franko, Bob took Ms. Dombovski, and Jack took Mr. Perkins.

Participants were asked to rate 32 critical items and 60 control/filler statements which included questions with clearly acceptable or unacceptable answers, as well as questions with pragmatically odd answers. The experiment started with the presentation of three trial stimuli. Participants then took the main test that lasted between 15–20 minutes.

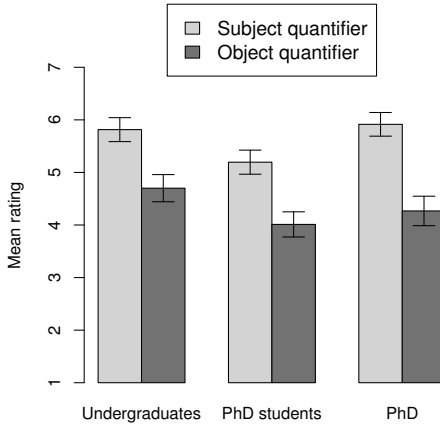


Figure 3.1: Subject/object asymmetry for different groups of speakers

3.2.2 Experiment I: Results

The analysis was performed using cumulative link mixed models (R package ‘ordinal’). We first fit a model with ratings as a dependent variable and type of answer as an independent variable, random effects include random intercepts for subjects and items and random slopes for subjects. As expected, single answers received higher ratings (mean = 6.8 on a 7-point scale) than PLAs (mean = 5) ($\beta = 4.4$, $SE = 0.513$, $p < 0.01$). Single answers serve as control, showing that subjects had no problems dealing with questions containing universal quantifiers overall. From now on, our analysis focuses solely on PLAs since it is about their distribution that conflicting claims are made.

The analysis confirmed a significant effect of quantifier position: PLAs to questions with subject quantifiers received higher ratings, than PLAs to questions with object quantifiers as predicted by all approaches ($\beta = 2.49$, $SE = 0.36$, $p < 0.01$). Professional linguists did not differ from either naive subjects ($\beta = 0.42$, $SE = 0.57$, $p = 0.46$), or Ph.D. students in linguistics ($\beta = -0.39$, $SE = 0.57$, $p = 0.49$) with regards to this type of question/ answer pair. These results confirm the literature findings of the subject-object

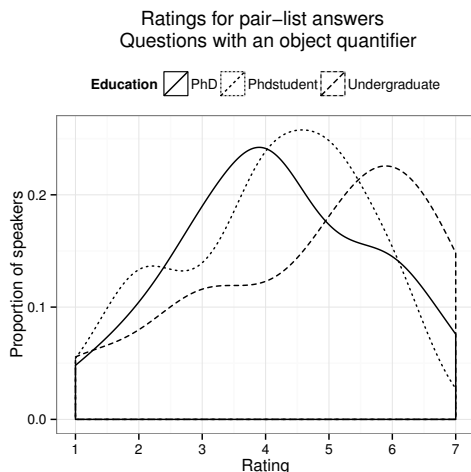


Figure 3.2: Distribution of ratings (averages across 8 items of a given type)

asymmetry in the distribution of PLAs for all the tested populations.

We now turn to a more detailed analysis of the responses. Figure 3.2 shows the distribution of ratings assigned by the speakers to PLAs in questions with object quantifiers. Further analysis revealed that among naïve speakers at least 30% assigned a rating of 6 or 7 to such question-PLAs pairs, in contrast to the predicted unavailability of PLAs in such cases (May 1985, Beghelli 1997). However, the number of speakers showing no subject-object asymmetry appears to diminish with expertise. It is smallest for professional linguists.

3.2.3 Experiment I: Discussion

The results of Experiment I are generally in line with what is typically observed in the literature (see 3.1.1). On the one hand, professional linguists, Ph.D. candidates, and naïve participants as a group give very similar results, and all groups confirm the presence of the subject-object asymmetry. On the other hand, the patterns of variation in judgments are different between the three groups. While very few professional linguists with a Ph.D. judged PLAs to object-quantifier questions to be possible, more Ph.D. students in linguistics

did so (i.e. consistently rating these 6 or 7), and even more naïve participants (at least 30%).

Could this pattern of judgments indicate that 30% of the naïve participants have a different grammar (being then perhaps less likely to become linguists)? We contend that this is rather unlikely, and suggest instead that naïve participants could be more amenable to ignoring certain confounds. For one thing, naïve participants may be more willing to accommodate than linguists. When accepting PLAs to object-quantifier questions with *every*, undergraduate students may unconsciously accommodate the distributivity of *every*, making it, in relevant respects, more similar to the quantifier *each*. Recall from Section 3.1.2 that strongly distributive quantifiers like *each* are known to escape the subject-object asymmetry observed with the pseudo-distributive ones like *every* (Beghelli 1997). If some of our naïve participants subconsciously accommodated *every* to *each*, this would predict a higher acceptability ranking for object-quantifier questions². In Experiment 2, we show that this subconscious lexical accommodation can be avoided when participants are asked to judge sentences with *every* alongside sentences with *each*, thus increasing their awareness of the contrast.

Another possible reason why relatively many naïve participants seem to accept the supposedly ungrammatical PLAs may have to do with the set up of the task. Naïve speakers lack the experience of producing acceptability judgments, and therefore may be more susceptible to noise that could be introduced by the choice of fillers and control items in an particular experiment. We address this concern in Experiment 3.

3.3 Follow-up Experiments

The experimental methods for both Experiment 2 and Experiment 3 were essentially the same as for Experiment I, although only naïve speaker participants took part in the follow-up studies. In Experiment 2 participants were asked to judge answers to questions with that vary the type of quantifier *every* vs. *each* in addition to its position. As a consequence, it is plausible to suppose, that their awareness of the contrast between these two quantifiers was sharpened, making them less likely to accommodate *every* to *each*. We

² Interestingly in this regards, naïve speakers behave not unlike preschoolers for whom as Achimova, Syrett, et al. (submitted) show, the distributivity contrast between *each* and *every* is inexistent.

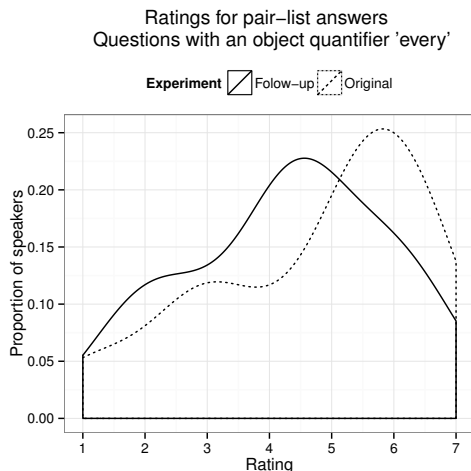


Figure 3.3: Naïve participants

see in Figure 3.3 that this resulted in a shift of the mode of ratings for *every* object-quantifier questions as compared to the results of Experiment 1, suggesting that the contrast between *every* vs. *each* is indeed relevant to naïve speakers' judgments.

In Experiment 3, we asked naïve speaker participants to perform the same task but the number of items per condition was increased up to 20, and a binary yes/no judgment was used instead of a scale. The set of controls was also modified: instead of using pragmatically incoherent answers as unacceptable items (8), questions with downward entailing quantifiers such as *nobody*, *most*, and *few* were used, resulting in pairs like (9).

- (8) Did you read every book on the list?
Yes, I read 3 out of 8
- (9) Who did nobody see?
Mary didn't see John, Sue didn't see Nick, and Helen didn't see Mike.

The results of Experiment 3 are summarized in Figure 3.4.

If displaying the expected subject-object asymmetry, participants are pre-

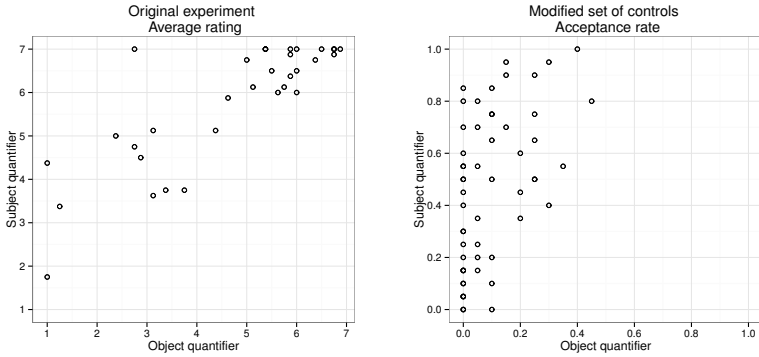


Figure 3.4: The effect of control items in an experiment

dicted to accept PLAs with subject-quantifier but not with object-quantifier questions. Hence, data points should cluster in the upper left part for each of the right and left graphs (high rating/acceptance rate for subject-quantifier questions, and low rating/acceptance rate for object-quantifier questions). In the original experiment (left graph) we see that at least 30% of speakers show *similarly* high acceptance for PLAs in both the subject- and the object-quantifier condition. This is not true however for the follow-up (yes/no) experiment, where participants show behavior in line with theoretical predictions: participants clearly rejected PLAs to questions with object quantifiers.

Because several parameters were modified in this follow-up experiment, it is possible that all of them contributed in sharpening the subject-object asymmetry for naïve speaker participants. Note, however, that several studies have shown that using a scale vs. a binary a yes/no judgment task produced essentially similar results (Bader & Häussler 2010, Kawahara 2011). Increasing the number of tested items should likewise have little effect on judgment quality; though possibly help in producing a cleaner quantitative picture of the responses. Thus the factor that is most likely to be responsible for the effect observed in Figure 3.4 must come from using a different set of controls/fillers. In this follow-up experiment, we used controls/fillers that more closely matched the type of violation expected in the critical items. We conjecture that in being asked to compare sentences with different quantifier types, the sensitivity to

the task might have been increased. Conversely, it is possible that the set of controls used in Experiment I created an overly strong impression of deviance that belittled the comparatively more mild deviance of object-quantifier PLAs for naïve participants. In sum, it would appear that the type of comparison class items used as controls in a judgment task is of importance in sharpening the attention of naïve speakers to pertinent contrasts.

3.4 Discussion

Pair-wise comparisons of professional linguists, linguistics students and naïve speakers did not reveal an effect of expertise on the ratings in Experiment I. Thus our experimental results indicate that speakers of all three groups essentially patterned alike: they manifested a clear subject-object asymmetry in their rating of PLA availability, and variability in judgments was present for all three groups of speakers for the controversial object-quantifier questions like (5), but not for the subject-quantifier questions like (4).

We observed that judgments tended to get closer to those reported in the literature (rating a PLA to an object-quantifier question lower) as expertise increases, yet the analysis revealed no statistical differences between professional linguists and naïve speakers. This implies that data from experts and naïve speakers can be a reliable source of acceptability judgments. This result is advantageous because naïve speaker subjects are often easier to access as a population, and when useful, experiments can be performed with larger numbers of speakers.

Our results also offer some insight into the differences that are here observed between linguists and naïve speaker participants. In line with the sensitivity hypothesis outlined in 3.1.1, we argued that linguists are more able to abstract away from certain performance factors that can act as confounds. In the case at hand, it appears that there were at least two potential sources of such confounds. First, Experiment 1 only tested questions with *every*, but the availability of very similar questions with *each* for which the PLAs are acceptable has apparently led some naïve participants to accommodate and rate PLAs higher than expected from the theoretical literature. Second, the nature of the fillers and controls used in Experiment 1 may have made it more likely for naïve participants to apply the accommodation strategy, because unacceptable controls were of a rather different nature than the critical items, and clearly very degraded, being not just grammatical deviant, but also dis-

cursively incoherent. The results of Experiments 2 and 3 suggest that such confounds can be addressed by making naïve speaker participants more aware of important lexical contrasts and by choosing control items that set up more appropriate linguistic contrasts. When these factors are adequately controlled for, the variation within the group of naïve speaker participants becomes very similar to that observed with more expert linguists in Experiment I. We conclude that although both naïve speaker participants and linguists can give very consistent judgments, experiments with the former group should be carefully designed to address the potential effects of scale adjustment and accommodation. We further submit that the type of controls used in linguistic experiments should also be detailed as their nature may well be of central importance in influencing the judgment of non-expert naïve speakers.

Cause in Russian and the formal typology of coordination and subordination

Oleg Belyaev

4.1 Introduction

Coordination and subordination has been a long-standing problem in syntactic typology.¹ While traditional grammar views it as a binary opposition, there are lots of typological data which put such a simple view of the problem into question. Various tests that have been proposed in the literature do not match for individual constructions in individual languages (Zaliznyak & Paducheva 1975, van Oirsouw 1987, Haspelmath 1995, 2004, Kazenin & Testelefs 2004). The exceptions fall into two broad categories, conveniently named **pseudocoordination** and **pseudosubordination** in Yuasa & Sadock (2002).

Pseudocoordination involves an otherwise coordinating conjunction or construction being used in a context involving subordination-like semantics

¹ I am grateful to the audiences of Formal Approaches to Russian Linguistics (Moscow, 19–20 March 2014) and Coordination and Subordination in Lisbon (May 7–9, 2014), especially Denis Creissels, Ira Eberhardt, Martin Haspelmath, Caroline Heycock, Daniel Ross, and Uli Sauerland. I would also like to thank the Festschrift team – Peter Arkadiev, Ivan Kapitonov, Yury Lander, Ekaterina Rakhilina, Pavel Rudnev and Sergei Tatevosov – for their tireless work. Finally, nothing in this paper would have been possible without Barbara Partee, who introduced me to formal semantics back in 2009; life has not been the same ever since. Thank you, Barbara!

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or function. A familiar example of pseudocoordination is the so-called left-subordinating *and* (_{LS} *and*) construction in English, describe in Culicover & Jackendoff (1997):

- (1) You drink one more can of beer **and** I'm leaving.

In (1), conditional semantics is observed in spite of the use of the coordinating conjunction *and*. This construction is not merely functionally unusual. It also displays a number of subordination-like properties. For example, it cannot, unlike ordinary coordination, undergo right node raising:

- (2) a. Big Louie finds out about that guy who stole some loot from the gang, and Big Louie puts out a contract on him.
(conditional meaning implied)
- b. *Big Louie finds out about __, and Big Louie puts out a contract on __, that guy who stole some loot from the gang
(Culicover & Jackendoff 1997: 198–199)

Culicover & Jackendoff's explanation involves a mismatch between syntax and semantics. Such constructions are treated as being syntactically coordinating but semantically subordinating. This explains the fact that their linear-order properties are coordinating, while more semantically-oriented properties such as the possibility of additional ellipsis types are subordinating.

This approach is extended by Yuasa & Sadock (2002), who introduce the notion of “pseudosubordination” for mismatches of an opposite kind, i.e. when subordinating syntax coexists with coordinating semantics. There are two cross-linguistically widespread examples of such mismatches. One is the so-called “comitative coordination”, especially widespread in Slavic and neighbouring languages. In this construction, the preposition ‘with’, which is subordinating in that it selects instrumental case, semantically behaves like a coordinating conjunction. This is especially apparent due to the fact that the verb agrees in plural:

- (3) Petja s Vasej opozdali / * opozdal na urok.
P.NOM with V.INS were.late.PL was.late.SG to lesson
'Petya and Vasya were late for the lesson.'

A second type of this mismatch involves converb constructions, which are syntactically subordinating in that they appear in morphologically deranked

and syntactically independent form. However, in many languages they are used in coordination-like contexts such as clause chaining, and display certain coordinating properties:

- (4) a. *Takeshi-ga **kanojo**_i-no uchi-e it-te **Hanako**_i-ga Jiro-no uchi-e
 T.-NOM her-GEN house-to go-and H.-NOM J.-GEN house-to
 it-ta
 go-PST
 ‘Takeshi went to her_i house, **and** Hanako_i went to Jiro’s house.’
- b. Takashi-ga **kanojo**_i-no uchi-e ik-u **mae-ni** **Hanako**_i-ga
 T.-NOM her-GEN house-to go-PRS front-DAT H.-NOM
 Jiro-no uchi-e it-te shimat-ta
 J.-GEN house-to go-GER have-PST
 ‘Before Takashi went to her_i house, Hanako_i had gone to Jiro’s house.’
 (Yuasa & Sadock 2002: 96)

The mismatch approach to coordination and subordination is quite promising, as it allows us to establish a clear connection between the surface properties of constructions and their meanings (functions). Unfortunately, the notions “semantic coordination” and “semantic subordination” are themselves rather vague, and it is never explicitly stated how exactly the surface contrasts under discussion follow from the semantic differences. More precise definitions can be provided, but the resulting semantic classification inevitably ends up having significant differences from the traditional one.

A particularly good example concerns German causal clauses. This language has two principal causal subordinators: *weil* and *denn*. Clauses introduced by the former display verb-final word order, typical for subordinate clauses in German, while clauses introduced by the latter display verb-second word order, typical for main clauses, including main coordinate clauses. Therefore, syntactically, *denn* behaves like a coordinating conjunction. In Scheffler (2013), it is demonstrated that semantic properties of *denn*-clauses also correspond to coordination. In particular, the causal meaning introduced by this conjunction cannot be in the scope of negation or modal operators, or in narrow focus as an answer to a why question:

- (5) A: Warum ist Otto zu Hause? B: **Weil** / ***denn** es regnet.
 ‘A: Why is Otto at home? B: **Because** it’s raining.’ (Sohmiya 1975, cited from Scheffler 2013: 87)

Scheffler links this behaviour to the fact that the causal meaning expressed by *denn* is not an at-issue meaning, but a conventional implicature (CI) in the sense of Potts (2005). This explains its scopelessness and also brings it closer to coordinating conjunctions such as *and* or *but*, which display the same properties as in ([germanq]) and have therefore been described since Grice (1975) as introducing CIs. In contrast, *weil* introduces an at-issue meaning, just like other subordinating connectives. Therefore, the notions semantic coordination and subordination can be defined in terms of the CI/at-issue dimensions. While the resulting classification is quite different from the traditional one, it is superior in that clear diagnostics can be provided for each of the clause combining types.

However, as defined in this way, semantic coordination and subordination do not seem to correspond to the same notions as employed in Yuasa & Sadock and Culicover & Jackendoff's work. Specifically, there are certain constructions which are "semantically subordinating" according to the CI/at-issue distinction, but are "semantically coordinating" according to the behaviour of Right Node Raising, the Coordinate Structure Constraint, etc. A particular example of such a construction is the Ossetic causal pseudocoordinating construction, discussed in detail in Belyaev (2014). In this construction, the conjunction *эмз* 'and' is used together with the dative form of the demonstrative *waj* 'that' in a causal sense. This construction clearly involves an asserted at-issue causal meaning which can be questioned, negated, put in the scope of modal operators, etc. At the same time, long-distance dependencies in this construction (including the CSC to the extent that it can be tested for Ossetic) all behave according to the coordinating schema. Word order facts also point towards coordination.

At the same time, Ossetic has another pseudocoordinating construction, where the conjunction *эмз* 'and' introduces complement clauses. This construction also has coordinating word order properties, but is fully subordinating according to both semantics and long-distance dependencies. Therefore, the data of Ossetic show that, if the mismatch approach is to be maintained, we need three levels instead of two at which the notions "coordination" and "subordination" are defined. In Belyaev (2014), I have proposed that this idea corresponds to the distinction drawn in some theories between two kinds of syntax: constituent structure and dependency-based structure, both distinct from semantics. In particular, exactly such a view of grammar is maintained in the framework of Lexical Functional Grammar (LFG, R. Kaplan & Bresnan 1982), which distinguishes between c-structure (constituent structure), f-structure

(functional structure), and semantics. Accordingly, I have proposed naming the corresponding clause combining types as c-, f- and s-coordination and subordination. Formalization of these notions allows one to clearly delineate the tests used for each of the levels. There may be mismatches between different levels, but no mismatching data within a single level.

In this paper, I will demonstrate how the same distinction can be applied to causal constructions in Russian, making generalizations across surface data which have long been treated in separation. The analysis crucially depends on two key assumptions: first, a formal, truth-conditional view of meaning; second, a clear separation between syntax, semantics and their interface. Arguably, these assumptions are necessary prerequisites for any meaningful theory of clause combining.

4.2 Causal clauses in Russian

Russian has several causal subordinators. This paper will focus on three of them, *potomu čto* ‘because’ (by far the most frequent and least marked), *tak kak* ‘as’ and *poskol’ku* ‘since’:

- (6) Net, papa, ja vyjdu za nego zamuž, [**potomu čto** ljublju].
 no daddy I will him marry because I.love
 ‘No, daddy, I will marry him, **because** I love (him).’ [RNC: Сергей Седов. Доброе сердце Робина // «Мурзилка», 2002]
- (7) U ètix rastenij nas interesujut tol’ko stebli, [**tak kak** list’ja ne
 at these plants us interest only stems as leaves are.not
 godjatsja dlja pletenija]
 appropriate for braiding
 ‘Only the stems of these plants are interesting to us, **as** leaves are not appropriate for braiding.’ [RNC: Елизавета Мельникова. Жатва на болоте (2003) // “Сад своими руками”, 2003.09.15]
- (8) Otbirali kvalificirovannyx specialistov, [**poskol’ku** zdes’ učit’sja bylo
 they.chose qualified specialists since here to.learn was
 ne u kogo].
 not from whom
 ‘They chose qualified specialists, **since** there was no one to learn from here.’
 [RNC: Надежда Шагрова: «Я – мал» ищет единомышленников (2004) // «Экран и сцена», 2004.05.06]

All three subordinators eventually go back to two-word combinations, but their synchronic properties are different. *Potomu čto* consists of *potomu* ‘for that reason’ (< *po tomu* ‘by that’) and the general subordination marker *čto* ‘that’, and the two are still synchronically distinct, being separable both intonationally and in terms of linear order:

- (9) Stranno i xorošo, i imenno **potomu** xorošo, [**čto** stranno].
 strange and good and exactly for.that good that strange
 ‘It is strange and pleasant, and pleasant exactly **because** it is strange.’ [RNC: И. Грекова. На испытаниях (1967)]

In Paducheva (1996), accordingly, two distinct variants of *potomu čto* are distinguished: “unified” (“нерасчленённый”) and “split” (“расчленённый”). They certainly possess different properties in terms of information structure (the latter is normally used in focal contexts), but it is not clear whether they should be treated as distinct lexical items. For reasons of space, I will generally treat the two as variants of a single construction, pointing out the differences whenever necessary.

Tak kak consists of *tak* ‘thus’ and *kak* ‘how’, going back to a manner construction (‘in the same way as X’), which still exists in the language in a different punctuational and prosodic form (*tak, kak*). The causal subordinator, however, has become considerably lexicalized and can no longer be treated as a free combination of these two words. In particular, *tak* and *kak* can be separated from each other in manner constructions, but not in the causal construction:

- (10) Ja **tak** obradovalsja, **kak** nikogda ran’she.
 I so became.happy how never before
 ‘I became happy **like** never before.’
- (11) a. Ja obradovalsja, **tak kak** ty prišël.
 I became.happy as thou came
 b. *Ja **tak** obradovalsja, **kak** ty prišël.
 ‘I became happy **because** you came.’

Finally, *poskol’ku* goes back to the combination of the preposition *po* ‘via, by’ and *skol’ko* ‘how many’, but is, like *tak kak*, no longer treated as a combination of two independent words. In addition to the causal meaning, this subordinator also retains its original degree meaning ‘inasmuch as’.

In the majority of contexts, these subordinators are interchangeable, with only minor stylistic differences. However, their syntactic and semantic properties are quite different, and represent a challenge for the coordination–subordination dichotomy.

4.3 The properties of the subordinators

4.3.1 Linear order

4.3.1.1 Core constructions

Russian generally allows free **embedding**, and **preposing/postposing**, of adverbial and complement clauses, and this serves rather well as a test of coordination vs. subordination, cf. the following contrast:

- (12) a. [**Kogda** Petja prišël domoj], on lëg spat'.
when P. came home he lay to.sleep
- b. Petja lëg spat', [**kogda** prišël domoj].
- c. Petja, [**kogda** prišël domoj], lëg spat'.
'**When** Petya came home, he went to sleep.'
- (13) a. Petja prišël domoj **i** lëg spat'.
P. came home and lay to.sleep
- b. *Petja, **i** lëg spat', prišël domoj.
- c. ***I** lëg spat', Petja prišël domoj.
- d. #Petja lëg spat' **i** prišël domoj.
'Petya came home **and** went to sleep.'

4.3.1.2 Causal constructions

According to this criterion, clauses headed by *tak kak* 'as' and *poskol'ku* 'since' are undoubtedly subordinate, being freely embeddable within the primary clause:

- (14) a. [**Tak kak** Petja pozval Vasju], on prišël.
as P. called V.ACC he came
- b. Vasja, [**tak kak** Petja ego pozval], prišël.
'Vasya came, **for** Petya called him.'

- (15) a. [**Poskol'ku** Petja pozval Vasju], on prišël.
 since P. called V.ACC he came
- b. Vasja, [**poskol'ku** Petja ego pozval], prišël.
 'Since Petya called Vasya, he came.'

Potomu čto 'because', however, is different: it does not allow embedding in either of its variants, and only marginally allows preposing.

- (16) a. ? [**Potomu čto** Petja pozval Vasju], on prišël.
 because P. called V.ACC he came
- b. *Vasja, [**potomu čto** Petja ego pozval], prišël.
 'Vasya came **because** Petya called him.'
- (17) a. Vasja **potomu** ko mne prišël, [**čto** ja ego pozval].
 V. for.that to me came that I him called
- b. *Vasja **potomu** ko mne, [**čto** ja ego pozval], prišël.
- c. * [**Čto** ja ego pozval], Vasja **potomu** ko mne prišël.
 'Vasya came **because** Petya called him.'

There have been attempts to explain this behaviour of *potomu čto* by its information structure properties. In particular, it has been argued that this is due to the fact that clauses introduced by this connective always convey new information (Apresjan & Pekelis 2012). Its infelicitousness in clause-initial position, associated with topicality and presupposition, is thus explained. However, the impossibility of embedding is more difficult to explain in this way, as embedded clauses in Russian are not generally banned from conveying new information. In general, the information structure explanation is too weak: it does not predict the strong constraints on linear order shown above, and especially the contrasts between the different subordinators. It is more likely that a purely syntactic or construction-based explanation is to be pursued. For example, *potomu čto*-clauses may be attached at a higher structural level than other causal clauses, or may involve a coordinating structure altogether. This may, in turn, be related to their tendency to convey new information noted in the previous literature. I will provide my analysis of this behaviour below.

4.3.2 ATB, scope of mood, gapping

4.3.2.1 Core constructions

Another set of tests concerns **the possibility of across the board (ATB) extraction, scope of subjunctive mood assigned by the matrix verb, and gapping**. These are fairly robust diagnostics in Russian when it comes to canonical cases:

(18) Scope of mood

- a. Ja xoču, **čtoby**, [**kogda** ty priděš' domoj], ty lëg
I want PURP when you come.FUT home you lie.SBJV
spat'.
to.sleep
'I want you **to** go (sbjv.) to sleep **when** you come (fut.) home.'
- b. Ja xoču, **čtoby** ty { prišël / * priděš' } domoj i { lëg
I want PURP you come.SBJV come.FUT home and lie.SBJV
/ * ljažeš' } spat'.
lie.FUT to.sleep
'I want you **to** come home **and** go to sleep.'

(19) ATB

- a. **Čto** Petja kupil __, a Vasja prodal __?
what Petya bought and Vasya sold
'**What** did Petya buy **and** Vasya sell?'
- b. ***Čto** Petja kupil __, [**kogda** Vasja prodal __]?
what Petya bought when Vasya sold
('**What** did Petya buy **when** Vasya sold?')

(20) gapping

- a. Pete podarili mašinku, a Maše — kuklu.
to.Petya they.gave toy.car and to.Masha doll
'Petya was given a toy car **and** Masha, a doll.'
- b. *Pete podarili mašinku, [**kogda** Maše — kuklu].
to.Petya they.gave toy.car when to.Masha doll
('Petya was given a toy car **when** Masha, a doll.')

ATB extraction is typically viewed as one of the consequences of the Coordinate Structure Constraint (CSC, Ross 1967), but while the two phenomena are

related, I will show below that CSC behaves in a somewhat different way and does not necessarily reflect the syntactic difference between coordination and subordination.

4.3.2.2 Causal constructions

These criteria, unlike the linear order data, uniformly classify all the three causal constructions as being subordinating:

- (21) ***Čto** Petja vykinul __, { **potomu čto** / **tak kak** / **poskol'ku** } Vasja
 what Petya threw.away because for since Vasya
 slomal __?
 broke

(‘**What** did Petya throw away __ **because** / **for** / **since** Vasya broke __?’)

- (22) *Respublikancy polučili men'sinstvo mest, { **potomu čto** / **tak kak** /
 Republicans received minority of.seats because for
poskol'ku } bol'sinstvo — demokraty.
 since majority democrats

(‘The Republicans have received the majority of seats, because the democrats (received) the minority.’) (modification of the example with *ibo* ‘for’ from Pekelis 2009: 115)

- (23) Esli ty budeš' ženit'sja na devuške, to ja xoču, **čtoby** ty
 if you will marry on girl then I want so.that you
 ženilsja na nej, { **potomu čto** / ? tak kak / poskol'ku } eë {
 marry.SBJV on her because for since her
 ljubiš' / # ljubil }.
 you.love.PRS you.love.SBJV

(‘When you marry a girl, I want you **to** marry her **because** / **for** / **since** you **love** her. [And not because she’s rich.]’)

4.3.3 Semantic properties

4.3.3.1 Core constructions

Finally, there is a third set of tests, which concern the possibility of **putting the meaning expressed by the conjunction within the scope of some sentence-external operator**, or **focusing** it (e.g. as an answer to a question).

This is generally possible for subordinating conjunctions but impossible for coordinating ones:

(24) focus

- a. Petja prišël, **tol'ko** [**kogda** ja ego pozval].
Petya came only when I him called
'Petya came **only when** I called him.'
- b. * <**Tol'ko**> ja pozval Petju, <**tol'ko**> i on prišël.
only I called Petya and he came
('<**Only**> I called Petya <**only**> and he came')

(25) negation

Petja prišël, **ne** [**kogda** ja ego pozval], a pozže.
Petya came not when I him called but later
'Petya did **not** come **when** I called him, but later.'

(26) negation

#**Neverno**, čto Maša umnaja, **no** krasivaja: èti kačestva ne
false that Masha intelligent but beautiful these qualities not
protivorečat drug drugu!
contradict one another
('It is not the case that Masha is intelligent **but** beautiful: these qualities do not contradict each other!')

(27) answer to question (narrow focus)

(*Why did Petya go away?*)

- a. ^{OK} Navernoe, Petja ušël, **potomu čto** Maša s nim ne
probably Petya left because Masha with him not
razgovarivala.
spoke
'Petya probably left **because** Masha did not speak to him.'
- b. # Navernoe, Maša ne razgovarivala s Petej, i on ušël.
probably Masha not spoke with Petya and he left
('Probably Masha did not speak to Petya, and he left.')

A very robust diagnostic on focusing the linking relation has been proposed in Pekelis (2009), the *èto* 'this' / *vsë èto* 'all this' test for Russian:

- (28) Sovremennaja fotografija stala banal'noj, pritornoj i neinteresnoj,
 modern photography became banal luscious and uninteresting
 i **vsě èto**, **potomu čto** mnit sebja iskusstvom.
 and all this because considers itself art
 'Modern photography has become banal, luscious and uninteresting, and **all this, because** it considers itself art.' (Pekelis 2009: 96)
- (29) Maša byla zanjata podgotovkoj k èkzamenu i k tomu že
 Masha was busy by.preparation to exam and in.addition
 prostužena. * { **Èto / vsě èto** }, i my ne vzjali eě s soboj.
 having.cold this all this and we not took her with ourselves
 'Masha was busy preparing to the exam and in addition had a cold. * { **This / all this** }, and we didn't take her with us.' (Pekelis 2009: 98)

Only subordinate clauses may be focused in this way.

4.3.3.2 Causal constructions

Causal constructions pattern in the following way. *Tak kak* cannot be used in the *èto* focus construction, while *potomu čto* can do so quite freely:

- (30) *this-focus*
 Asfal't mokryj, no **èto** { * **tak kak / potomu čto** } dožd' prošël.
 asphalt wet but this as because rain passed
 'The asphalt is wet, but **this (is) because** it has been raining.'

Poskol'ku 'since' would sound admittedly strange in the above example, although not to the same extent as *tak kak* 'as'. But it is possible to come up with context where such a usage is plausible; a particularly good example is found in Pekelis (2009):

- (31) *this-focus (poskol'ku)*
 Mne bylo očen' zabavno, no **èto poskol'ku** ja znaju mnogix iz
 to.me was very funny but this since I know many of
 tex, o kom idët reč'.
 those about whom goes speech
 'It was very funny for me, but **this (is) since** I know many of those about whom the story is concerned.' (Pekelis 2009: 96)

Tak kak cannot be in the scope of negation under any circumstances, while *potomu što*, in its “split” version, can:

(32) negation

- a. *Ja prišël, **ne tak kak** on menja priglasil, a sam po sebe.
I came not as he me invited but on.my.own
- b. Ja prišël **ne potomu, što** on menja priglasil, a sam po sebe.
I came not because he me invited but on.my.own
'I **didn't** come **because** he invited me, but on my own.'

Once again, *poskol'ku* is unnatural in this constructed example, but more natural-sounding corpus examples are readily available:

(33) negation (*poskol'ku*)

- a. Bog zapovedal Adamu delat' dobro i otyskivat' ego s
God commanded Adam to.do good and to.find it from
točki zrenija dobra, a **ne poskol'ku** ono protivopoložno
point of.view of.good but not since it opposite
zlu ...
to.evill
'God commanded Adam to do good and find it from the point of view of good, and **not since** it is opposite to evil ...' (RNC: Oleg Aronson. *Televizionnyj obraz, ili Podražanie Adamu // Neprikosnovennyj zapas*, 2003.11.11)
- b. Ved' vrač stroit dom ne kak vrač, a kak stroitel' i
after.all doctor builds house not as doctor but as builder and
sedym stanovitsja **ne poskol'ku** on vrač, a **poskol'ku** on
gray becomes not since he doctor but since he
brjunet.
dark.haired
'A doctor builds a house, not qua doctor, but qua housebuilder, and turns gray, **not qua** [he is a] doctor, but **qua** [he is] dark-haired.' (Aristotle. *Physics*, Book 1, Part 8, Russian translation by V. P. Karpov, English translation by R. P. Hardie and R. K. Gaye)

With *tol'ko* 'only', *potomu što* 'because' and *poskol'ku* 'since' can be used, but not *tak kak* 'as':

(34) *only-focus*

- a. Lužinym on zanimalsja **tol'ko poskol'ku** èto byl fenomen, —
 by.Luzhin he occupied.self only since this was phenomenon
 javlenie strannoe, neskol'ko urodlivoe, no obajatel'noe, kak
 object strange somewhat ugly but charming as
 krivye nogi taksy.
 crooked legs of.dachshund
 'He occupied himself with Luzhin **only because** he was a phenomenon: a
 strange, somewhat ugly, but charming object, like a dachshund's crooked
 legs.' (V. Nabokov, *Zaščita Lužina*, from Pekelis 2009: 46)
- b. Lužinym on zanimalsja **tol'ko** { * tak kak / ^{OK} potomu, čto } ...

Finally, *tak kak* cannot be used as an answer to a why-question, while *potomu čto* can:

(35) *why-question*

(People with tuberculosis used to be sent to Crimea for treatment.)

Počemu? { **Potomu čto** / * tak kak } vozdux v Krymu vošebnyj.
 why because as air in Crimea magic
 Udivitel'nyj.
 marvelous

'Why? Because the air in Crimea is magic. Marvelous.' [RNC: В Крыму будет нечем дышать (2003) // «Криминальная хроника», 2003.07.24]

The use of *poskol'ku* as an answer to a why-question is somewhat marginal, but examples of this type can be found in very formal or bureaucratic language, in particular, in legal contexts:

(36) (The clause used to say: "No one can be extradited to another state"; now it says: "A citizen of the Russian Federation cannot be extradited to another state".)

Počemu? **Poskol'ku** zdes' reglamentiruetsja pravovoe položenie
 why since here is.regulated legal status
 graždan Rossijskoj Federacii, a ne voobšče vsej ljudej.
 of.citizens of.Russian Federation and not in.general of.all people

'Why? Because (lit. *since*) here [the Constitution] regulates the legal status of the citizens of the Russian Federation, not of all people in general.' (О.Г. Румянцев (ред.). *Из истории создания Конституции Российской Федерации*. Т. 3: 1992 год. Кн. 2. М.: Wolters Kluwer, 2008. С. 386)

To sum up, *poskol'ku* ‘since’ and *potomu čto* ‘because’ can be in the scope of external operators and in focus, while *tak kak* ‘as’ cannot. Thus, according to this test, *tak kak* is coordinating while *potomu čto* and *poskol'ku* are subordinating. This matches neither the linear order facts nor the tests related to ATB-extraction and the scope of mood.

4.3.4 Summary

Summing up the above, we have the following distribution of features:

connective	linear order	extraction, mood	scope
<i>potomu čto</i>	coordination	subordination	subordination
<i>tak kak</i>	subordination	subordination	coordination
<i>poskol'ku</i>	subordination	subordination	subordination

If the two-level approach of Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) is adopted, these results are problematic for several reasons. First, there are not two but three clusters of features that have to be distinguished. Second, there are two different sets of “semantic” features (extraction and semantic scope) which do not align with each other. Third, all of the constructions involved are causal. This is a clearly asymmetrical relation which would be considered subordinating in all traditional approaches to this issue. Thus we either have to abandon the multi-level approach and the coordination–subordination distinction altogether as lacking predictive power, or acknowledge that there are indeed two semantic types of cause, coordinating and subordinating. In the latter case, the semantic definitions of coordination and subordination would have to be more complex than what Culicover & Jackendoff and Yuasa & Sadock propose.

4.4 Analysis

I believe that the optimal solution to this problem would be to maintain the multi-level approach of Culicover & Jackendoff (1997) and Yuasa & Sadock (2002), but distinguishing three levels instead of two. In particular, syntax has to be split into constituent structure and a more “functional” (dependency-based) level; at the same time, a separate semantic level must be distinguished. As argued in Belyaev (2014), this three-level distinction corresponds to the

grammatical architecture of Lexical Functional Grammar (R. Kaplan & Bresnan 1982, Dalrymple 2001) with its distinction between c-structure (constituent structure), f-structure (functional, dependency-based structure) and semantics. In terminology, I have proposed distinguishing between the levels through prefixes, thus defining c-, f- and s-coordination and subordination. Each level corresponds to a distinct set of tests:

- **c-coordination** vs. **c-subordination**: linear order, embedding, position of the conjunction;
- **f-coordination** vs. **f-subordination**: ATB, gapping, scope of mood;
- **s-coordination** vs. **s-subordination**: scope of semantic operators, focusability.

In what follows I will show how exactly these properties follow from the structure of each of the levels, and why all three have to be distinguished.

4.4.1 *Semantics*

4.4.1.1 **Conventional implicatures and discourse relations**

In this section, I will demonstrate that only the tests on focusing the causal relation and the scope of negation, questions and modal operators are truly semantic. This idea is based on two different approaches to the meanings of coordinating constructions: the Gricean conventional implicature (CI) approach and the rhetorical relations approach.

The CI approach Since Grice (1975), meanings of conjunctions such as *but* are treated as CIs, although this has been contested (K. Bach 1999a). Indeed, coordinating relations are clearly not asserted, due to their scopelessness, including the impossibility of using a coordinating structure as an answer to a constituent question. But neither are they presupposed. For example, if the relation of contrast implied by *but* is (assessed as) false, this does not lead to the whole sentence lacking a truth value. Consider the following examples:

- (37) ('Is Dargwa a Nakh-Daghestanian language, **but** an ergative one?')
- a. # Net, naxsko-dagestanskije jazyki vse èrgativnye!
no Nakh-Daghestanian languages all are.ergative
(‘No, all Nakh-Daghestanian languages are ergative!’)
 - b. ^{OK} Da, no v ètom net ničego strannogo.
yes but in this is.not nothing strange
‘Yes, but there’s nothing strange in it.’
- (38) The fact that Russian is SVO **but** lacks postpositions implies that it also has NGen word order.

In this case, the inappropriate use of *but* does not lead to presupposition failure.

Furthermore, a coordinating conjunction embedded in a complement clause may still be speaker-oriented:

- (39) (John said: “Russian is SVO and lacks postpositions, so it follows that it has NGen word order”. David, misremembering that prepositions are typical for SVO, retells:) John thinks that the fact that Russian is SVO but lacks postpositions implies that it also has NGen word order.
- (40) (John wants to cheat at the exam, but the speaker knows that it will be closely monitored and it’s likely that cheaters will be caught.) John seems to think that he will be able to cheat but still pass the exam.

This behaviour is also typical for CIs but not for at-issue content.

The rhetorical relations approach But there are certain problems associated with the CI approach. One of them is that certain coordinating conjunctions have clear truth-conditional effects that cannot be said to belong to the CI level:

- (41) Either he left her and she took to the bottle or she took to the bottle and he left her. (Carston 2002: 227)

Conventional implicatures are not predicted to cause such at-issue effects. A possible solution is an alternative analysis proposed in such works as Txurruka (2003) and Kobozeva (2010), where it is argued that English *and* and Russian *i* introduce rhetorical relations. This also concerns other coordinating conjunctions. For example, ‘but’ introduces the relation Contrast. If this analysis

is accepted, the scopelessness of coordinating conjunction is easily explained: since rhetorical relations are introduced at a higher level than ordinary predicates and, only serving to structure the discourse, do not introduce any new entailments, they cannot be negated, questioned or put under the scope of modal operators.

The two approaches, however different, make the same predictions concerning the behaviour of “semantically coordinating” and “semantically subordinating” constructions: coordinating meanings are expected to be scopeless and speaker-oriented, while subordinating meanings are expected to be at-issue meanings (usually asserted). I will now consider how this distinction applies to causal constructions.

4.4.1.2 Two semantic types of cause

As mentioned in the introduction, there is a considerable body of literature distinguishing between several types of causal relations. A particular distinction that interests us here is the distinction between “coordinating” and “subordinating” causal relations. German examples like (5) above from Scheffler (2013) show how the two causal connectives *weil* and *denn* are classified as being semantically subordinating and coordinating, respectively.

A further piece of evidence demonstrating that *denn* is closer to coordination than to subordination is that, unlike *weil*, it can be used to refer to the speech act of the main clause (42) and in the epistemic sense (43).

- (42) Ist vom Mittag noch etwas übrig? **Denn** / ?? **weil** ich schon wieder Hunger habe.
 ‘Is there anything left over from lunch? – Because I’m already hungry again.’
 (Scheffler 2013: 52–53)
- (43) Es hat geregnet, **denn** / * **weil** die Straße ganz nass ist.
 ‘It was raining, **because** the street is wet.’ (Scheffler 2013: 53)

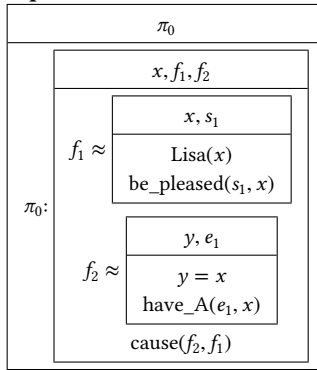
Within the tradition that views coordination as involving rhetorical relations, an analogous analysis of coordinating conjunctions has been proposed as early as Groupe λ -1 (1975) for the French causal connectives *parce que* ‘because’ and *car* ‘for’, exemplified below:

- (44) Lisa est contente peut-être { **parce que** / * **car** } elle a eu un A en maths.
 ‘Lisa is pleased perhaps **because** / * **for** she has had an A in maths.’

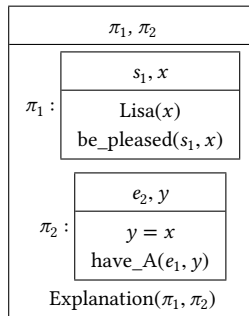
- (45) Lisa n'est pas contente {parce que / * car} elle a eu un A en maths,
 mais {parce que / * car} il fait beau.
 'Lisa is not happy **because** / * **for** she has had an A in maths, but **because** / *
for the weather is good.'

In Groupe λ -1 (1975), it is argued that the chief difference between these connectives is that *parce que* introduces an assertive causal meaning while *car* only introduces a rhetorical relation. This analysis has been translated into Segmented Discourse Representation Theory (SDRT, Asher & Lascarides 2003) in Delort & Danlos (2005), who propose the following semantic representations for sentences involving these connectives:

- (46) Lisa est contente **parce qu'**elle a eu un A en maths.



- (47) Lisa est contente **car** elle a eu un A en maths.



($f_n \approx P$ is the shorthand notation for facts from Asher (1993))

4.4.1.3 The semantics of Russian causal clauses

As we can now see from the data in Section 4.3.3, the behaviour of Russian causal clauses fits into the pattern of there being two semantic types of cause. In this respect, *tak kak* demonstrates clearly coordinating behaviour. This behaviour of *tak kak* correlates with the possibility of it being used for “indirect reason” (Quirk et al. 1985) of various kinds, called “illocutionary cause” in the Russian tradition (Iordanskaja 1988, Pekelis 2014), something which is impossible for *poskol’ku*:

- (48) On navernjaka ne spit, { **tak kak** / # **poskol’ku** } v ego okne
 he probably not sleeps as since in his window
 gorit svet.
 burns light
 ‘He’s probably awake, **as**/***since** there is light in his window.’

This agrees with earlier claims in the literature that this connective is associated with a more restricted kind of causal meaning, “logical implication” (Iordanskaja 1988).

Potomu čto may seem fully semantically subordinating based on the data in Section 4.3.3, but in fact, its behaviour is more complex. It can freely express indirect causation:

- (49) On navernjaka ne spit, **potomu čto** v ego okne gorit svet.
 he probably not sleeps because in his window burns light
 ‘He’s probably awake, **because** there is light in his window.’ (Pekelis 2009: 9)
- (50) Prošël dožd’, **potomu čto** asfal’t mokryj.
 passed rain because asphalt wet
 ‘It has been raining, **because** the asphalt is wet.’

But when *potomu čto* marks indirect or illocutive causation, it loses its semantically subordinating properties. It can no longer participate in the *èto*-focus:

- (51) a. Asfal’t mokryj. **Èto potomu, čto** dožd’ prošël.
 asphalt wet this because rain passed
 ‘The asphalt is wet. **This (is) because** it has been raining.’
- b. Dožd’ prošël. # **Èto potomu, čto** asfal’t mokryj.
 rain passed this because asphalt wet
 (‘It has been raining. **This (is) because** the asphalt is wet.)

The causal meaning can no longer be in the scope of negation:

- (52) a. Asfal't mokryj **ne potomu, što** prošel dožd', a **potomu, što**
asphalt wet not because passed rain but because
proexala polival'naja mašina.
went.by cleaning car
'The asphalt is wet **not because** it has been raining, but **because** a cleaning car passed by.'
- b. # Dožd' prošel **ne potomu, što** asfal't mokryj, a **potomu, što**
rain passed not because asphalt wet but because
s kryši kapaet.
from roof drips
'(It has been raining **not because** the asphalt is wet, but **because** water is dropping from the roof.)'

Finally, "indirect" *potomu što* cannot be in the scope of epistemic modals:

- (53) a. **Možet byt'**, asfal't mokryj **potomu, što** prošel dožd'?
maybe asphalt wet because passed rain
'**Maybe** the asphalt is wet **because** it has been raining?'
- b. # **Možet byt'**, dožd' prošel **potomu, što** asfal't mokryj?
maybe rain passed because asphalt wet
'(**Maybe**² it has been raining **because** the asphalt is wet?)'

This leads us to the conclusion that, while *tak kak* is semantically coordinating and *poskol'ku* is semantically subordinating, *potomu što* expresses both types of cause, which is reflected in the variation in its properties.

There are two additional observations that support this analysis. One of the is the behaviour of the Coordinate Structure Constraint. Above, I have only used ATB-movement as a criterion of syntactic coordination. This is not accidental, because, as long observed in the literature, the CSC in what concerns the availability of extraction from only one of the conjuncts is often violated (Lakoff 1986). In Kehler (2002), such violations are explained through discourse coherence relations. Similarly, within the approach advocated in this paper, the operation of CSC involves semantic, and not syntactic, coordination. This can be confirmed by the fact that extraction from the main clause is only possible when *potomu što* 'because' is used to express cause in the narrow sense. In the following pair of examples, (a) is semantically subordinating

(the fact of the beating implies the nose bleeding) while (b) is semantically coordinating (the speaker infers the beating from the bleeding):

- (54) a. U Vasi krov' tečēt iz nosu, **potomu što** ego izbili.
 at Vasya blood runs from nose because him they.beat.up
 'Vasya's nose is bleeding, **because** he was beaten up.'
- b. Vasju izbili, **potomu što** u nego krov' tečēt iz nosu.
 Vasya they.beat.up because at him blood runs from nose
 'Vasya was beaten up, **because** his nose is bleeding.'

Just as we expect if the CSC is assumed to be coordinating, wh-movement from the main clause is only possible in the first example. In (55b), the only interpretation available is that someone was beaten up due to his nose bleeding, which is clearly infelicitous.

- (55) a. U kogo krov' tečēt iz nosu, **potomu što** ego izbili?
 at whom blood runs from nose because him they.beat.up
 'Whose nose is bleeding **because** he was beaten up?'
- b. # Kogo izbili, **potomu što** u nego krov' tečēt iz nosu?
 whom they.beat.up because at him blood runs from nose
 ('Who was beaten up **because** his nose is bleeding?')

More information on formal differences between causal proper and illocutionary uses of *potomu što* can be found in Pekelis (2014); they are all generally in agreement with the analysis presented herein.

The second observation is that *tak kak* clauses and “illocutionary” *potomu što* clauses, like coordinate clauses and unlike subordinate clauses, exhibit main clause phenomena (Hooper & Thompson 1973, Green 1976, Paducheva 1996). In (56), the past tense is used in the future sense. In (57), a special construction expressing something analogous to the rhetorical question in the English translation is employed. Both of these can normally only be found in main clauses, and their use in causal clauses, according to Kobozeva (2000), implies that the subordinate clauses in these examples comprise separate speech acts.

- (56) Moj posudu sama, **potomu što** ja pošl.
 wash dishes yourself because I am.gone.away
 'Wash the dishes yourself, because I am going away.' (lit. 'because I'm gone away') (Kobozeva 2000)

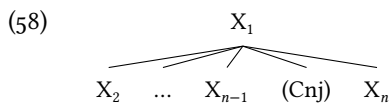
- (57) Vy sami vo vsëm vinovaty, **potomu što oxota že** vam
 you yourselves in everything guilty because desire PTCL to.you
bylo ženit'sja.
 was to.marry
 'You yourselves are to blame for everything, **because why** did you have to marry?' (Kobozeva 2000)

4.4.2 Syntax

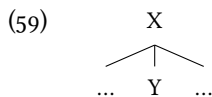
At the syntactic level, we have to distinguish between two sets of diagnostics: those which are related to constituent structure (c-structure) and those which are related to functional structure or dependency grammar (f-structure).

4.4.2.1 Constituent structure

The first set corresponds to linear order properties, specifically, the position of the conjunction and the level of embedding. These diagnostics correspond to the constituency-based definition of coordination and subordination (LFG's c-structure), as found, for example, in Testelefs (2001). In informal terms, coordination is a symmetric structure, such that $X_{1...n}$ are all coordinate to each other in (58).



In a c-subordinating construction, one of the elements is properly subsumed by the other. In (59), Y is c-subordinate to X.



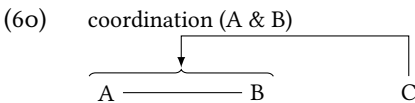
It is easy to see how the linear order-based diagnostics follow from these structures. Indeed, in a coordinating construction, neither of the conjuncts can be embedded within the other, by definition. A coordinating conjunction, if present at all, does not syntactically belong to any of the conjuncts; in a subordinating construction, it must belong to the subordinate element, because it cannot be a dependent on its own.

Therefore, the *potomu čto* construction must be classified as c-coordinating, as it allows no embedding, and the connective *čto* must be positioned strictly between the two clauses. Both kinds of behaviour are untypical for subordination in Russian and are, in fact, not observed with the other two causal constructions, which should be classified as c-subordinating.

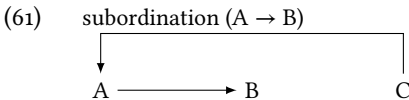
4.4.2.2 Functional structure

The second set of syntactic properties is related to those definitions of coordination and subordination that refer to symmetry or asymmetry. A typical definition of this kind, albeit somewhat vague, is found in Haspelmath (2004: 3): “A construction [A B] is considered coordinate if the two parts A and B have the same status (in some sense that needs to be specified further), whereas it is not coordinate if it is asymmetrical and one of the parts is clearly more salient or important, while the other part is in some sense subordinate”.

Unfortunately, it is difficult to be more precise than Haspelmath’s definition without using particular formal theoretical notions (which I will do in the next section). However, informally, it should be rather clear that in a construction that is coordinating in the dependency-based sense (i.e. f-coordinating), all elements are in some sense “co-dependent” on some other element if the construction is itself found in a subordinate position. This can be schematically represented as in (60), where A and B are coordinate, and both are co-subordinate (as a set) to some element C.



At the same time, dependency-based subordination (f-subordination) implies that only the superordinate clause takes part in the interaction with upper strata of the sentence. This can be represented as in (61), where B is subordinate to A, and only A is then visible to all upper parts of the dependency tree.



Thus, any operation that applies to a coordinating construction must either apply to all conjuncts at once or not apply at all; in a subordinating con-

struction, such operations only apply to the main clause. This is, essentially, the motivation behind the Coordinate Structure Constraint and the rules of assigning mood, case and other categories to complex phrases.

In this understanding, all three constructions are f-subordinating, regardless of their semantics or linear order properties.

4.4.3 *Informal conclusion*

The central idea of my approach is that coordination and subordination in the sense of dependency or symmetry (f-coordination and f-subordination) are notions that are distinct from coordination and subordination in the sense of constituent structure (c-coordination and c-subordination), and both are distinct from coordination and subordination in the semantic sense. While all the three causal constructions surveyed in this paper are f-subordinating, only *tak kak* and *poskol'ku* can be considered to be truly c-subordinating. And neither of these properties correlates with the semantic properties related to scope. The generalization can be represented in the following table:

connective	c-structure	f-structure	semantics
<i>potomu čto</i>	coordination	subordination	subordination / coordination
<i>tak kak</i>	subordination	subordination	coordination
<i>poskol'ku</i>	subordination	subordination	subordination

The informal motivation behind these distinctions seems to be rather clear. However, in order to show how exactly the predictions follow from the analysis, a formalization is needed. I will briefly present it in the next section.

4.5 Formalization

In this section, I will generally reproduce the definitions in Belyaev (2014), which will then be applied to the Russian constructions in question.

4.5.1 *Syntax*

I define c-coordination in a rather straightforward way:

- Nodes A and B are **c-coordinate** iff all of the following are true:
 - A is the sister of B ;
 - The category of A is the same as the category of B and the category of the immediately dominating node C ;
 - All sisters of A and B either have the same category as A or have the category C_{nj} .

This defines the structure in (58). For the purposes of this paper, I ignore the possibility of the coordination of unlikes or non-constituent coordination.

In contrast, in c -subordination categorial information is only inherited from one of the nodes. In the LFG X' model of phrase structure, this can be handled by saying that the subordinate constituent occupies the complement, specifier or adjunct positions of the superordinate constituent's structure. In LFG, an additional provision must be made for the non-endocentric category S , which is the only category not adhering to X' theory.

- A maximal projection B is **c-subordinate** to a maximal projection A iff both of the following are true:
 - A dominates B ;
 - Every maximal projection that dominates B , if it is not B itself, dominates A .

Essentially, the definition states that a constituent (which must be a maximal projection) is c -subordinate to the nearest dominating maximal projection.

At f -structure, coordinate constituents are elements of a set while a subordinate constituent occupies an argument or adjunct position in the superordinate constituent's f -structure:

- Two f -structures f_1 and f_2 are **f-coordinate** iff they both belong to the same local f -structure sequence.³
- An f -structure f_2 is **f-subordinate** to an f -structure f_1 iff $(f_1 \text{ GF}) = f_2$, where $\text{GF} \equiv \{\text{SUBJ} \mid \text{OBJ} \mid \text{OBL}_\theta \mid \text{COMP} \mid \text{XCOMP} \mid \text{ADJ} \in \mid \text{XADJ} \in \}$.

³ The term is from Kuhn & Sadler (2007): essentially an ordered set. Required for single conjunct agreement and other phenomena.

The way sets are handled in LFG ensures that a distributive feature (which include mood, grammatical relations and usually case), if taken of a set, must have the same value for all elements of this set. This ensures that any long-distance dependency that targets a coordinate set, including extraction relations, must apply equally to each member of a set. The same applies to case and mood assignment. Thus, the effects of the CSC and feature assignment in LFG stem from one source, which predicts that these diagnostics should never contradict each other.

4.5.2 *Semantics*

If the CI approach to coordination is adopted, the definitions of semantic coordination and subordination are rather clear: coordinating conjunctions introduce CIs (the at-issue meaning is just logical conjunction), while subordinating conjunctions introduce at-issue meanings. Thus:

$$(62) \quad \llbracket \text{John came home and went to sleep} \rrbracket = [\text{came_home}(e_1, j) \wedge \text{slept}(e_2, j), \text{and}(\text{came_home}(e_1, j), \text{slept}(e_2, j))]$$

$$(63) \quad \llbracket \text{When John came home, he went to sleep} \rrbracket = [\text{came_home}(e_1, j) \wedge \text{slept}(e_2, j) \wedge e_1 < e_2, \epsilon]$$

The implementation in LFG, using the system in D. Arnold & Sadler (2010) implementing the Pottsian notion of CI, is fairly straightforward:

$$(64) \quad \llbracket \text{and} \rrbracket = \lambda P. \lambda Q. [P \wedge Q, \text{and}(P, Q)] : p_{\langle t \rangle} \multimap q_{\langle t \rangle} \multimap f_{\langle t \rangle} \otimes f_{\langle t^c \rangle}$$

Accordingly, the definition of *s*-coordination will be:

- The clauses f_1 and f_2 in the minimal *f*-structure g that contains both of them are *s*-coordinate iff the proof contains the expressions $P : (f_1)_{\sigma\langle t \rangle}$, $Q : (f_2)_{\sigma\langle t \rangle}$ and $[P \wedge Q, R(P, Q)] : g_{\sigma\langle t \rangle} \otimes g_{\sigma\langle t^c \rangle}$, where P and Q are logical formulae, R is some relation and P does not contain Q or vice versa.

Different kinds of *s*-subordinating constructions will not have much in common except for not being *s*-coordinating, i.e. not involving a conventional implicature, and involving some at-issue semantic relation.

The rhetorical relations approach is more difficult to directly implement in LFG due to the lack of a compositional version of SDRT. However, in purely representational terms, the definitions may still be provided, such as the following:

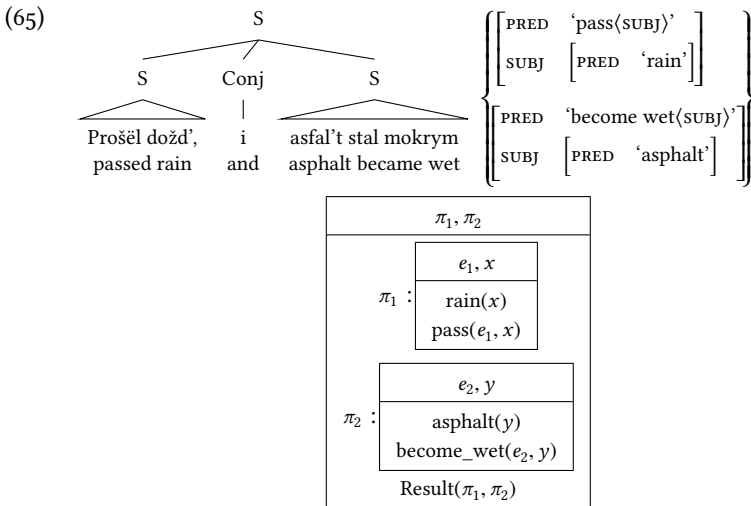
- Two clauses are **s-coordinate** iff they map to different speech act discourse referents which are linked by a rhetorical relation.
- One clause is **s-subordinate** to the other iff they are both found within a single SDRS corresponding to the same speech act, and are connected by a predicate linking their propositional content.

4.5.3 Short illustrations of various constructions and their structures

In this section, I will provide short illustrations of the structures for each of the constructions under consideration. I am using a simplified representation of Russian c-structure, which is adequate for the purposes of this paper; for a more detailed LFG analysis, see King (1995).

4.5.3.1 Canonical coordination

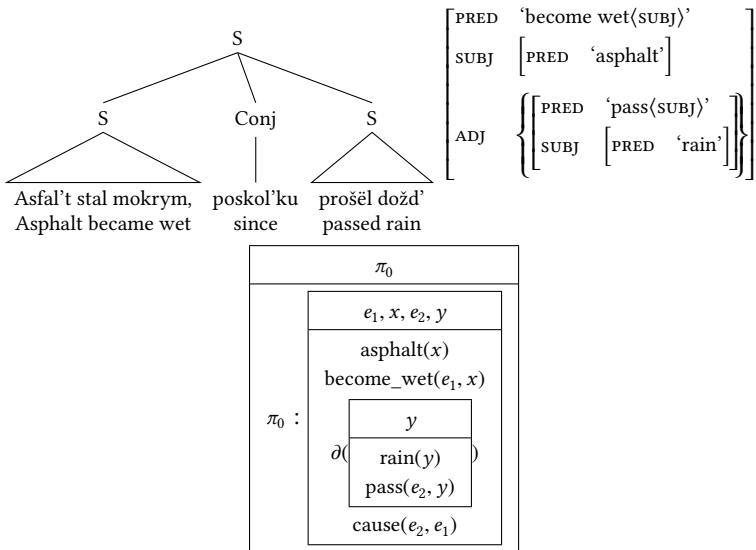
A canonically coordinating construction is classified as coordination at all three levels of grammar: c-structure, f-structure and semantic. Thus, in the following example, the c-structure is flat, the f-structure is a set and the semantics consists of two speech acts linked by a rhetorical relation:



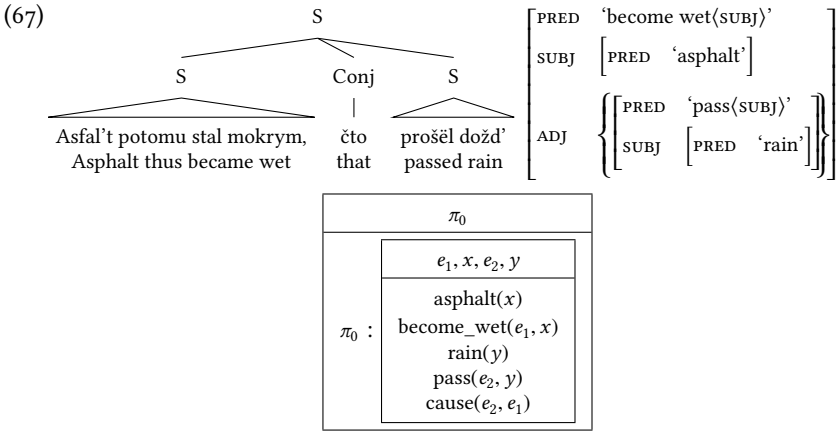
4.5.3.2 Causal constructions

The only causal construction which is canonically subordinating is the *poskol'ku* ‘since’ construction. At the level of c-structure, the subordinate clause is embedded within the main clause as an adjunct (I assume that it is adjoined to VP; this may be contested but is not crucial for the central claim of the analysis). At f-structure, the clause is an adjunct and at c-structure, it is a presupposition that is linked to the main clause via an additional semantic predicate (∂ is the presupposition operator of Beaver (1992)). Both clauses are part of a single speech act (π_0).

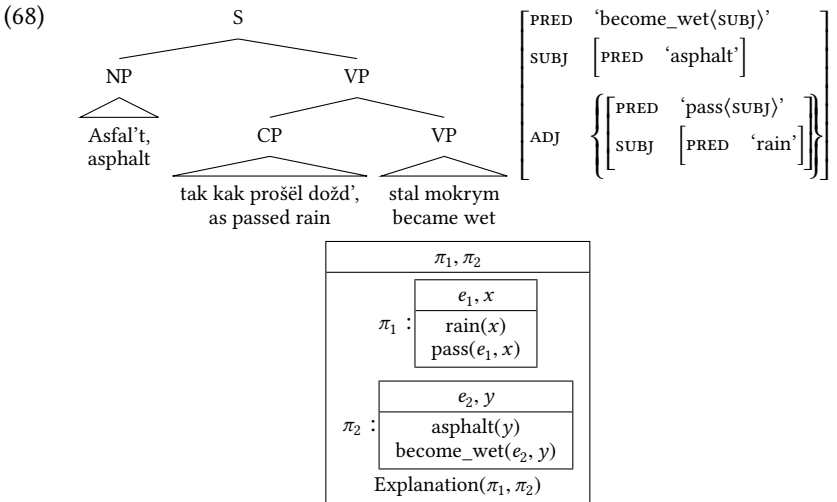
(66)



Potomu čto ‘because’ may be both semantically coordinating and subordinating. I will only illustrate the subordinating variant here. The only semantic difference from *poskol'ku* ‘since’, apart from a slightly different causal meaning (not shown here), is the fact that the subordinate clause is not presupposed. At f-structure, there are no differences. At c-structure, the construction is coordinating. The example provided below is of the “split” variant of the construction, as the existence of this variant demonstrates that it is *čto* ‘that’ that serves as the c-coordinating conjunction here; *potomu* ‘for that reason’ is merely a cataphoric element referencing the following clause.



Finally, *tak kak* ‘as’ also involves a mismatch, but of a different kind. In this construction, the semantics is coordinating, involving the rhetorical relation of Explanation between two speech acts. The f- and c-structure, however, are subordinating, as the construction is freely embeddable within the main clause and behaves as a subordinating construction according to all the f-structure diagnostics.



4.6 Conclusions

In this paper, I have applied the approach previously elaborated in Belyaev (2014) on the data of Ossetic to Russian causal constructions, the differences between which are a long-standing problem of Russian syntax. I have shown that these constructions generally fit into the three-level approach, and the allowance of mismatches between the three levels explains their otherwise puzzling properties.

These results, especially the semantic classification of the constructions, are not new; similar ideas have already been proposed in Russian linguistics. However, it is important to highlight the usefulness of distinguishing between different levels. This allows us to separate those properties which are truly semantic from those properties which belong to the area of syntax. In particular, various properties related to extraction and anaphora have long been believed to be directly reflecting semantics, in large part due to the influence of Culicover & Jackendoff (1997) and later work on the topic. The data of Russian show that, whatever semantic approach one adopts, these properties are in fact logically independent from the meanings of the constructions in question. At the same time, they are also distinct from those properties which are related to constituency or linear order, and are thus situated at a level intermediate between syntax and semantics: a kind of dependency-based structure.

In this paper, I have used LFG's *c*- and *f*-structures as the constituency-based and dependency-based representations, respectively. While *c*-structure is a conventional syntactic tree, *f*-structure is a level unique to LFG. In principle, corresponding representations in other frameworks, such as the deep syntactic structure of Meaning↔Text Theory, or HPSG's *SYNSEM*, should also be able to reflect the relevant generalizations. But this does not mean that the analysis is translatable to any framework. The key features of LFG that make this analysis possible are the clear separation between constituency- and dependency-based syntax and a rather unconstrained, almost construction-based, approach to the interface between syntax and semantics. The importance of these features for any grammatical theory which aims to capture the whole complexity of the coordination vs. subordination distinction is one of the more broadly relevant claims of this paper.

Another claim that has wider importance is that a multi-level approach

must be combined with a proper truth-conditional semantic theory instead of the more representational approach of, *inter alia*, Culicover & Jackendoff (1997), Yuasa & Sadock (2002) in order to account for the data. When such a theory is used, the semantic distinctions involved in the coordination vs. subordination opposition can be described in ways which do not directly correspond to the traditional symmetry vs. asymmetry distinction: either as the opposition between at-issue meanings and conventional implicatures, or as the opposition between rhetorical relations connecting separate speech acts and asserted predicates connecting abstract objects (facts, events or propositions). While similar ideas have been expressed in functionally oriented work (for example, in the communicative approach of Pekelis 2009), a key advantage of this approach is that it is formally explicit; therefore, analyses of particular constructions in individual languages are comparable among each other and lead to clear and testable predictions for each language.

Notes on perspective-sensitivity

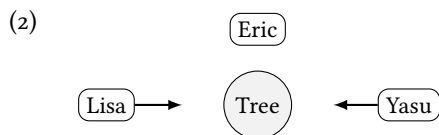
Lisa Bylinina, Eric McCready and Yasutada Sudo

5.1 Introduction

To evaluate the truth or falsity of statements like (1), one needs information about the ‘perspective’ under which they are made.

(1) Eric is standing to the *left* of the tree.

This is because (1) is only true or false with respect to the location of some **Perspective Centre (PC)**. To be more precise, the meaning of (1) is roughly paraphrasable as “Eric is standing to the left of the tree *looking from the PC’s location*”, and depending on where the PC is, the sentence might or might not be true. If you imagine a situation as depicted in (2), for example, (1) is true if Lisa is the PC, but not if Yasu is (the arrows indicate the orientation of their faces).



Dependency on the PC – which we call **perspective-sensitivity** – is a type of context-sensitivity, as who counts as the PC is largely determined by the context (although as we will see shortly, it is not entirely up to the context). One characteristic of perspective-sensitivity is that it is triggered by certain items such as *left*, which we call **Perspective Sensitive Items (PSIs)**. PSIs

must be somehow marked as such in the lexicon, since not every morpheme is a PSI. For instance, the truth of (3) is not dependent on the PC.

(3) Eric is standing to the north of the tree.

Supposing that the north in the picture (2) is upwards, (3) is true regardless of whose perspective is adopted, unlike (1). What this shows is that perspective-sensitivity is attributable to the meanings of PSIs, and the meanings of PSIs must be analysed in relation to the PC. And this is exactly the task we are concerned with in the present paper.

How should we go about the analysis of PSIs? The first thing to do is to identify PSIs. We do so according to the following two (closely related) criteria: (i) default speaker-orientation¹ and (ii) ‘shiftability’. The former property is quite noticeable and easily demonstrated, although what counts as a ‘default’ is not so easy to pin down in rigorous terms (see fn. 2 below). Suppose in the situation depicted in (2), Lisa is utters (1), while talking to her daughter Vera at home over the phone. You, as a third-party observer, would say what she said was true. This is because by default you take the PC to be the speaker, Lisa. In fact, it would be quite strange to take Yasu’s perspective in this case.² The second property of shiftability is an important one that sets PSIs apart from other context-sensitive items (which might include all natural language expressions, if ‘context-sensitivity’ is loosely understood), and is worth clarifying here. We observe that when put in certain grammatical constructions, PSIs can be interpreted with respect to a non-default PC. Here is an example. Take the above context where Lisa is on the phone with Vera, and suppose that she says (4).

(4) Yasu thinks Eric is standing to the left of the tree.

In this case, it is possible, if not required, to take Yasu’s perspective in understanding (4). Under this interpretation, what Lisa is reporting is Yasu’s false belief (because Eric is actually standing to the right of the tree from

1 At least for some PSIs – Predicates of Personal Tastes (PPTs), epistemic modals and evidentials, in particular – the default PC often has a generic flavour (Moltmann 2009, Pearson 2013). In Bylinina, McCready & Sudo 2014 we suggest that these items have another layer of context-sensitivity that is responsible for the genericity, but we will not delve into it in the present paper.

2 With a sufficient prior context, however, the default PC can be somebody other than the speaker. For instance, in a narrative context, it is most natural to take the PC to be the main protagonist, rather than the narrator. This fact makes it difficult to rigorously define the notion of ‘default PC’. We will not be concerned with this issue in the present paper.

his perspective). Recall, importantly, that it was not possible to take Yasu's perspective in the scenario where Lisa uttered (1). This difference between (1) and (4) is one of the puzzles we want our theory of perspective-sensitivity to account for.

It should be remarked at this moment that PSIs should be distinguished from so-called indexicals like first person pronouns. Firstly, while first person pronouns also exhibit speaker-orientation, they do so more rigidly. As noted in fn. 2, the PC can often shift to a non-speaker, while this is virtually impossible with first person pronouns, no matter how rich the context is (unless they occur in quotations; but see McCready 2007 for data from colloquial Japanese). Secondly, although it is known that indexicals do shift in certain grammatical contexts in certain languages (a phenomenon known as 'indexical shifting'; Schlenker 1999, 2003, Anand & Nevins 2004, Anand 2006, McCready 2007, Sudo 2012), perspective shifting is much more pervasive and is observed in languages and constructions where indexicals do not shift. In fact, we are not aware of cross-linguistic variation in perspective-sensitivity at this moment.

Now, according to the above characterisation of PSIs, the following expressions count as PSIs.

- 1) Relative locative and socio-cultural expressions (Mitchell 1986, Partee 1989, Oshima 2006) – e.g. *foreigner* is 'somebody from a different country from the PC';
- 2) Subjective predicates (Lasersohn 2005, 2009, Stephenson 2007, McCready 2007, Moltmann 2009, Pearson 2013, Bylinina 2014) – e.g. *expensive* means 'expensive according to the PC's judgments';
- 3) Epistemic modals and evidentials (Speas & Tenny 2003, McCready 2007, Stephenson 2007, Anand & Hacquard 2013) – e.g. *might p* means 'It's compatible with what the PC knows that *p*';
- 4) Perspective-sensitive anaphora (Kuno 1972, 1973, 1987, Kuno & Kaburaki 1977, Sells 1987, Abe 1997, Sundaresan 2012, Nishigauchi 2014) – e.g. Japanese *zibun* refers to the PC.

Unsurprisingly, the context-sensitivity of these items is generally acknowledged in the literature, but the point has rarely been made, if at all, that their context-sensitivity is of the same kind, i.e. perspective-sensitivity in our sense. It is not our purpose here, however, to convince the reader of their uniformity

on an empirical basis, which we do elsewhere (Bylinina, McCready & Sudo 2014, where we also discuss their differences). Rather, the main purpose of the present article is to revisit the theoretical ideas discussed in (Partee 1989) in light of the development made in the past 25 years since its publication on our understanding of perspective-sensitivity, and other types of context-sensitivity in general.

Looking at a subset of the above PSIs, Partee (1989) identifies certain commonalities between pronominal anaphora with third person pronouns and the way PSIs refer to the PC. As she remarks, the simplest way to account for this state of affairs would be to postulate an implicit pronominal component in PSIs referring to the PC. While there are perhaps a number of different ways to implement this idea with or without morpho-syntactic ramifications, the core idea behind it is that the PC is just a hidden pronoun. However, Partee raises several reasons to be skeptical about this view. Let us start our discussion with her observations and arguments against identifying the PC as a mere hidden pronoun.

5.2 Why the PC is not a pronoun

5.2.1 Similarities

Partee (1989) identifies three classes of uses that third person pronouns and PSIs share: 1) deictic uses, 2) discourse-anaphoric uses, and 3) bound-variable uses, as illustrated in (5) and (6):

- | | | | |
|-----|----|--|--|
| (5) | a. | Who's <i>he</i> ? | DEICTIC |
| | b. | A woman walked in. <i>She</i> sat down. | DISCOURSE ANAPHORIC |
| | c. | Every man believed <i>he</i> was right. | BOUND VARIABLE
(Partee 1989: (1–3)) |
| (6) | a. | Eric visited a <i>local</i> bar. | |
| | b. | Every sports fan in the country was at a <i>local</i> bar watching the playoffs. | (Partee 1989: (9)) |

The PSI in (6) is *local*, meaning ‘in the vicinity of the PC’. In (6a), it can be understood in two possible ways: as referring to the utterance location, where the speaker is the PC; or referring to wherever Eric was at the relevant time, with Eric being the PC. The former corresponds to the deictic use and the latter

to the anaphoric use. (6b) has a reading where the meaning of *local* co-varies with the sports fan, which is the quantificational use.

In addition to the range of these three basic uses, Partee observes another parallel behaviour between pronominal anaphora and PSIs that has to do with restrictions on backward anaphora. The following examples demonstrate that both an overt pronoun and PSIs exhibit Weak-Crossover effects. The PSI in (8) is *near(est)*, which roughly means ‘close(st) to the PC’.

- (7) a. Only *his_i* top aide got a good picture of *Reagan_i*.
b. #? Only *his_i* top aide got a good picture of *every senator_i*.
c. *Every senator_i* directed a smile at *his_i* top aide. (Partee 1989: (19))
- (8) a. Only the *nearest_i* photographer got a good picture of *Reagan_i*.
b. #? Only the *nearest_i* photographer got a good picture of *every senator_i*.
c. *Every senator_i* directed a smile at the *nearest_i* photographer. (Partee 1989: (18))

Furthermore, Partee points out that both third person pronouns and PSIs allow for ‘donkey anaphora’:

- (9) Every man who owns a donkey beats *it*. (Partee 1989: (12))
- (10) a. Every man who stole a car abandoned it *2 hours later*.
b. Every man who stole a car abandoned it *within 50 miles / 50 miles away*. (Partee 1989: (13))

The PC component of the PSIs in (10) can co-vary with the time and location of the event mentioned in the relative clause on the subject, which is analogous to the interpretation of *it* in (9) where it co-varies with the donkey mentioned in the relative clause on the subject.

As mentioned above, these observations naturally follow if PSIs come with a silent anaphoric pronoun (in the morphosyntax or purely semantically). Concretely, this ‘pronominal approach’ to perspective-sensitivity would analyse *local* as differing minimally from *local to him/her* with a phonologically null argument instead of the overt PP containing a third person pronoun, for example.

Despite its initial plausibility, Partee (1989) expresses doubts about this analysis. Let us review empirical reasons she raises for her skepticism.

5.2.2 Partee's arguments against the pronominal approach

Partee makes two kinds of observations that cast doubt on the pronominal approach. Firstly, it is not always possible to overtly express the alleged pronominal argument of PSIs. In some cases, furthermore, where it is expressed overtly, the argument looks like an adjunct rather than an argument (11).

- (11) a. Eric had a black spot on the middle of his forehead. *To the left of it* (from Eric's point of view / from an observer's point of view) was a green 'A.'
- b. *?... to the left of it from/for *him* (Partee 1989: (20))

Moreover, in general, there seems to be no general uniform manner in which PSIs express the hidden pronominal argument (12).

- (12) a. Citizens of every country tend to find {*foreign cars/foreigners / strangers*} attractive.
- b. [*foreign* to them/that country], [*a stranger* to them/that country], *[*a foreigner* to them/that country] (Partee 1989: (21))

Secondly, even for items that can take an overt pronominal argument, there are configurations where its overt realisation is forbidden. The PSI *arrived* in (13a) (adapted from Partee 1989) cannot combine with an explicit pronominal argument (*there*), unless an overt antecedent for this pronoun is added (*from any place*) (13b):

- (13) a. In all my travels, whenever I have called for a doctor, one has *arrived* (**there*) within an hour.
- b. In all my travels, whenever I have called for a doctor *from any place*, one has *arrived* there within an hour.

Partee admits that these considerations are suggestive, but not conclusive.³ Below, we add more empirical arguments for her hunch, which we believe are cogent enough to reject the uniform pronominal approach.

³ In her words: "I will offer what seems to me to be rational grounds for my skepticism, but I have to confess to sometimes wondering if I don't have a temperamental objection to the uniform pronoun approach. I have resolved several times in the past to try to work out an analysis *with* pronouns, and have not been able to bring myself to do it. But I hope someone will try to work out such a theory so that results can be compared" (Partee 1989: fn. 12).

5.2.3 Constraints on the PC

We observe that there are constraints on what the PC can be that do not constrain the anaphoric possibilities of third person pronouns. Firstly, as noted at the outset, the PC is by default taken to be the speaker, while third person pronouns do not exhibit default speaker-orientation (they in fact often denote non-speakers).

Secondly, in their anaphoric uses, third person pronouns can in principle refer back to any individuals that have been mentioned in the discourse (as far as the φ -features match), while PSIs are much less flexible in this regard. For instance, in the following examples, the third person pronoun can refer back to the comitative phrase, while the PSI cannot, so the foreigner in (14b) cannot be somebody who is a foreigner from Vera's perspective.

- (14) a. Yasu is talking with Vera about *her* mother.
b. Yasu is talking with Vera about a *foreigner*.

Thirdly, while two third person pronouns can generally have different referents, two PSIs occurring in the same 'domain' must refer to the same PC. We call this behaviour SHIFT-TOGETHER-LOCALLY (cf. Anand & Nevins 2004, Shklovsky & Sudo 2014). Here is an example. Suppose Wei is from China but not the speaker. Assume also that the speaker and Wei are facing each other. Then the reading (15c), if available, should be true if Wei talked to a Chinese person who was sitting next to him, on the side closer to his heart. Similarly (15d), if available, should be true if Wei talk to somebody from my country who was sitting next to him, on the side further from his heart. However, these 'mixed' readings are not attested for (15).

- (15) Wei talked to a *foreigner on the left*.
- a. Wei talked to someone from a *different country than me* who was sitting on the *left from my perspective*.
- b. Wei talked to someone from a *different country than Wei* who was sitting on the *left from Wei's perspective*.
- c. *Wei talked to someone from a *different country than me* who was sitting on the *left from Wei's perspective*.
- d. *Wei talked to someone from a *different country than Wei* who was sitting on the *left from my perspective*.

On the other hand, two pronouns in similar syntactic configurations can have mixed readings, as shown by (16).

(16) Eric_e said that Wei_w broke his_{e,w} computer in his_{e,w} office.

It seems to us that these observations reinforce Partee's skepticism to a point where we can confidently assert that perspective-sensitivity cannot be identified with pronominal anaphora. Thus, we reject the pronominal approach to perspective-sensitivity of the kind that postulates a simple pronominal component in PSIs. But of course the similarities between the two phenomena should not be understated. How could we reconcile these seemingly conflicting demands? In the next section, we will discuss the idea that Partee (1989) brings up.

5.3 Some Theoretical Prospects

Instead of the pronominal approach where perspective-sensitivity is reduced to pronominal anaphora, Partee (1989) invites us to consider a different theoretical possibility where both pronominal anaphora and perspective-sensitivity are both conceived of as special cases of more general context-dependency. She suggests a way of implementing it in a version of dynamic semantics, but we believe her core intuitions are more general, and for the sake of simplicity, we will stick to a static setting for the moment.

Roughly put, the idea is that both third person pronouns and PSIs – and context dependent items more generally – refer to 'contexts', although they refer to different aspects of contexts. In order to make the discussion more concrete, let us postulate (*possible*) contexts in the model. We assume that they are equipped with (at least) two features: the PC and a set of salient individuals.⁴ Thus, we assume that a context c is formally a pair consisting of an individual P_c , the PC, and a sequence s_c of individuals, which represents salient individuals in the context, i.e. $c = \langle P_c, s_c \rangle$.

The semantic value of an expression α with respect to the context c is denoted by $\llbracket \alpha \rrbracket_c$. The pragmatics-semantics interface ensures that (in the

⁴ One could in principle enrich contexts to account for other context-dependent items, e.g. one could add a unique agent to each context so as to account for first-person pronouns, as done by D. Kaplan (1989) among others, but since these additional aspects are orthogonal to our central concerns here, we will ignore them.

default case) when the sentence is uttered in a context c_0 it is evaluated against c_0 . Let us state this as a rule, as in (17).

(17) A declarative sentence S uttered in c_0 is true iff $\llbracket S \rrbracket_{c_0} = 1$.

To reiterate the central tenets of Partee's idea we are pursuing, context-dependent items refer to the context index in a non-trivial manner in their meaning, while context-independent ones do not. For third person pronouns, for instance, we assume that they bear indices and pick out the i th coordinate from the sequence s_c of c . Let π^i be the i th projection function (for any $i \in \mathbb{N}$). Then for any context c , $\llbracket he_i \rrbracket_c = \pi^i(s_c)$. This is no different from what is standardly assumed (by frameworks that postulate variables) in any essential respects.

Being context-dependent, the semantic values of PSIs are also dependent on c , but they do not bear indices unlike pronouns and simply refer to the first coordinate of c , the PC P_c . Here are some examples.

(18) a. $\llbracket \text{left} \rrbracket_c = \lambda x_e. \lambda y_e. y$'s location is left of x 's location relative to P_c
 b. $\llbracket \text{local} \rrbracket_c = \lambda x_e. x$ is in the vicinity of P_c

It should be emphasised here that according to the present analysis, there is a irreducible difference between PSIs and pronouns. PSIs refer to the first component of c , namely P_c without an index, while pronouns refer to the second component of c , namely s_c , and pick out its i th component. This idea is fundamentally different from the spirit of the pronominal approach we considered above, where PSIs merely contain a (null) pronoun. And importantly, we can capitalise on the formal distinction between PSIs and pronouns in formulating the restrictions on what can be P_c that we observed in the previous section, as we will demonstrate now.

5.3.1 Default Speaker-Orientation

Recall from the introduction that the PC is by default interpreted as the speaker. We enforce this by requiring that the utterance context by default has the speaker as the PC. That is, if the speaker a_{c_0} utters a sentence S in an context equipped with a sequence of salient individuals s_{c_0} , we take the context c_0 to be $\langle a_{c_0}, s_{c_0} \rangle$. This should be conceived of as a pragmatic rule. Unfortunately, there is a considerable degree of uncertainty here with respect to how this pragmatic

rule actually works. In particular, as noted in fn.2, in certain situations, it is quite natural to take somebody other than the speaker to be the PC, e.g. in a narrative context. We leave this topic for future research, but it is an important feature of the present analysis that we can formulate a default rule that only affects the interpretation of PSIs.

5.3.2 *Perspective Shifting*

What about cases where the PC is different from the default? As we saw in the introduction, in belief reports, it is possible to take the attitude holder to be the PC for PSIs embedded in the subordinate clause. We observe similar shifting behaviour in the following contexts.

- (19) a. Matrix questions allow the PC to be the addressee.
 b. Adjunct clauses such as *if*-clauses allow the PC to be the matrix subject.
 c. Modifiers (e.g. relative clauses) on objects and other VP-internal positions allow the PC to be the matrix subject.

As we discuss concrete data elsewhere (Bylinina, McCready & Sudo 2014), we will not present it here. Instead we will focus on how this shifting behaviour can be accounted for.

First, it is instructive to remind ourselves how third person pronouns ‘shift’. It is standardly assumed that the interpretation of a third person pronoun is not entirely determined by the context and the index they bear, but also by a grammatical mechanism, i.e. by the Λ -operator (cf. Heim & Kratzer 1998):

$$(20) \quad \llbracket \Lambda_i \text{ XP} \rrbracket_c = \lambda x_e. \llbracket \text{XP} \rrbracket_{\langle p_s, s_c[i \mapsto x] \rangle}$$

$s[i \mapsto x]$ is that sequent that differs from s at most in that its i th coordinate is x . The primary function of the Λ -operator is to enable variable binding.

Suppose that something very similar happens with the PC. Concretely, we propose that perspective shifting takes place via an operator Π .

$$(21) \quad \llbracket \Pi_i \text{ XP} \rrbracket_c = \llbracket \text{XP} \rrbracket_{\langle \pi^i(s_c), s_c \rangle}$$

When this operator is present, all PSIs in its scope are interpreted relative to the new PC, $\pi_i(s_c)$. It is important that Π bears an index i , whereby referring to the i th coordinate of s_c . This makes Π pronominal in some sense, and as we will see, this will allow us to account for the commonalities between pronominal

anaphora with third person pronouns and perspective-sensitivity that Partee (1989) pointed out.

Let us see with concrete examples how Π achieves perspective-shifting. Consider the sentence in (22). It has two readings: a speaker-oriented reading, where the PSI *foreigner* is interpreted under the speaker's perspective, and a shifted reading, where the PC is Eric. The latter shifted reading is accounted for with an LF containing Π , as in (22b) (where $\pi^3(s_c) = \text{Eric}$).⁵

- (22) a. Eric invited a *foreigner*.
 b. $\llbracket \text{Eric invited } [\Pi_3 \text{ a foreigner}] \rrbracket_c = \text{Eric invited someone from a different country than } \pi^3(s_c)$.

The presence of Π is also essential in deriving bound variable readings of PSIs. Let's first discuss the derivation of the bound-variable readings of third person pronouns. For sentences with quantifiers, as in (23), we assume movement of the quantifier phrase (following Heim & Kratzer 1998):

- (23) a. Every boy likes his mother.
 b. $[\text{every boy}] [\Lambda_8 t_8 \text{ likes his}_8 \text{ mother}]$

The semantics of (23) is built using the following denotations of the relevant parts:

- (24) a. $\llbracket \text{every boy} \rrbracket_c = \lambda P_{\langle et \rangle}$. for every boy x , $P(x) = 1$
 b. $\llbracket \Lambda_8 t_8 \text{ likes his}_8 \text{ mother} \rrbracket_c = \lambda x_e$. $\llbracket t_8 \text{ likes his}_8 \text{ mother} \rrbracket_{\langle P_s, s_c \{8 \rightarrow x\} \rangle} = \lambda x_e$. x likes x 's mother

These ingredients give us the correct semantics of (23):

- (25) $\llbracket (23b) \rrbracket_c = \text{for every } x \text{ who is a boy, } x \text{ likes } x \text{'s mother}$

The same mechanism works for bound variable readings of PSIs. To derive the bound variable reading of (26a), its LF needs to contain both the Λ and the Π operator, bearing the same index, as in (26b):

⁵ At this point we remain agnostic as to where exactly the Π -operator is located. This issue closely ties to the 'domain' of perspective-shifting, which we are not able to identify at the moment (see discussion in section 5.3.3). For expository purposes, we locate the Π -operator somewhere close to the shifted PSI.

- (26) a. Every boy invited a *foreigner*.
 b. [every boy] [Λ_6 t_6 invited [Π_6 a *foreigner*]].

The LF in (26b) has an interpretative effect of the bound-variable reading of the PSI *foreigner*, as the index on Π ends up being ‘bound’ by the quantifier.

$$\begin{aligned}
 (27) \quad & \llbracket \Lambda_6 t_6 \text{ invited } [\Pi_6 \text{ a } \textit{foreigner}] \rrbracket_c = \lambda x_e. \llbracket t_6 \text{ invited } \Pi_6 \text{ a } \textit{foreigner} \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle} \\
 & = \lambda x_e. \llbracket \textit{invited} \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle} (\llbracket \Pi_6 \text{ a } \textit{foreigner} \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle}) (\llbracket t_6 \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle}) \\
 & = \lambda x_e. \llbracket \textit{invited} \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle} (\llbracket \textit{a } \textit{foreigner} \rrbracket_{\langle \pi^6(s_c), s_c[6 \mapsto x] \rangle}) (\llbracket t_6 \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle}) \\
 & = \lambda x_e. x \text{ invited someone from a different country than } x
 \end{aligned}$$

If Λ and Π bear different indices, the non-bound reading of the PSI will arise.

$$(28) \quad \llbracket \Lambda_6 t_6 \text{ invited } \Pi_3 \text{ a } \textit{foreigner} \rrbracket_c = \lambda x_e. \llbracket t_6 \text{ invited a } \textit{foreigner} \rrbracket_{\langle P_3, s_c[6 \mapsto x] \rangle} = \lambda x_e. x \text{ invited someone from a different country than } \pi^3(s_c)$$

We also tentatively assume that Π is optionally present. If Π is absent, the PC is taken to be the speaker, due to the default pragmatic rule we postulated above.

The present mechanism can also account for the data involving donkey anaphora in (12) by simply dynamicizing the entire system. Since this is largely routine, we will not present a dynamic version of the system here.

5.3.3 *Shift-Together-Locally*

Recall now the SHIFT-TOGETHER-LOCALLY constraint discussed in section 5.2.3 and illustrated in example (15). This constraint is accounted for with an auxiliary assumption that at most one instance of Π appears per ‘domain’. To see this more concretely, suppose that one and only one Π appears in the DP *a foreigner on the left*:

$$(29) \quad [\Pi_2 \text{ [a [foreigner] [on the left]]}]$$

Depending on what $\pi^2(s_c)$ is, the PC is taken to be a different person. Crucially, however, the two PCs *foreigner* and *left* are interpreted with respect to the same PC, deriving SHIFT-TOGETHER-LOCALLY.

In order for this analysis to be complete, it needs to be established what constitutes a domain of perspective-shifting. This can in principle be investigated by checking where SHIFT-TOGETHER-LOCALLY holds between two PSIs. For instance, we observe that VP as a whole is not a shifting domain (*pace*

Sundaresan 2012), given that the PC for a PSI used as a main predicate does not shift to the subject, as shown by (30).

(30) #This boring comedian is funny.

The PSI *funny* cannot be relative to the comedian, which would make the sentence synonymous with ‘This boring comedian is funny from his own perspective’. This interpretation would be possible, if Π could appear right above *funny* with an index referring to the comedian. On the other hand, *funny* appearing as part of the object DP can shift to the subject, as in (31).

(31) This boring comedian met a funny philosopher.

In this case, the PC for *funny* can be the comedian.

Partee (1989) also notes that shift-together does not hold between PSIs in the subject and in the VP, which are, presumably, in different domains:

(32) Most *foreigners* speak a *foreign* language. (Partee 1989: (31))

There’s a reading of (32) where *foreigners* is anchored to the utterance or discourse context, while *foreign* is anchored to the restrictor, i.e. to the perspective of the (variable) subject.

In this short paper, we cannot delve into the issue of what counts as a domain of shifting, which we leave for future research (see Bylinina, McCready & Sudo 2014 for some data and preliminary hypotheses).

5.3.4 **Thematic Restrictions**

We observed in Section 5.2.3 that PSIs are more constrained than third person pronouns in terms of the thematic status of noun phrases they can refer back to. For instance, (14) demonstrates that the PC cannot refer back to the comitative phrase. This restriction is not specific about comitative phrases. A similar difference between pronominal anaphora and perspective-sensitivity is observed with a conjoined subject. Specifically, one of the conjuncts of a conjoined subject cannot be the PC. Suppose Lisa, who is Russian, utters (33).

(33) Vera and Eric met a foreigner.

Suppose further that Vera is also Russian, while Eric is American. This sentence cannot describe a situation where Vera and Eric met an American, although

an American is a foreigner for Vera. By contrast, a third person pronoun can easily refer back to one of the conjuncts, as demonstrated by (34).

(34) Vera and Eric met her violin teacher.

The immediate question here is which noun phrases can be referred back to by PSIs and which cannot. In order to answer this, however, a systematic study is needed, which we unfortunately need to leave for future work. But we would like to note here that part of this restriction is for a subclass of PSIs, especially Japanese *zibun*, under the rubric of 'subject-orientation'.

As the empirical landscape is not yet entirely clear, we will not try to formulate the restriction. However, it should be recognised that how such a constraint can be formulated in our framework is not at all a trivial issue. In particular, our analysis so far assigns a pronominal component to Π , which by assumption should behave like third person pronouns with respect to thematic restrictions. If so, there is in principle nothing that prevents Π to appear above *a foreigner* in (33) and shift the PC to Vera. We will leave this issue for future research.

Формальная семантика и философия: мировой опыт и российские перспективы

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Современные мировые исследования в области формальной семантики естественного языка представляют собой междисциплинарный проект, в котором задействована лингвистика, логика и философия¹. Однако, как в российской, так отчасти, и в зарубежной философии зачастую сохраняется скепсис в отношении проекта формального систематического описания естественных языков.

В рамках данной статьи мы рассмотрим причины такого положения дел и попробуем обозначить те аспекты современных философских исследований (как в отечественной, так и в зарубежной философии), в которых влияние формальной семантики и лингвистики в целом могло бы оказаться конструктивным.

6.1. Формальная семантика и фундаментальные проблемы философии языка

6.1.1. Формальный анализ значения естественно-языковых выражений как философская проблема

Проект формального анализа значения в естественном языке восходит к работам философов Г. Фреге, Б. Рассела и Л. Витгентшейна. Однако даже эти авторы выражали скептицизм в отношении возможности формального анализа естественного языка. Философы и логики указывали на

¹ См. об этом, например, открытую лекцию Б. Парти: <http://polit.ru/article/2012/05/18/Partee>

то, что в естественном языке можно формулировать противоречивые, но при этом грамматические утверждения (Кемпену 1957: 313), что в нем можно формулировать грамматически корректные псевдопредложения (Карнап 1998: 69–70), на то, что структура предложений естественного языка может быть неоднозначной, что, в свою очередь, вызывает их двусмысленность (Рассел 2002), на то, что неоднозначными могут быть даже единичные выражения естественного языка (Фреге 2000а: 231), наконец, на то, что обозначающие и необозначающие термины могут никак грамматически не отличаться друг от друга (Рассел 2002).

Парти в Partee 2011: 18 указывает, что даже при столкновении самых непримиримых в своих философских взглядах оппонентов (коими были, например, Б. Рассел и П. Стросон) они соглашались лишь в одном: «Я, однако, согласен с мистером Стросоном, что обыденный язык не имеет никакой логики».

Проблема неразличимости в естественном языке обозначающих и необозначающих выражений была одной из наиболее важных для философов, ибо она была связана с вопросами онтологии и логической формы предложения. Б. Рассел (Рассел 1999) полагал, что естественный язык является нелогичным, поскольку, к примеру, подлежащим в английском языке может быть как собственное имя «Джон», так и квантор «каждый студент». Однако, согласно Расселу, «каждый студент» не является конститuentой (т.е. выражением обладающим собственным значением), значение данного выражения как бы распространяется по всему предложению, оно включает все, кроме выделенного жирным шрифтом элемента: $\forall x[\text{Студент}(x) \rightarrow \text{Умен}(x)]$.

В итоге философская традиция, восходящая к Фреге и Расселу, отбрасывала естественные языки и обращалась к исследованию формализованных языков логики, тогда как в традиции, связанной со Стросоном и восходящей к позднему Витгенштейну, в качестве альтернативы формально-семантическому анализу естественного языка в философии была сформулирована концепция значения как употребления (Витгенштейн 1994b), в которой не оставалось места для различия между тем, что сказано в предложении, и тем, что имплицитно в него произнесено: значение предложения целиком и полностью оказывалось зависимым от контекста его употребления. При этом контекст понимался в самом широком смысле.

Идеи позднего Витгенштейна оказали большое влияние на филосо-

фию языка, и многие исследователи, следуя за ним, считали, что проект формального систематического исследования языка невозможно реализовать. Данный скептицизм до сих пор сохраняет свое влияние на многих философов, интересующихся проблемами языка, как в отечественной, так и в зарубежной философии. Эти мыслители считают, что контекстуальная зависимость и неопределенность выражений не позволяют отделить проблемную область семантики от проблемной области прагматики. Иными словами, эти исследователи полагают, что не существует различия между тем, что сказано в предложении, и тем, что имплицитно, предполагается говорящим при его произнесении. Они думают, что невозможно задать и описать условия истинности предложения вне зависимости от контекста его конкретного произнесения.

6.1.2. Решения исходных философских проблем в проекте формальной семантики естественного языка

В проекте формально-семантического анализа естественного языка, начатом в работах Р. Монтегю были сняты или непосредственно решены многие из проблем, волновавших философов языка. Так, известное решение описанной выше проблемы Рассела, предложенное Монтегю (Montague 1973) в рамках сформулированной им интенциональной логики, позволяло представить такие кванторные выражения как «каждый студент» в качестве конститuentов, т.е. интерпретировать выражение «каждый студент» как обладающее собственным значением. В упомянутой работе интерпретация осуществлялась опосредованно через перевод естественно-языкового выражение в язык интенциональной логики: Перевод («Каждый студент») = $\lambda P\forall x[\text{Студент}(x) \rightarrow P(x)]$.²

Исследования, последовавшие в развитие новаторских идей Монтегю, позволили категорематически проинтерпретировать и многие другие выражения естественного языка, определявшиеся ранее в логико-семантической традиции исключительно синкатегорематически. В частности, речь идет о союзах и логических связках (см., например, Partee & Rooth 1983 и Partee 1987). Такая интерпретация позволяла дать предложениям естественного языка композиционную интерпретацию в рамках семантики условий истинности, что также оказалось важным с философской точки зрения результатом, ибо ранее композициональная

2 Подробнее об этом см., например, Бах 2010.

интерпретация считалась возможной лишь для выражений формализованных языков логики (см. Фреге 2000b).

В рамках формально-семантической традиции языкового анализа были предложены решения и для ряда проблем, беспокоивших сторонников концепции значения как употребления. Возможность проведения четкого различия между прагматикой и семантикой долгое время подчеркивалась в формально-семантических исследованиях, ибо считалась крайне важной для возможности систематического исследования значения.

Рассмотрим, например, предложение «Все студенты сдали экзамен на отлично». Значение этого предложения, произнесенного в контексте, будут состоять не в том, что все студенты всего мира сдали экзамен на отлично, а в том, что все студенты в конкретном классе сдали экзамен на отлично. Каким образом данное предложение получает такое прочтение?

Некоторые радикальные ответы предлагаются в рамках философского контекстуализма и философского минимализма. Согласно контекстуализму, для адекватного анализа того, что сказано, не достаточно семантики; ни одно предложение не выражает пропозицию, не обладает условиями истинности (или условиями приемлемости), если мы рассматриваем его без контекста употребления и не принимаем во внимание прагматические по своей природе факторы. К контекстуализму в семантике относят идеи Дж. Серла, Ч. Тревиса, Ф. Реканати, Дж. Перри и др.

Согласно минимализму, данное предложение в действительности означает, что все студенты всего мира сдали экзамен на отлично. Таким образом, когда мы его произносим, мы произносим предложение, которое в буквальном смысле является ложным. Слушатель пытается понять, что говорящий имел в виду, произнося очевидно ложное предложение, он пытается интерпретировать его, руководствуясь тем, что кооперативный собеседник руководствовался максимальной информативности и хотел сообщить что-то интересное и содержательное. Таким образом, говорящий понимает, что речь идет о всех студентах в определенном контексте. К минимализму в современной философии языка относятся Н. Сэлмон, С. Соумс, Э. Борг, К. Бах., Э. Лепор, Г. Каппелен и др. (см. Borg 2004, K. Bach 1999b, Cappelen & Lepore 2005). Оба эти ответа не являются удовлетворительными. Первый из них предполагает, что нельзя

провести различие между семантикой и прагматикой, а второй — что большинство предложений (а возможно и все), которые мы произносим, являются ложными и что без привлечения прагматических принципов нельзя интерпретировать ни одно из предложений языка.

Решение для данной проблемы было предложено в формально-семантической литературе. Подход, принимаемый большинством современных лингвистов-представителей формально-семантического направления, состоит в том, что в логической форме предложения присутствуют элементы — переменные, которые не произносятся. Существуют лингвистические тесты, которые позволяют выявить присутствие таких переменных. Например, они могут получать связанное прочтение.

(1) В большинстве стран, которые я посетил, каждый теннисист старается быть как Моника Селеш. (von Fintel 1998)

(1) не просто означает, что «каждый теннисист пытается быть как Моника Селеш». «Каждый теннисист» выбирает различные классы людей, в зависимости от страны («каждый теннисист в этой стране»). Здесь мы обнаруживаем пример связанного прочтения квантифицированной именной группы.

Зависимость от контекста и неопределенность естественного языка уже давно стали объектами формального исследования, и теперь нельзя построить аргумент, в котором просто из существования такого рода феноменов выводится невозможность их систематического анализа.

6.1.3. Важность лингвистики для современной философии языка

Ключевыми темами в философии языка являются проблема значения имен собственных и определенных дескрипций, местоимений и связанные с этим проблемы прямой референции, проблема значения модальных и условных (включая контрфактические) высказываний, значение предложений о верованиях, вопрос о границе между семантикой и прагматикой.

Данные темы разрабатывались также в рамках формальной лингвистики, и результаты этих исследований обладают непосредственной релевантностью для философов, работающих в рамках направления аналитической философии языка.

Можно выделить два основных преимущества лингвистического

подхода к анализу данных проблем: во-первых, семантика (т.е. значение) исследуется в непосредственной связи с синтаксисом естественного языка; во-вторых, исследование не ограничивается материалом какого-то одного языка, например, английского. В качестве примера можно рассмотреть работы лингвистов о семантике и синтаксисе имен собственных.

Вопрос о значении собственных имен восходит к классическим работам Г. Фреге, который указал на то, что имена собственные не могут быть просто ярлыками объектов, а должны указывать на объекты посредством смысла. В частности, он отметил информативность предложений о тождестве, таких, как (2).

(2) Утренняя звезда — это Венера.

С. Крипке в работе «Именованное и необходимость» (Kripke 1980) выдвинул тезис о том, что имена собственные отличаются от определенных дескрипций принципиальным образом. Он сформулировал ряд аргументов в пользу теории, согласно которой имена собственные обладают прямой референцией, т.е. указывают на свой объект без опосредования дескриптивным содержанием, и являются жесткими десигнаторами, т.е. указывают на один и тот же объект во всех возможных мирах. Данная концепция сталкивается с проблемой значения имен в косвенных контекстах. Если имена являются только ярлыками для объектов, то каким образом предложение (2) может быть истинным (при условии, что Иван является рациональным индивидом)?

(3) Иван верит, что Марк Твен — это писатель, но не верит, что Сэмюэл Клеменс — это писатель.

Проблема значения имен собственных и сегодня остается одной из наиболее обсуждаемых проблем в философии языка. Философы связывают ее решение с фундаментальными вопросами в области метафизики (вопрос о природе необходимых истин) и эпистемологии (вопросы о природе априорных и аналитических высказываний).

Современная лингвистика может предложить ряд интересных исследований по вопросу о том, насколько структура имен собственных отличается от структуры определенных дескрипций в различных языках. Например, О. Матушански (Matushansky 2008b) исследует синтаксис таких конструкций, как (4), в нескольких языках.

(4) Они называли его Ваней.

Она показывает на основе нескольких лингвистических тестов, что в таких конструкциях собственные имена выступают в качестве предикатов. Один из ее аргументов опирается на данные из русского языка: имя употребляется в творительном падеже, которым маркируются предикаты в других конструкциях. Она показывает, что в таких конструкциях имена выступают в качестве предикатов-цитат. Если имена собственные являются предикатами в этих конструкциях, то это может быть аргументом в пользу теории, согласно которой в других конструкциях (например, в позиции субъекта предложения) они выступают определенными дескрипциями (т.е. представляют собой сочетание предиката и артикля).

Также в лингвистической литературе хорошо известен тот факт, что во многих языках имена собственные употребляются с артиклями, так же, как и определенные дескрипции.

Данные факты, возможно, говорят в пользу теории, согласно которой имя собственное «Вася» — это дескрипция со значением «индивид, именуемый Васей». Эта теория впервые была эксплицитно сформулирована в работе философа Т. Берджа (Burge 1973; хотя сама идея упоминается в работе Б. Рассела «Философия логического атомизма» Рассел 1999).

Для наших целей важно только то, что любая философская теория значения имен собственных должна принимать во внимание такого рода аргументы.

Другой ключевой темой в современной философии языка является проблема значения индексных выражений. Эта тема представляет собой яркий пример того, как лингвистический анализ языков, отличных от английского, может полностью изменить философские представления о семантике термина. Индексные выражения — это такие выражения, как «я», «сегодня» и т.п. Философский интерес к проблеме значения этих выражений во многом объяснялся тем, что они, как полагали многие философы, обладают прямой референцией и являются жесткими десигнаторами.

Вопрос о существовании таких терминов связывался с вопросом о природе пропозиций и природе ментального содержания. Д. Каплан, одна из ключевых фигур в исследовании значения индексных выражений, выразил это так:

Я все больше интересовался проблемами, связанными с тем, что я хотел бы назвать семантикой прямой референции. Имеется в виду теории значения, согласно которым определенные единичные термины имеют прямую референцию без опосредования фрегевскими смыслами. Если такие термины существуют, то пропозиции, выражаемые содержащими их предложениями, включали бы индивиды, а не «индивидуальные понятия (концепты)» или «способ представления», как меня учили думать (Almog, Perry & Wettstein 1989: 438).

Чтобы увидеть, что индексные выражения являются жесткими десигнаторами, можно сопоставить употребление слова «я» и определенной дескрипции «говорящий» в некотором модальном контексте. Рассмотрим (5) и (6) в контексте, где они произносятся женщиной.

- (5) Если бы выступал Петя, то говорящий был бы мужчиной.
 (6) #Если бы выступал Петя, то я была бы женщиной.

Предложение (5) имеет такое прочтение, в котором оно является истинным, определенная дескрипция «говорящий» может указывать на Петю в тех мирах, где он выступает. Однако в (6) слово «я» не может указывать на Петю. Оно будет указывать на того, кто произносит данное предложение в данном контексте, т.е. на женщину.

Капкан (Almog, Perry & Wettstein 1989) предложил семантику для индексных выражений, которая объясняет данный факт. Ключевым понятием в его теории было понятие *контекста*. Контекст — ситуация, в которой осуществляется высказывание. Эту ситуацию можно описать, указав, кто является автором высказывания, в какое время и в каком возможном мире оно совершается. Контекст рассматривался как один из параметров, относительно которого оценивается интерпретирующая функция.

Параметр контекста применяется в семантике индексных выражений следующим образом:

- (7) $\llbracket я \rrbracket^{c,g,t,w} = \text{говорящий в контексте } c$

Капкан полагал, что ни одно выражение в ни в одном из естественных языков не может изменять параметр контекста. Операторы, которые могли бы это делать, он называл «монстрами». Такие операторы, как

«необходимо», «думаю, что» могут изменять только параметр возможного мира.

Этот тезис, а значит и тезис о том, что индексные выражения обладают прямой референцией, был подвергнут критике в работах Ф. Шленкера (Schlenker 2003). Шленкер указывает, что существуют языки, в которых такие выражения, как «я», могут изменять свое значение в косвенных контекстах (он приводит примеры из амхарского языка). Если дословно перевести (8) на такие языки, то это предложение может значить, либо то, что говорящий сказал про себя, что он ошибается, либо то, что говорящий сказал про меня, что я ошибаюсь.

(8) Говорящий сказал, что я ошибаюсь.

Работа Шленкера породила множество дискуссий и исследований в современной лингвистике, в настоящее время описано множество языков, в которых существуют «монстры».

Возможно, что русский язык является одним из таких языков. Предложение (9) может означать, что Вася сказал про себя, что он устал.

(9) Вася₁ сказал, я₁, мол, устал.

Однако, роль «мол» в русском языке требует дальнейшего анализа, в частности, не вполне ясно, не является ли «мол» оператором цитирования (возможно, частичного цитирования). Например, в предложении с «мол» допускается обращение, невозможное в обычном косвенном контексте.

(10) Саша говорил мне, мол, Марфанька, не стоит ходить туда.

(11) *Саша говорил мне, что, Марфанька, не стоит ходить туда.

Таким образом, чтобы удостовериться, что операторы-монстры в действительности существуют в естественных языках, нам нужно убедиться, что такие примеры, как (9) не являются примерами, где «я» просто цитируется. Существует целый ряд тестов, которые позволяют установить, присутствует ли оператор-монстр в предложении.

Например, в некоторых языках, если смещается значение одного индексного выражения, смещается и значение всех других индексных выражений в предложении. При этом синтаксические тесты показывают, что вся вложенная клауза не является цитатой.

Данный пример демонстрирует, что только дальнейший межъязыковой анализ способен пролить свет на решение проблемы значения индексных выражений в естественном языке. Эти и другие примеры показывают, что вряд ли возможно успешное развитие современной философии языка без знакомства с работами лингвистов и освоения философами аппарата формального синтаксиса и формальной семантики.

6.2. Формальная семантика и отечественная философия

В России исследования в области формальной семантики велись, как минимум, с конца 1970-х годов и также представляли собой междисциплинарный проект с участием лингвистов, философов и логиков. Однако, несмотря на целый ряд получивших известность сборников статей, возникших в процессе этого взаимодействия в 1980-е и 1990-е годы, данное сотрудничество вряд ли можно считать оказавшим столь же сильное влияние на философию в России, каким оно было в других странах. Здесь мы рассмотрим некоторые специфические аспекты основных направлений российской философии, которые так или иначе взаимодействовали с формально-семантической проблематикой, и попробуем обозначить те их аспекты, в которых влияние формальной семантики могло бы оказаться конструктивным.

6.2.1. Эпистемология и философия науки

Философско-научное направление в отечественной философии и связанные с ним исследования в области теории познания, в той или иной мере имеющие общие отправные точки с современной формальной семантикой, были представлены разработками в области теории научных парадигм, связи между научной теорией с так называемой картиной мира и общей прагматическо-релятивистской интерпретацией научного знания (Касавин, Никифоров, Микешина, Маркова и др.). Эти исследовательские направления, развивавшиеся под непосредственным влиянием идей Т. Куна (Кун 1977) и П. Фейерабенда (Фейерабенд 1986), в своих фундаментальных посылах опирались на ряд философско-языковых концепций, считавшихся центральными в XX веке и представленных в работах Л. Витгенштейна, Р. Карнапа, У. Куайна, Д. Дэвидсона и др.

Здесь мы обозначим ряд основных концептуальных аспектов этих направлений, рассмотрим их влияние на отечественную философию языка и сопоставим их с теми базовыми идеями, которые ассоциируются с проектом формальной семантики.

Один из начальных этапов развития аналитической философии языка в XX веке был связан с проектом реабилитации эмпиризма, т.е. философской концепции, восходящей к работам Дж. Локка, согласно которой человеческое знание происходит из опыта и должно на нем основываться. Подобные проекты уже со времен критики Локка Лейбницем испытывали систематические сложности с объяснением происхождения так называемых истин разума (в отличие от истины факта), коими были истины логики и математики. Их было весьма затруднительно считать опытным знанием. В работах Р. Карнапа, А. Айера и других представителей Венского кружка предлагалось интерпретировать истины разума как относящиеся к так называемым аналитическим истинам, являющимися таковыми исключительно в силу смысла тех терминов, в которых они сформулированы (см. об этом Ауге 1952).

Программа логического эмпиризма подвергалась сильнейшей внутренней критике (Нейрат, Карнап), однако наиболее известным ее разоблачителем стал У. Куайн, предложивший ряд аргументов против существования смыслов, обуславливавших аналитичность и, соответственно, против всей программы логического эмпиризма, который вновь оказывался неспособным объяснить природу истин разума. Провозглашенная Куайном натурализованная эпистемология рассматривала в качестве тривиальных или аналитических истин лишь логические тавтологии, являющиеся истинными исключительно в силу своей формы. Все остальные истины рассматривались как синтетические, а научное знание — как некий концептуальный каркас, состоящий из взаимосвязанных понятий и соотносящийся с опытом лишь периферийно. Опыт при этом понимался Куайном так же, как и логическими эмпиристами, а именно как бессвязный поток впечатлений, воспринимаемых человеком, или как-то иначе фиксируемых данных. Для той или иной научной теории считалось, что ее отправные понятия связаны между собой и, если принимаются или отбрасываются, то все вместе (тезис Дюгема-Куайна). Наука, таким образом, понималась как то, что позволяет упорядочить бессвязный поток опытных данных. Метафора науки как концептуального каркаса предполагала, что функции объяснения и предсказания

опыта осуществлялись через задание ею определенной «картины мира», которая либо подтверждается опытом, либо нет.

Критика Куайном философии Венского кружка стала этапной для развития эпистемологии в XX в. Более того, вполне возможен аргумент о том, что весь корпус идей, сформулированных в рамках описанной критики, был впоследствии так или иначе инкорпорирован в философско-научные концепции, оказавшие значительное влияние на отечественную философию науки. Применительно к философии языка данные идеи сводились к следующим основным шести. Первая – непостижимость референции, т.е. идея о том, что поскольку опыт репрезентирован потоком ощущений, то говорить о референции к каким-либо конкретным объектам не приходится. Вторая – онтологическая относительность, т.е. идея, согласно которой, подобно тому как в каждом формализованном языке есть свой домен референции, каждая научная теория обладает собственной онтологией, которая задается ею через те переменные (индивидуальные или предикатные), которые могут связываться квантором существования в этой теории). Третья – в критика теории смысла как развитие начатой Куайном критики понятия синонимии, связываемое с отрицанием существования интенциональных сущностей, обеспечивающих однозначность перевода одних высказываний в другие. Четвертая – неопределенность перевода или тезис, по которому отсутствие смыслов делает перевод из одного языка в другой неизбежно гипотетическим и допускающим альтернативные переводы. Пятая – несоизмеримость картин мира (невозможность соотнесения онтологий, постулируемых в двух различных теориях без использования третьей метатеории; невозможность говорить о существовании тех или иных объектов вообще, безотносительно всего того концептуального каркаса теории, в которой эти объекты постулируются). Шестая – прагматические критерии выбора между двумя или несколькими конкурирующими теориями (ибо в отсутствие таких объективных критериев как соотнесенность с некоей внешней реальностью (в силу непостижимости референции) и общность смысла (в силу отсутствия смыслов) единственным основанием для выбора между двумя теориями или формализованными языками становится прагматическая оправданность (в частности простота и консервативность)).

Перечисленные идеи обусловили торжество максимы Л.Витгенштейна «границы моего языка означают границы моего мира» (см. Витген-

штейн 1994а: п. 5,6) в отечественной философии науки и эпистемологии. Возможность существования различных формализованных языков и теорий, описывающих одни и те же данные опыта, а вместе с этим и возможность сосуществования различных картин мира и, как следствие, способов мышления обусловили торжество понятия относительности онтологии и способов мышления в современной эпистемологии. Современный релятивистский тренд в отечественной философии, сочетаясь, помимо философских концепций столь влиятельных философов, как Куайн и Дэвидсон, с гипотезой Сепира-Уорфа (Уорф 1960а,б) и теорией научных революций Т. Куна, стал практически повсеместным. Известный отечественный философ науки И.Т. Касавин в этой связи отмечает, что сегодня философско-языковое влияние на эпистемологию (в его терминологии — «тема „Познание и язык“») «грозит даже поглотить всю эпистемологическую проблематику» (Касавин 2011), а В.А. Лекторский резюмирует: «Релятивизм не только в современной философии, но и в культуре в целом кажется одержавшим победу... Сегодня многие философы — как в мире, так и в нашей стране — считают, что сегодня нельзя не быть релятивистом» (Лекторский 2012).

Сегодня в отечественной философии науки считается обыденным не рассматривать истину как необходимое следствие знания: считается, что знание может быть ложным в силу, например, того, что древние, считавшие, что Солнце вращается вокруг Земли, обладали соответствующим знанием, которое потом было признано ложным. Иначе, как объясняют сторонники подобного взгляда на знание³, следовало бы сказать, что древние не обладали никакими знаниями вообще, но поскольку мы признаем, что у них были знания, то расхождение их знания с тем, что считается знанием сегодня, объясняем ложностью того знания. Среди ведущих отечественных философов науки, менее погруженных в эпистемологическую проблематику, нередко встречаются и попытки определения истины в терминах знания. Например, Е.М. Мамчур, Г.Д. Левин и М.А. Розов сходятся во мнении, что истина может определяться как, например, соответствие теоретического знания «вещи самой по себе» (Мамчур 2008).

Релятивизм оказал влияние и на отечественную философию языка. Упомянутые выше непостижимость референции и онтологическая отно-

3 И.Т. Касавин (опыт личного общения с обоими авторами).

сительность получили, к примеру, свое воплощение в концепции именования А.Л. Никифорова, согласно которой говорить о неких объективных референтах используемых в речи имен собственных не приходится не только потому, что концептуализация реальности у каждого индивида своя и он по-своему воспринимает, казалось бы, одни и те же объекты, но еще и потому, что сами объекты представляются разным индивидам в разных контекстах по-разному. Из подобных рассуждений делается вывод о том, что говорить об объектах, объективно существующих в независимой от воспринимающего и оценивающего сознания реальности, не приходится, и, если они вообще существуют, то являются крайне «тощими» сущностями, лишенными практически каких-либо свойств, обычно используемыми людьми для их опознания (Никифоров 2012а).

Сходным образом рассуждает и влиятельный американский философ С. Шиффер, автор концепции «сдвига полутонов» (*penumbral shift*), призванную показать изначальную непостижимость референции (см. Schiffer 2013). Здесь идея заключается в том, что нечеткие термины (*vague terms*) такие как «молодой», «лысый», «девушка», «молодой человек» и т.п. имеют объем (денотат) с изначальными размытыми границами, задаваемыми исключительно субъективно или дискурсивно. Данная установка переносится и на анализ других терминов языка. Общий вывод такой же, как и у Никифорова — об однозначно заданном домене референции говорить не приходится.

Каким образом формальная семантика отвечает на подобные вопросы? Ответом является указание на то, что метафизика естественного языка, т.е. объекты, которые допускает в качестве объективно существующих объектов естественный язык, такова, какова она есть: это не вопрос выбора, а вопрос эмпирического факта. Если в естественном языке допустима квантификация над второпорядковыми сущностями, моментами времени, событиями и возможными мирами, то, значит, они как сущности допускаются в онтологии естественного языка. И формальная семантика здесь лишь следует за объектом своего исследования, беря на себя лишь те «онтологические обязательства», которые уже присутствуют в естественном языке (см. E. Bach 1986) и описывая его таким, какой он есть, а не таким, которым он, по мнению тех или иных философов, должен быть (см. Gamut 1991: 47,64).

Сказанное, как кажется, распространяется и на идеи несоизмеримости картин мира, неопределенности перевода и скепсиса относительно

интенциональных сущностей. Восходящие к Куайну и рассмотренные выше релевантные аргументы скорее связаны с лексической неопределенностью выражений разных языков, что в малой степени затрагивает проект формальной семантики, ориентированной на исследование структурных аспектов значения языковых выражений. Например, такое сочетание приведенных выше «размытых» терминов как «лысые молодые люди и девушки» при любой размытости значения каждого из входящих в него терминов будут вполне однозначно иметь лишь две синтаксические структуры (два прочтения), отличающиеся друг от друга существенным образом — так, что из этого вытекают разные условия истинности того предложения, частью которого данное выражение может являться.

Такого же рода ответ может быть предложен для отечественных философов, которые полагают, что знание может быть ложным. Исследуемый формальными семантистами пресуппозициональный характер термина «знание», — эмпирически фиксируемый факт естественного языка: высказывание *a знает, что p* имеет истинностное значение, только если *p* истинно. Формальная семантика изучает то понимание знания, которое заложено в естественном языке и которое предполагается нашим повседневным употреблением слова «знать». Можно утверждать, что значение слова «знать» не согласуется с теорией, согласно которой знание может быть ложным.

6.2.2. Формальная логика

Исследования в области формальной логики в России можно условно разделить на две группы: исследования в области символической логики и исследования в области теории аргументации. Это отражено и в ряде появившихся учебников (Бочаров & Маркин 1994, Брюшинкин 1996 и др.). Однако подавляющее большинство работ этих двух направлений были практически не связаны непосредственно с лингвистической или философско-языковой проблематикой. Даже философская и логическая семантика долгое время не попадала в сферу магистральных интересов отечественных логиков. Только в последние годы отдельные исследования этой проблематики были дополнены попытками построить аппарат логики в междисциплинарное пространство, в котором присутствовала бы философия и лингвистика.

Эти первые попытки выразились в появлении двух учебников по логике (Бочаров & Маркин 2011, Томова & Шалак 2014), в которых авторы эксплицитно привлекают междисциплинарную (т.е. философскую и лингвистическую) проблематику при обсуждении логического аппарата и иллюстрации возможностей его применения. Тем не менее, можно указать на то, что и в двух указанных работах результаты лингвистики задействованы не в достаточной мере, а используемый в ней формальный аппарат практически не задействован. Так, например, денотатом определенных дескрипций Бочаров & Маркин (2011) считают не единичный объект, а единичное множество. Выражения типа «женат(x , y)» являются в Томова & Шалак (2014) предикатными константами, а не предложениями. Вызывают критику целый ряд используемых авторами таких центральных для лингвофилософской проблематики как язык, логика, знание, познание, теория, суждение, высказывание (подробнее см. критические обзоры в Никифоров 2012b, Куслий 2014).

6.2.3. Историко-философские исследования

Отдельный канал, по которому проблематика формальной семантики поступала и до сих пор поступает в отечественное философское пространство, — труды историков философии (или работы в историко-философском жанре, написанные представителями других философских специальностей), посвященные изложению концепций «западных» аналитических философов, среди которых были столь значительные для формально-семантической традиции личности как Г. Фреге (Бирюков 2000), Л. Витгенштейн (Козлова 1986, Грязнов 1985), Х. Патнем (Макеева 1996), Д. Льюис (Веретенников 2008).

Этот канал играл и продолжает играть важную роль в образовании студентов, интересующихся проблематикой современной философии языка, или действующих специалистов, незнакомых с ней, но стремящихся интегрировать ее в свои исследования. Однако влияние историко-философских исследований такого типа было и остается преимущественно пропедевтическим и внутренним.

6.2.4. Философия языка и формальная семантика

Много работ, немалая часть которых состояла из описательных, экспозиционных пассажей, были написаны уже не историками философии,

а логиками и методологами науки. Эти работы, посвященные исследованию отдельных тем в так называемой аналитической философии языка, не только представляли собой последовательную экспозицию концепций тех или иных мыслителей, но и содержали ее критический анализ, а также идеи по решению тех или иных проблем и дальнейшему развитию проблематики. Среди них такие исследования как Ледников 1973, Павилёнис 1986, Целищев & Петров 1984, Целищев 1977, а также Ладов 2008, Микиртумов 2006, Драгалина-Черная 2012 и многие другие.

Именно в этих работах формально-семантическая проблематика и ее конструктивные общефилософские аспекты излагались наиболее эксплицитно. Например, Герасимова 2000 (появившаяся реально гораздо раньше года публикации) является, пожалуй, единственной отечественной монографией, полностью написанной в традиции интенциональной логики Р. Монтегю и применяющей этот аппарат к материалу русского языка.

Работы именно этого направления могли бы сделать влияние философских аспектов формальной семантики на отечественную философию наиболее конструктивным: релятивистские аргументы в философии науки и философии языка, если бы и формулировались, то в более критическом и дискуссионно-ориентированном ключе, ориентированные на междисциплинарную проблематику учебники по логике не находились бы лишь на начальных этапах своей разработки.

Взаимодействие философии, логики и лингвистики в России, одним из примеров которого является проект формальной семантики, еще в полной мере не состоялось. Однако перечисленные выше работы создают достаточный задел для того, чтобы этот процесс, начатый в нашей стране в 1970-е годы и возобновленный в последнее время (см. Васюков, Драгалина-Черная & Долгоруков 2014, Куслий 2013) получил в дальнейшем новые стимулы к развитию и достиг того уровня плодотворности, которая наблюдается в других странах мира.

Pronouns with multiple indices as conjunctions and disjunctions

Natalia Ivlieva and Alexander Podobryaev

In this squib we would like to use the opportunity to point at some previously unnoticed facts concerning the semantics of plural pronouns with multiple indices. Such pronouns are normally interpreted as conjunctions (sums) of indices (for example, an inclusive *we* in a given context can be understood as ‘*you and I*’). However, we note that in certain environments plural pronouns can be also interpreted as disjunctions (*we* as ‘*you or I*’). Interestingly, exactly these environments were characterized in Ivlieva 2012 as those that license plural disjunctive noun phrases.

7.1 Plural pronouns as conjunctions

As a starting point we will use an old observation that plural pronouns can have several antecedents, as in the following example from Lasnik 1989:¹

- (1) After John₁ talked to Mary₂, they₁₊₂ left the room. (Lasnik 1989: 98)

¹ The research presented here received funding from the European Research Council under the European Union’s Seventh Framework Programme (FP/2007–2013) / ERC Grant Agreement N°324115–FRONTSEM (PI: Schlenker). Research was conducted at Institut d’Etudes Cognitives, Ecole Normale Supérieure – PSL Research University. Institut d’Etudes Cognitives is supported by grants ANR-10-IDEX-0001-02 PSL* and ANR-10-LABX-0087 IEC.

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In a sense, in this sentence the pronoun *they* is used in place of the conjoined noun phrase *John and Mary*. (Collins & Postal 2012) explicitly propose that the plural pronoun in sentences like (1) is underlyingly a conjunction of singular pronouns transformed into a single plural pronoun on the surface by a special rule called “coordinate fusion”. The deep structure of (1) is given in (2):

- (2) After John₁ talked to Mary₂, he₁ and she₂ left the room.
(Collins & Postal 2012: 42)

If this particular treatment is correct, plural pronouns with split antecedents can be viewed as a sort of pronouns of laziness. But even if we don’t endorse Collins & Postal’s analysis, it may be needed to attribute multiple referential indices to plural pronouns. It is especially useful for the cases of partially bound plural pronouns of the kind discovered in Partee 1989² and extensively discussed in Rullmann 2003, 2004 and Heim 2008, as in the examples below.

- (3) [Every woman John₁ dates]₂ wants them₁₊₂ to get married.

The index 1 + 2 is a special index, usually called a *set index*, and the pronoun *them*₁₊₂ denotes a plural individual that is the sum of the individuals that the assignment function maps the indices 1 and 2 to. In principle, any index that is a part of a set index can be bound. In (3), the index 1 on the pronoun *them* is free, but the index 2 is semantically bound by the universal quantifier. The sentence is interpreted as follows:

- (4) $\llbracket(3)\rrbracket^g = 1$ iff for every x , such that x is a woman that John dates, x wants $g(1) \oplus x$ to get married (where g maps 1 to John).

Again, it is possible to have an analysis that explicitly states that at LF the plural pronoun is represented as a conjunction of pronouns with single indices, one of which appears to be bound. And in fact, such an LF can have a transparent corresponding PF that would also have conjoined pronouns:

- (5) [Every woman John₁ dates]₂ wants him₁ and her₂ to get married.

However, as we will show in the next section, this way of interpreting multiple indices cannot be the only one. There also should be a possibility to

² Here is Partee’s original example:

- (i) John₂ often comes over for Sunday brunch. Whenever someone else₃ comes over too, we₁₊₂₊₃ (all) end up playing trios. (Otherwise we₁₊₂ play duets.) (Partee 1989)

interpret multiply indexed plural pronouns as meaning something like “any member of the sum”. Or, in other terms, it may be the case that plural pronouns with multiple indices are not always LF-conjunctions. They may also be LF-disjunctions.

7.2 Plural pronouns as disjunctions

Consider the following example:

- (6) a. Speaking of John₃ and Mary₄... I didn't see them₃₊₄.
 b. #I only saw John₃.

The fact that it is strange for (6a) to be followed by (6b) in discourse³ cannot be accounted for if the pronoun with a set index denotes a plurality consisting of John and Mary, since in principle it should be possible to not see a plural individual while seeing some individual that is a subpart of that plurality, cf. the example below

- (7) Speaking of John₃ and Mary₄...
 I didn't see the two of them₃₊₄. I saw only John.

It looks the sentence in (6a) is really interpreted as ‘I didn't see *any* of them’, or, in other words, ‘I didn't see John or Mary’.

This way of interpreting multiply indexed pronouns is consistently available throughout various downward-entailing contexts. Consider some sentences and their paraphrases below.

- (8) *Restrictor of universal quantifier*
 Mary₃ told me₁ that everybody who knows us_{1,3} wants us₁₊₃ to get married.
 = Mary₃ told me₁ that everybody who knows me₁ or her₃ wants us₁₊₃ to get married.⁴

³ It might be possible to for (6b) to follow (6a), if the pronoun *them* is stressed: *I didn't see THEM. I saw only John*. We don't have much to say about such cases, but it can be noted that this pattern could be viewed as a signature of embedded implicature computation (cf. *It stopped raining in SOME of the cities* ⇒ *It didn't stop raining in all of the cities*).

⁴ Presumably, there is also a “conjunctive” reading: ‘Mary₃ told me₁ that everybody who knows *both* me₁ *and* her₃ wants us₁₊₃ to get married’. This kind of reading may be available in other downward-entailing cases as well, but crucially a “disjunctive” reading is also an option.

(9) *Scope of “few”*

Few people notice them_{3,4}, because John₃ and Mary₄ are both very quiet.

= Few people notice him₃ or her₄, because John₃ and Mary₄ are both very quiet.

As it is common for other monotonicity-sensitive phenomena, downward-entailing environments above seem to pattern with questions. There it even looks like interpreting multiply indexed pronouns as disjunctions is even preferred to interpreting them as sums. This is why, with an inclusive *we* in (10), (10a) makes sense as coherent dialogue, and (10b) does not. The positive answer in (10a) works only if *we* is understood as a disjunction, while the negative answer in (10b) works only if *we* is understood as the sum of the speaker and the addressee.

- (10) a. — Has anyone seen us_{1,2}? (= — Has anyone seen you₂ or me₁?)
 — Yes, I think I₁’ve been spotted.
- b. — Has anyone seen us_{1,2}?
 — #No, they noticed only me₁.

At this point the reader may wonder if we are even on the right track. Isn’t it the case that even overt conjunctions could have the intended interpretation in the contexts we have just discussed? For many speakers it seems to be so. That is, if multiply indexed pronoun in the examples (6), (8–10) are replaced by overt conjunctions of singular pronouns, the disjunctive interpretations we are after would still be available:

- (11) I didn’t see John and Mary#I only saw John.
- (12) Mary₃ told me₁ that everybody who knows me₁ and her₃ wants us₁₊₃ to get married.
- (13) Few people notice John₃ and Mary₄, because they₃₊₄ are both very quiet.
- (14) Has anyone seen you and me? #No, they noticed only me.

We won’t be able to address the issue of how exactly conjunctions of pronouns give rise to what we call disjunctive readings, but it is important to not limit our attention to these particular cases. In some other downward-entailing environments conjunctions and disjunctions give rise to very different interpretations, and multiply indexed pronouns can pattern with either conjunctions or disjunctions. Consider the two examples below:

- (15) *Antecedent of a conditional: conjunctive reading*
 (John₃ and Bill₄ had a fight recently.)
 If they_{3,4} happen to be in the same room, please make them_{3,4} talk to each other.
 = If John₃ and Bill₄ happen to be in the same room, please make them_{3,4} talk to each other.
 ≠ If John₃ or Bill₄ happen to be in the same room, please make them_{3,4} talk to each other.
- (16) *Antecedent of a conditional: disjunctive reading*
 (John₃ and Bill₄ are both wanted for murder.)
 If you happen to see them_{3,4}, please give us a call.
 = If you happen to see John₃ or Bill₄, please give us a call.
 ≠ If you happen to see John₃ and Bill₄, please give us a call.

The example in (16) illustrates an interesting case where it is clear that the paraphrase with a conjunction is different from the one with the disjunction. Of course, the context in (16) is set up in a way that makes the disjunctive interpretation preferable. However, it is still important to establish that in principle we can tell disjunctive representations from conjunctive ones and entertain the possibility that those disjunctive representations do exist.

In the examples above the indices of disjunctive pronouns were all free, but it can be shown that just like conjunctive (sum) representations (3), disjunctive representations allow for binding of individual indices in disjunctions, as below:

- (17) [No girlfriend of mine₁]₃ would talk to anyone who gossips about us_{1,3}.
 = [No girlfriend of mine₁]₃ would talk to anyone who gossips about me₁ or her₃.

The pronoun in (17) is partially bound by the negative quantifier, but the bound index and the free one are not summed up, but, on the intended reading, disjoined.

In all of the cases considered in this section multiply indexed pronouns appear in exactly in those environments that are known to license strong NPIs and, more importantly, unstrengthened disjunctions. If the analysis of multiply indexed pronouns as disjunctions is taken seriously, then it is not coincidental that in these particular environments we observe these particular interpretive effects.

However, we face a new question now. If it is in principle possible to interpret multiply indexed pronouns as disjunctions, why is it not the case that this option is *always* available. For example, why is it not possible for (1), repeated below as (18a) to mean (18b)?

- (18) a. After John₁ talked to Mary₂, they_{1,2} left the room.
 b. After John₁ talked to Mary₂, he₁ or she₂ left the room.

The answer that we tentatively provide has to do with the fact that the disjunctions we are talking about are of a particular kind. These are *plural disjunctions*, which have been independently shown to be licensed only in a subset of contexts where singular disjunctions can occur (Ivlieva 2012, 2013). In the next section, we take a closer look on the makeup and licensing of plural disjunctions.

7.3 Plural disjunctions and their licensing

Ivlieva (2012, 2013) observed the phenomenon of plural verbal agreement with disjunctive subjects in Russian⁵. Crucially, she noted that plural agreement can occur only in a limited set of contexts. These are downward-entailing environments, questions, and quantificational contexts.

Plural disjunctions don't seem to be licensed in episodic sentences outside of the scope of some quantifier. In such cases, only singular verbal agreement with a disjunctive subject is possible (19a). However, things change in the scope of quantifiers: plural agreement somehow becomes available (19b).

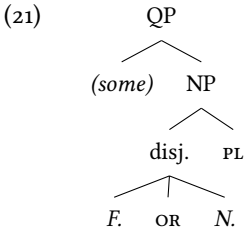
- (19) a. Včera ko mne prišēl-∅ / *prišl-i Petja ili Vasja.
 Yesterday to me came-SG *came-PL Petja or Vasja
 'Yesterday Petja or Vasja came to me.'
 b. Každyj den' ko mne prizodil-∅ / -i Petja ili Vasja.
 every day to me came-SG / -PL Petja or Vasja
 'Every day Petja or Vasja came to me.'

⁵ As Ivlieva (2013) acknowledges, the phenomenon may be not limited to Russian. The data from Kazana 2011 suggest that a very similar (if not the same) distribution of plural disjunctions could be observed in Greek, and, at least for some speakers, English works parallel to Russian as well (see also judgments in Morgan 1985, Peterson 1986, Jennings 1994, Eggert 2002. As for Russian, the earliest observation of plural agreement with disjunctions can be attributed to Skoblikova (1959).

Ivlieva argues that the unacceptability of plural disjunctions is due to a conflict that arises in course of the scalar implicature computation (which, for Ivlieva, takes place in the grammar). This conflict cannot be resolved by implicature cancellation or “pruning” of alternatives, and thus leads to ungrammaticality.

According to Ivlieva, a plural disjunction contains two scalar items: a disjunction that triggers an exclusivity implicature (“not both”), and a plural morpheme that triggers a multiplicity implicature (“more than one”). As a whole, plural disjunctions are generalized existential quantifiers with restrictors in the form of disjunctive properties. For example, the plural disjunction from the sentence (20) can be schematically represented in (21).

- (20) V 2006-m i 2007-m vse turniry “Bol’sogo šlema”
 In 2006 and 2007 all tournaments.ACC Grand Slam.GEN
 vyigral-i [Federer ili Nadal’].
 won-PL [Federer OR Nadal].PL
 ‘In 2006 and 2007, all Grand Slam tournaments were won by Federer or Nadal.’



The constituent labeled *disj.* in (21) denotes a set consisting of Federer and Nadal:

$$(22) \quad \llbracket \text{Federer OR Nadal} \rrbracket = \{f, n\} = \lambda x. x = f \text{ or } x = n$$

The contribution of the plural morpheme amounts to embedding the denotation of *disj.* under Link’s (1983) *star-operator* (*).

$$(23) \quad \llbracket \llbracket \text{Federer OR Nadal} \rrbracket \text{ PL} \rrbracket = * \llbracket \text{F. OR N.} \rrbracket = \{f, n, f \oplus n\} = \lambda x. x = f \text{ or } x = n \text{ or } x = f \oplus n$$

The scalar alternative of OR is AND. The predicative meaning of the coordination $\llbracket \text{Federer AND Nadal} \rrbracket$ is given in (24).

$$(24) \quad \llbracket \text{Federer AND Nadal} \rrbracket = \{f \oplus n\} = \lambda x. x = f \oplus n$$

As for the plural morpheme PL, its scalar alternative is SG, which is semantically empty, so that for example, the singular alternative of (23) is what we had in (22):

$$(25) \quad \llbracket \llbracket \text{Federer OR Nadal} \rrbracket \text{ SG} \rrbracket = \llbracket \text{Federer OR Nadal} \rrbracket = \{f, n\} = \lambda x. x = f \text{ or } x = n$$

The intuition behind Ivlieva's analysis (which we won't be able to present here in full detail) is as follows. A sentence with a plural disjunction would normally have (at least) two implicatures: the one that is generated by the plural feature (multiplicity) and the one generated by disjunction (exclusivity). For example, the two implicatures of (26), an ungrammatical sentence with a plural disjunction, are given in (27).

- (26) *V 2006-m Roland Garros vyigral-i Federer ili Nadal.
 in 2006 Roland Garros won-PL [Federer OR Nadal].PL
Intended: 'In 2006, the Roland Garros was won by Federer or Nadal.'

- (27) a. *Multiplicity Implicature:*
 It is not true that only one of the two tennis players won the Roland Garros in 2006.
 b. *Exclusivity Implicature:*
 It is not true that both tennis players won the Roland Garros in 2006.

The two implicatures taken together obviously contradict the asserted disjunctive meaning: 'In 2006, Federer or Nadal or both won the Roland Garros'; and Ivlieva argues that this clash is the reason of why the plural feature on disjunction and hence the plural agreement on the verb is blocked.

If the disjunction were singular, there would be no multiplicity implicature and hence no contradiction; and the sentence in (28) is thus grammatical:

- (28) V 2006-m Roland Garros vyigral Federer ili Nadal.
 in 2006 Roland Garros won-SG [Federer OR Nadal].SG
 'In 2006, the Roland Garros was won by Federer or Nadal.'

In the quantificational case (20), the two implicatures are as in (29):

- (29) a. *Multiplicity Implicature:*
 It is not true that every GS tournament in 2006-2007 was won by Federer,

and it is not true that every GS tournament in 2006-2007 was won by Nadal.

b. *Exclusivity Implicature:*

It is not true that every GS tournament in 2006-2007 was won by both Nadal and Federer.

In this case the two implicatures are consistent with the assertion ‘*every GS tournament in 2006-2007 was won by Federer or Nadal or both*’, and seem to lead to the right meaning: both tennis players have to have won overall (but no tournament has to have been won by both of them).

In downward-entailing environments no implicatures would be generated, and so plural disjunctions would again be licensed. This is a correct prediction, as evidenced by examples like the one with negation below:

- (30) Ja ne dumaju, što [Federer ili Nadal] vyigryval-i Roland Garros
 I not think that Federer OR Nadal won-PL Roland Garros
 do 2005-go goda.
 before 2005 year
 ‘I don’t think Federer or Nadal won Roland Garros before 2005.’

To sum up, the distribution of plural disjunctions is conditioned by what implicatures are generated and whether they lead to a contradictory strengthened meaning. If the implicatures do not give rise to a contradiction, plural agreement is fine; but when there is a contradiction (and no possibility of getting rid of troublesome alternatives before computing implicatures), ungrammaticality results.

To make this intuition work, Ivlieva develops a theory in which (at least some) scalar implicatures are not optional in a Gricean way. If they were, there would be a way to “save” any sentence like the one in (26) by simply not computing one or both of the implicatures. Since it is apparently not an option, some implicatures would have to be *obligatory*. Ivlieva argues that obligatoriness of implicatures can come from at least two sources: a) certain scalar items are specified as generating alternatives that have to be negated; b) there are constraints on “pruning” of alternatives, which can eventually lead to implicatures being obligatorily generated.

If Ivlieva’s analysis is correct, and if multiply indexed pronouns can be plural disjunctions, we predict disjunctive interpretations to be available not only in downward-entailing environments, but also in quantificational con-

texts, where plural disjunctions are licensed.

The prediction may be borne out, although in many cases it is hard to test. Consider the following example:

- (31) (Nadal₁ and Federer₂ are great tennis players.)
All Grand Slam tournaments in 2006 and 2007 were won by them_{1,2}.

We might hypothesize that the multiply indexed *them* is interpreted as a plural disjunction ([Federer OR Nadal].PL), which, as we have just shown, would be licensed in such a context. However, we cannot exclude the possibility that *them* is not a disjunction, but a conjunction ([Federer AND Nadal].PL). Conjunctions are known to give rise to cumulative readings, and what we have in (31) could be just a special case of cumulation. In fact, it looks like the sentence would be true in the actual world (where Nadal won two of the eight Grand Slam tournaments in these two years, and Federer won the rest), whether it involves a conjunction or a disjunction, which we can make overt:

- (32) a. All Grand Slam tournaments in 2006 and 2007 were won by Nadal or Federer.⁶
b. All Grand Slam tournaments in 2006 and 2007 were won by Nadal and Federer.

Regardless of these complications, however, Ivlieva's plural disjunctions are very useful for our purposes, since we can at least predict that disjunctive readings of multiply indexed pronouns would be licensed in downward-entailing environments. If disjunctive readings arise precisely in those cases where a pronoun is (covertly) an existential GQ with a disjunctive restriction, then the constraints on disjunctive readings should be precisely the constraints on Ivlieva's plural disjunctions. That is to say that the disjunctive interpretation of a multiply indexed pronoun should be available, when plural disjunctions are licensed, and it should not occur in those contexts where plural disjunctions won't be licensed. These are at least upward-entailing and non-quantificational environments.⁷

So, having taken a closer look on plural disjunctions we can address and answer raised in the end of the previous section. Plural pronouns with multiple

6 Of course, there is another reading of (32a), where the disjunction takes scope over the universal quantifier and the ignorance inference is derived, but that reading is not at issue here.

7 As of now, we are not sure if non-monotonic environments should be included in this list, as it is not exactly clear if they allow for plural disjunctions.

indices cannot always be interpreted as disjunctions, because in many cases (like the one in (1)) plural disjunctions would give rise to a conflict on the level of scalar implicatures. In those cases only the conjunctive interpretation would be available.

Multiply indexed pronouns should not be analyzed in a uniform way. In principle, both disjunctive and conjunctive (sum formation) construals are available for them. The disjunctive construal is constrained by Ivlieva's conditions on plural disjunction. As for the conjunctive construal, we leave open the question of whether it is constrained as well.

7.4 Disjunctions vs. choice functions

Before we conclude, there is another potentially important point to be made. We have proposed that plural pronouns with multiple indices can be implicit disjunctions, but there could be an alternative analysis by which those plural pronouns are not disjunctions per se but rather choice-functional indefinites. In this section, we would like to show that this avenue seems less promising, at least for the cases discussed above.

The idea that plural pronouns can sometimes be interpreted as choice functions was recently discussed in Sudo 2014. Sudo is primarily analyzing *dependent* plural pronouns, as in (33).

(33) The first years all think that they are the smartest student.

According to Sudo, the reason to use a plural pronoun in (33) is that it denotes a choice function, whose range is a plurality of first years, that gets bound by a distributive operator.

A slightly more complex case that Sudo discusses is the one in (34), modeled after Dimitriadis 2000:

(34) The people who voted for John and Bill thought that they would win.

The sentence can be interpreted as follows: '*the people who voted for John thought that John would win, and the people who voted for Bill thought that Bill would win*'. To capture this reading, Sudo proposes that *they* in (34) denotes a second-order choice function that takes an additional Skolem argument that is a choice function itself:

(35) $h(X, y) =$ the person among X that y voted for.

The Skolem argument y is a choice function that ranges over the voters and that gets bound by the distributive operator.

Even though the material of Sudo's study is different from ours, it is important to ask ourselves if the cases we have been discussing could be accounted for with the use of choice-functions. On the first examination, it looks like there will be problems.

Consider the quantificational case in (31). If *them* in (31) is a choice-function it would be construed as follows:

(36) $h(X, y) =$ the person among X that won y , where $X = f \oplus n$

The Skolem argument must get bound by the universal quantifier *all Grand Slam tournaments*. It may seem that this way we will capture the meaning of (31), but this way we fail to take into account what seems to be the contribution of the plural feature of the pronoun, that is, the implicature that some tournaments were won by Federer and some by Nadal.

As for non-quantificational downward-entailing contexts, it is just not clear what would license a choice function there, i.e. what would bind either the function itself or its Skolem argument. Note that if we allow for plural pronouns to be *free*, non-bound choice functions, we would not be able to explain why plural pronouns with choice-functional (disjunctive) interpretation are not allowed outside of downward-entailing and quantificational environments, such as (1).

Yet another problem is that an analysis in terms of choice functions would fail to explain why disjunctive interpretation of plural pronouns is sensitive to islands.

One of the properties of choice functions, as opposed to quantificational indefinites, is that they do not have to undergo quantifier raising to take scope, and so they are predicted to be able to take pseudo-scope out of scope islands (cf. Reinhart 1997, Kratzer 1998). If multiply indexed pronouns with non-conjunctive interpretation are indeed choice functions, they should be able to scope out of islands, but this prediction does not seem to be borne out. Let us consider the following example:

(37) (John₁ and Bill₂ are very popular.)
 Every girl in our department will be thrilled if they_{1,2} ask her for a date.
 = Every girl in our department will be thrilled if John or Bill ask her for a date.

≠ Every girl in our department will be thrilled if John and Bill ask her for a date.

The widely shared intuition about (37) is that it can mean that every girl will be thrilled if either of John and Bill, no matter who exactly, asks her for a date. In our terms, this means that the multiply indexed pronoun is interpreted as a plural disjunction inside the antecedent of the conditional. Such an interpretation is possible, since antecedents of conditionals are downward-entailing.

An important fact about (37) is that it is not possible for the disjunction to take scope outside of the *if*-clause. If it did, the sentence would have an interpretation according to which for each girl there is a particular boy such that that girl would be thrilled if that boy asked her for a date. Such scope would have been an option if what we call plural disjunctions were indeed choice functions, but it should not be possible if, as we have claimed, plural disjunctions are existential GQs that are unable to scope out of islands, such as the *if*-clause in (37).

7.5 Concluding remarks

We hope to have shown that pronouns with multiple indices can be interpreted as disjunctions. Since pronouns with multiple indices are necessarily plural, these disjunctions would also be plural, and plural disjunctions are special in that they are licensed only in a particular set of contexts. This is why the disjunctive interpretation of multiply indexed pronouns is so constrained: it may occur only in downward-entailing and quantificational environments, and in questions.

There are still many problems to be solved, and at this point, one of the most important has to do with the reliability of the judgments. Even if we are right that disjunctive interpretations are sometimes available, these interpretations are often less readily available than the conjunctive ones. Why this would be the case is not very clear to us now.

On the quantification of events

Ivan Kapitonov

Quantification is perceived as a phenomenon characteristic of the nominal domain. Determiners, prototypically involved in building generalised quantifiers, syntactically combine with nominal elements. The things that constitute the D_i are typically expressed by nominals. However, they are not the only things that can be quantified over. The present paper discusses the quantification of events and an analogy between locative sentences in the spatial and temporal domains, in the spirit of Partee's (1973, 1984) observations of analogies between tenses and pronouns.

8.1 The *na*-construction in Greek

In a recent paper, Iatridou (2014) discusses semantics of a particular verbal construction in Modern Greek:¹

- (1) Echo tria chronia na dho ton Mano.
 have.1SG.PRS three years na see.1SG the.ACC manos.ACC
 ‘The last time I saw Manos was three years ago.’

This construction demonstrates a number of interesting properties. It carries an existential presupposition of the event described in the *NA*-clause. The presuppositional status of the existence inference is evidenced by the fact that it is not cancellable and projects from under operators such as negation and questions. The assertion is about the length of the period from the last

¹ All Greek examples are from Iatridou 2014, with her transliteration and glosses.

occurrence of the event to the utterance time (or, more correctly, reference time). Iatridou compares the *na*-construction with the negated Perfect (2a) and with what she calls the *since*-construction (2b) in English. She concludes that the negated Perfect is different because the existence inference is cancellable, hence is a conversational implicature. For the *since*-construction, see below.

- (2) a. I haven't visited Boston since 2010.
 b. It has been three years since the last Summer Olympics.

The Greek *na*-construction is a Perfect, i.e., semantically it is associated with a perfect time span (PTS; Iatridou, Anagnostopoulou & Izvorski 2001, Pancheva 2003). The left boundary (LB) is associated with the description in the *na*-clause, and the right boundary (RB), i.e., the *reference time* in Reichenbachian terminology, is modulated by tense. Iatridou uses the existential presupposition to distinguish between the *since*-construction and the *na*-construction. She shows the former to carry a uniqueness presupposition, thus being akin to definite descriptions. The event description in the *na*-construction, on the contrary, is neither definite nor specific. Rather, Iatridou argues that it includes free choice universal quantification over events. In what follows, I will use the shorthand EQ to refer to constructions of event quantification. She claims that *na*-construction instantiates U[niversal]-Perfect, i.e., the kind of Perfect where a statement holds of any subinterval of the PTS. The semantics that she provides for the construction is given in (3). Compositionality is left for future research.

- (3) $\forall t(t \in \text{PTS}) \rightarrow (\forall_{FC} e(\text{na-clause}(e)) \rightarrow (\exists i(i \neq \emptyset) \text{ between } e \text{ and } t))$

Finally, where does the existential presupposition come from? Iatridou resorts to metaphorisation of time as space. A time interval is likened to a container that holds time like substance. The container, a space, is defined by its boundaries, and likewise the temporal interval is defined by its boundaries. As far as there is an interval, its boundaries are presupposed to exist. The event of the *na*-clause names the LB, and since that is presupposed to exist, existence of the event is presupposed as well.

8.2 Russian: same function, different form

Iatridou (2014) provides a basis for a broader crosslinguistic outlook. In what follows, I will contribute to that with observations of a construction in Russian in the light of Iatridou's ideas, and along the way I'll pick up a few related topics.

8.2.1 Aspectual composition

The construction in question is presented in (4):²

- (4) Ja ne videl zemletriasenija tri goda.
I.NOM not see.3SG.PST earthquake.GEN three year.CNT
'I haven't seen an earthquake in/for three years.'

Although it looks like a negated perfect, there is an existential presupposition rather than an implicature, unlike what has been said about English. The sentence in (4) gives rise to the inference that I saw an earthquake before, and asserts that the specified time span lacks my seeing earthquakes. The inference cannot be cancelled:

- (5) Ja ne videl zemletriasenija tri goda. #Da i voobsche
I.NOM not see.SG.M.PST earthquake.GEN three year.CNT PRT and in.general
nikogda ne videl.
never not see.SG.M.PST
'I haven't seen an earthquake in/for three years. #And actually I never saw any.'

Thus the existence of an event described by the VP is not implicated. It is not asserted either: it projects out of questions (6) and negation (7) (on projection see Karttunen (1973), Potts (2015: §2), and references therein):

² With a different word order the construction allows an optional temporal complementizer *kak* 'as'/'when' (i), without any obvious effect on meaning.

- (i) (Ja) tri goda kak (ja) ego ne videl.
(I.NOM) three year.CNT as (I) he.ACC not see.PST
'It's three years since I saw him last.'

It is probable that such a configuration renders the event description as the complement of the adverbial. I'm leaving these data for future research.

- (6) Kak davno ty ne xodila v gory?
 how long you.NOM.SG not go.SG.F.PST in mountain.PL.ACC
 ‘How long have you not been to the mountains?’
- (7) Nepravda, chto ja ne pil vodku tri dnia! {Ja
 false that I.NOM not drink.SG.M.PST vodka.ACC three day.CNT {I
 vchera pil. / Ja uzhe nedelju ne pil! /#Ja
 yesterday drink.SG.M.PST / I already week.ACC not drink.SG.M.PST / I
 nikogda v rot ne bral!}
 never in mouth not take.SG.M.PST
 ‘It’s not true that I didn’t drink vodka for three days. {I drank yesterday! / I
 haven’t drunk for a week! / #I never even tried it!}

We are led to conclude that the existence of the event is a presupposition. The presupposition seems to be a feature of the construction as a whole: if the temporal adjunct is substituted for a different one or completely removed, not only can the inference be cancelled, it is gone:

- (8) Ja ne videl zemletriasenija (za tri goda) v Los-Angelese,
 I.NOM not see.3SG.PST earthquake.GEN in three year.CNT in LA
 gde uzh tam govorit’ o Moskve!
 where PRT there talk.INF about Moscow
 ‘I haven’t seen an earthquake (in three years) in Los Angeles, let alone Moscow.’
 [⇒ I never saw any]

Besides the characteristic behaviour in these ‘hole’ environments, the construction shows the expected division of *at-issue* and *not-at-issue* content (Simons et al. 2010). It can answer questions about the length of the period of the event or situation denoted by the VP (9a), but since the existential inference is actually a(n informative) presupposition (i.e., not-at-issue), the construction cannot answer questions about the event existence (9b):

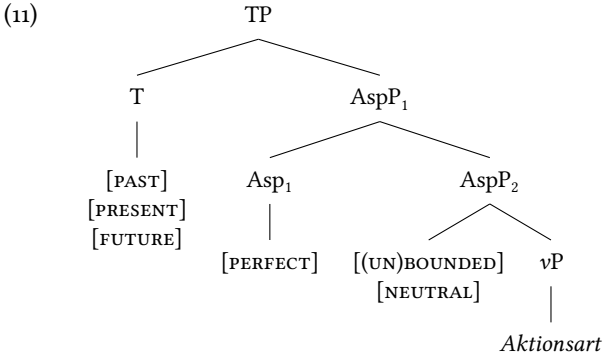
- (9) a. Ty chasto naveschaesh' roditelej? — Ja u nix
you.NOM.SG often visit.2SG.PRS parent.PL.ACC I.NOM at they.GEN
poltora goda ne byla.
one.and.a.half year.CNT not be.SG.F.PST
'Do you visit your parents often? — I haven't visited them for a year and a half.'
- b. Ty byl na Karibax? — #Ja tam (uzhe) tri
you.NOM.SG be.SG.M.PST on Carribean I.NOM there (already) three
goda ne byl.
year.CNT not be.SG.M.PL
'Have you (ever) been to the Carribean? — #I haven't been there for three years (already).'

The right boundary of the PTS can be modified by tense:

- (10) Cherez chas budet sutki, kak ja tebia ne videl.
across hour be.SG.FUT day as I.NOM you.SG.ACC not see.SG.M.PST
'In an hour it will be one day since I last saw you.'

Russian EQ construction, unlike the Greek one, is an E-Perfect. It denies (as there is obligatory negation) the assertion that some event has occurred in the specified time interval. However, we notice that the verb must be morphosyntactically imperfective to get the relevant reading.³ Here's a double puzzle: how does an imperfective verb end up in a perfective construction? Why does it *have* to be imperfective? The answer to the first question is relatively straightforward if we employ Pancheva's (2003) theory of perfect as the higher aspect. On her theory, perfect introduces an additional Aspect projection below T and above the viewpoint aspect. Its semantics is to relate "the interval of evaluation (the PTS), a reference time of sorts, to the reference time introduced by the tenses" (p.285). The resulting structure looks like this (p.284, (9a)):

³ On the usual tests for imperfective (Borik 2002, Romanova 2007).



The layers above the *vP* allow to derive the full range of readings compositionally. Postulating *AspP*₂ in the Russian EQ construction is further supported by the fact that they optionally include the adverb *uzhé* ‘already’, which is arguably a perfect level adverbial.

The answer to the second question is less obvious. I will offer three types of possible explanations, but without decisively choosing one of them. The first one relates the viewpoint aspect directly to the properties of the event. Imperfective provides the feature specification [UNBOUNDED]. This specification is required for the universal perfect interpretation, where both boundaries of the PTS should be included in the event interval (Iatridou, Anagnostopoulou & Izvorski 2001). According to Pancheva 2003, 282,(7b.ii), [UNBOUNDED] does just that:

$$(12) \quad \llbracket \text{UNBOUNDED} \rrbracket = \lambda P \lambda i \exists e [i \subseteq \tau(e) \& P(e)]$$

Semantics in (12) says that reference time is a subset of the event time. The main problem with this answer is that a universalist approach cannot account for both Russian and Greek. It has been noted that Greek does not have U-Perfect, which is dependent on the availability of imperfective perfect participle (Iatridou, Anagnostopoulou & Izvorski 2001: 169–171). However, Iatridou 2014 takes U-Perfect to be “a semantic label for universal quantification over subintervals of a time span, and not as the name of a syntactic construction” and claims that U-Perfect in Greek is expressed by imperfective verb forms. In the *na*-construction, on the contrary, only perfective forms of the verbs are used (Iatridou ms.). Another possible answer, namely, that the imperfective in Russian is required to allow for *repeatability* of the event (see next section)

is weakened by the same fact. Apparently, the viewpoint aspect is not a universally relevant property of such constructions and one might as well seek language-specific solutions.

Yet another type of explanation refers to Russian adverbs. The adverbs used in the Russian construction are always durative, and durative adverbs cannot combine with perfective. Since the adverbs are obligatorily present in this construction (and in general in Russian U-Perfect), they restrict the possible aspect of the verb.

The last type of explanation is in terms of strengthening of an imperfective statement under negation (Levinson 2005 as discussed in Partee 2008, Partee & Borschev 2009): imperfective under negation entails that perfective does not hold (and the entailment is reversed in affirmative). Since achievements, for the lack of the activity phase, don't show the entailment, but still must be imperfective, such an analysis might have to suppose that the strengthening has grammaticalised to a restriction of selectional kind. At the same time, achievements may be rescued by appealing to the fact that in imperfective they exhibit 'diminished referentiality':

- (13) a. Ja ne naxodil kliuchi.
I.NOM not find.IPFV.PST.M keys
'I did not find any keys.'
- b. Ja ne nashiol kliuchi.
I.NOM not find.PFV.PST.M keys
'I did not find the keys [I was looking for].'

The utterance (13a) does not give rise to the inference that there was an event of searching for some keys, which could lead to finding them. The utterance (13b) does. Given that the event in the Russian EQ construction is non-specific, it might require the imperfective form. So far it is difficult to find where the outlined analyses could give divergent predictions. Moreover, they are not mutually exclusive and may collaborate.

8.2.2 *An indefinite event description*

Recall that Iatridou 2014 argues for free choice semantics of the Greek construction. For the Russian construction I will use a narrow scope indefinite.

One of the crucial properties of the *na*-construction is that the event should be in principle repeatable. It carries some sort of an *non-uniqueness*

conversational implicature. The same is true for Russian. An utterance like (14) gives a feeling that applying to universities is Ilya's habit, perhaps because he is unfortunate but keeps trying (or used to, for that matter).

- (14) Ilya chetyre goda ne postupal v universitet.
 Ilya four year.CNT not apply.SG.M.PST in university
 'Ilya hasn't applied to university in four years.'

Uniqueness modifiers are out, but they are predictably good in the analogue of the *since*-construction:

- (15) a. Kirill dva goda ne ezdil na NYI (# vpervye).
 Kirill two year.CNT not go.SG.M.PST on NYI for.the.first.time
 'Kirill hasn't been to NYI for two years (#for the first time).'
- b. Uzhe dva goda s tex por kak Kirill ezdil na NYI
 already two year.CNT since Kirill go.SG.M.PST on NYI
 vpervye.
 for.the.first.time
 'It's been two years since Kirill went to NYI for the first time.'

This requirement of possible plurality of events suggests that this event description behaves like an indefinite: established uniqueness of the referent requires definite descriptions, and (possible) plurality is associated with indefinites (Hawkins 1991, Heim 1991). Russian EQ construction can be given a compositional analysis as a narrow scope (non-specific) indefinite, not a free choice universal à la Greek. The narrow scope claim is confirmed by a number of facts. First, the construction cannot refer to a specific event: (4), repeated here as (16), is not about any one of the earthquakes I might have seen (i.e., it is infelicitous if I also saw one two years ago):

- (16) Ja ne videl zemletriasenija tri goda.
 I.NOM not see.3SG.PST earthquake.GEN three year.CNT
 'I haven't seen an earthquake in/for three years.'

Therefore, it does not provide an antecedent for subsequent anaphora, although as the indexing in (17) shows, pronominal reference to events is possible in Russian:

- (17) [Ja ne [videl zemletriasenija]_k tri goda]_i, i
 I.NOM not see.3SG.PST earthquake.GEN three year.CNT and
 ty eto_{i/k} znaesh'.
 you.NOM.SG this know.2SG.PRS
 'I haven't [seen an earthquake]_k in/for three years]_i, and you know it_{i/k}.' [i.e.,
that I haven't seen them for three years, not that I have seen them before]

Third, modals also scope over the indefinite:⁴

- (18) Sasha ne dolzhna byla videt' Mashu (uzhe) dve nedeli.
 S. not must.F be.PST.F.SG see.INF M. (already) two week.CNT
 'It must be that Sasha hasn't seen Masha for two weeks already.'
 $\square > \neg > \exists$ but not $*\neg > \exists > \square$

The semantics that I propose for the discussed sentences is given below in (19e), derived compositionally from its components:

- (19) a. event/VP: P(e)
 b. imperfective aspect, providing UNBOUNDED as in (12)
 c. time adverbials measure the PTS: $\llbracket 3 \text{ goda} \rrbracket = \lambda p \lambda i [\text{length}(i) = 3 \text{yr} \wedge p(i)]^5$
 d. Perfect (Pancheva 2003: 284): $\lambda p \lambda i \exists i' [\text{PTS}(i', i) \wedge p(i')]$
 PTS(*i'*, *i*) iff *i* is a final subinterval of *i'*
 e. $\neg \exists i (i \subseteq \text{PTS} \wedge \exists e (i \subseteq \tau(e) \wedge P(e)))$

The semantics is fully compositional, as the reader is welcome to verify for herself. But this semantics does not explain where the existential presupposition comes from. That is the subject of the next section.

8.2.3 Locative and existential constructions with events

In a discussion of Russian Genitive of Negation (GenNeg) Partee & Borschev 2002 introduce a notion of *Perspectival Centre* that allows to capture the distinc-

⁴ First, even though our object may appear as a negative quantifier, I don't think that it's a negative indefinite and don't consider split scope readings (e.g., Zeijlstra 2011) here. Empirically, in (18) intermediate scope reading of the modal doesn't seem possible. Second, the modal can be read either epistemically (in the presence of *uzhe*) or deontically (without *uzhe*). This does not affect its scopal properties.

⁵ Under the semantics assumed here, adverbs must combine with the viewpoint aspect before the perfect, which suggests that they might adjoin to Asp₁. I'm remaining agnostic about their exact syntax.

tion between two types of sentences expressing spatio-existential situations, i.e., the kind that the authors represent as “BE (THING, LOC)”. One type is the *existential* sentences (20a), and the other “doesn’t have a name except when put in contrast with the other kind”, and will be dubbed “declarative” (20b), following P&B’s use of Babby’s (1980) terminology.

- (20) a. There’s a unicorn in the garden.
 b. The unicorn is in the garden.

The difference, according to the Perspectival Centre Hypothesis, is in which of the two participants (an individual or a location) is chosen as “the point of departure for structuring the situation”, i.e., as the Perspectival Centre. The PC is presupposed to exist, which is evident in the fact that existential sentences presuppose the existence of the LOCATION, while declarative sentences presuppose the existence of the THING (regardless of the referential status of the NP).

I think there is a clear parallel between speaking about things in certain places and speaking about events in certain time intervals. For instance, Russian EQ construction instantiates a temporal analogue of declarative sentences. The asymmetry of the event and the PTS is evident in the fact that the time interval adverbial cannot be topicalised:⁶

- (21) ??Čto kasaetsia poslednix dvux mesiacev, ja (ix)
 what concerns last.GEN.PL two.GEN.PL month.GEN.PL I.NOM they.ACC.PL
 ne xodil na katok.
 not go.M.SG.PST on icerink
 intended: ‘The last time I went to icerink was two months ago.’

Now we can say that the existential presupposition in Russian EQ construction arises due to the event being the Perspectival Centre of the sentence. Thus, the event is presupposed to exist in principle, but asserted to not occur in the PTS of a specified length.⁷ Existential sentences exist in the temporal domain, too. For instance, the negated perfect in English seems to structure the situation from the perspective of the time interval, and thus allows its topicalisation:

6 There is a certain relation between topics and PC. B&P use the PC to substitute for the Theme-Rheme account of GenNeg.

7 It may be further conjectured that then the temporal measure is indispensable on pain of contradiction, as the default left boundary of an existential perfect is the beginning of life.

(22) As for the last five years, he hasn't had a seizure.

Where is the 'existential'/'locative' predicate of temporal declarative sentences? Given the structure BE(EVENT, TIME), we might expect to find it above the projection that encodes the event and below the projections related to the PTS. It turns out that this position is exactly the viewpoint aspect projection, AspP₂ in (11). It relates the vP to the time interval created by the perfect and measured by the adverbial. My claim is that viewpoint aspect universally may have the force to introduce a Perspectival Centre, thus giving rise to presuppositions in a manner analogous to spatial existential and declarative sentences. Whether this force is optional or not is left for another occasion.

8.3 Conclusion

This paper discussed the variability of quantification over events, drawing on Greek and English data from Iatridou 2014 and novel data from Russian. We saw verbal constructions with semantics of free choice quantification, definite and narrow scope indefinite determiners. I also made a case for another parallel between the verbal and nominal domains, which concerns sentences expressing (non-)existence of certain things in certain places and certain events in certain time intervals. Finally, I suggested that the viewpoint aspect is involved in the operation of Partee & Borschev's (2002) Perspectival Centre in the domain of events – just as its name indicates.

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Quantifiers in RSL: distributivity and compositionality

Vadim Kimmelman

9.1 Introduction

9.1.1 *Quantification and sign languages*

In her 1995 article, Partee discussed various questions concerning the nature of quantifiers based on cross-linguistic data. An important part of the argument is based on the analysis of data from American Sign Language (ASL).

In particular, Partee (1995) discussed the distinction between D-quantifiers (quantifiers which are typically determiners and which quantify over entities) and A-quantifiers, which are not determiners, and which in general constitute a more heterogeneous class. Thus, adverbs are A-quantifiers, and they quantify over events, and also unselectively bind variables in their scope. However, ASL (as well as some spoken languages) has another means of expressing quantification, which can also be called A-quantifiers, but which has different properties.

In particular, verb inflection in ASL can express quantification, but only over certain arguments of the verb, not over event and all argument variables in the clause. Partee called this type of quantifiers Argument Structure Adjusters. They are different from D-quantifiers because they are not determiners, but they are also different from quantifiers like *always* because they are not unselective binders, and they quantify only over particular arguments of the verb. Partee further referred to A-quantifiers as non-NP means of expressing

quantification. One might argue that Argument Structure Adjusters are a middle case between clear D-quantifiers like *every* and clear adverbial quantifiers like *always*, because they share some properties with both classes. Thus two follow-up questions can be asked: (1) Do non-NP quantifiers constitute one class of markers? (2) Is there a clear boundary between NP and non-NP quantifiers? In this paper I will try to show that sign language data can be relevant for answering these questions, especially the latter.

Another case where Partee (1995) used ASL is the question of compositionality of quantificational structure. Semantically, quantification involves three parts: the operator, the restrictor, and the nuclear scope. However, there is cross-linguistic and language-internal variation in compositionality, in other words, in the question whether these three entities are also syntactically distinguished. ASL is an interesting language in this respect because it uses the topic-comment structure as the basis for the quantification structure: the marked topic constitutes the restrictor, the quantifier is a separate sign not included in the topic, and the nuclear scope (the comment) is prosodically separated as well. Quer (2012) also argued that sign languages (in particular ASL and Catalan Sign Language) have the tendency to overtly express the tri-partite semantic structure of quantification. But how universal is this tendency?

In this paper I discuss these issues from Partee 1995 based on the data from yet another sign language, namely Russian Sign Language (RSL). I will show that RSL distributivity marking is interesting for the discussion of the status of D-quantifiers vs. A-quantifiers (section 9.2), and I will discuss how RSL realizes the tri-partite semantic structure of quantification (section 9.3).

9.1.2 *Russian Sign Language*

RSL is a natural language used by deaf and hard-of-hearing people in Russia and some other former Soviet countries. In Russia, it is used by at least 120,000 people, according to the census organized in 2010. It emerged in the beginning of the 19th century, when the first school for the deaf children was founded.

One important property that RSL shares with many other sign languages, including ASL, is using space to localize referents, to refer back to them through pointing sign (pronouns) and for verbal agreement. For first and second person, the pointing to the signer (INDEX₁) and the addressee (INDEX₂) are used, as in (1); other referents are assigned arbitrary locations in the signing space, which

we will gloss as *a*, *b* etc., as in (2).

- (1) INDEX₁ INDEX₂ SEE₂ SELDOM [RSL]
 ‘I seldom see you.’
- (2) INDEX_a INDEX_b SEE_b [RSL]
 ‘He sees him.’
- (3) INDEX₁ INDEX_b LOVE [RSL]
 ‘I love him.’

Examples (1) and (2) also demonstrate that verbs can agree with these locations, which phonologically means that the verbal sign either moves from the location of the subject to the location of the object, or it is oriented towards the object. However, not all verbs are agreeing: plain verbs, such as the RSL sign LOVE, do not change the form depending on the locations associated with their arguments (3).

The RSL data discussed in this paper comes from elicitation sessions conducted for a project on quantification in RSL (see Kimmelman to appear, also for further details of the methodology). Four signers (working in pairs) have been consulted, mainly with the help of a written questionnaire.

9.2 Distributivity marking in RSL

Partee (1995), based on Petronio’s (1995) data, discussed verbal quantification in ASL. In this language some verbs can be modified to express aspect (iterative, durative, etc.), but also to quantify over arguments. The following example is adapted¹ from Partee (1995: 548). In this example distributive quantification over women is expressed through the spatial modification of the verb GIVE (figures illustrating this type of modification in RSL are provided below).

- (4) $\overline{\text{WOMAN}}^{\text{top}} \text{BOOK}_1 \text{GIVE}_{\text{DISTR}}$ [ASL]
 ‘I gave each woman a book.’

This type of quantification is interesting because it does not strictly speaking fall under D- or A-quantification. It is definitely not D-quantification, because there is no adnominal quantifier present; instead, the verb is marked. On the other hand, adverbial A-quantifiers (*always*, *often*) typically quantify

¹ All examples are adapted to conform to a notation more commonly used nowadays (Pfau, Markus Steinbach & Woll 2012).



Figure 9.1: Stills for example (5). Movement from the signer towards several (four) locations.

over events, not arguments. Partee (1995) uses the term Argument-Structure Adjusters to refer to this type of quantifiers.

Similar marking clearly also exists in RSL. The verbal sign moves towards the locations of the objects distributed over (*the distributive key*). Interestingly, distributive agreement can apply both to objects and subjects: see (5) and figure 9.1, and (6) and figure 9.2. In addition, similar to other sign languages, RSL also has the form of non-distributive plural agreement, when the hand follows an arc shape to denote a plurality of objects.

(5) ${}_1\text{GIVE-PRESENT}_{\text{DISTR}}$ [RSL]
 'I gave everyone a present.'

(6) $_{\text{DISTR}}\text{GIVE-PRESENT}_1$ [RSL]
 'Everyone gave me a present.'

Partee (1995: 564) claimed that distributive marking on the verb “indicat[es] both distributive key and distributed share”. However, note that in RSL² the distributive morphology itself indicates the distributive key only: in (5), it is the people who I gave presents to, as these people are associated with the spatial location with which the verb agrees. The distributed share (the present) is in principle also marked morphologically by the handshape of the verb, but it is not marked in any specifically distributed way: the same handshape

² The same is probably true for ASL as well.



Figure 9.2: Stills for example (6). Movement from several (four) locations towards the signer.

would be used in the non-distributive form of the verb GIVE-PRESENT, as in (7).

- (7) $_1$ GIVE-PRESENT $_2$ [RSL]
 'I gave you a present.'

However, distributed share can be marked in RSL as well, and the marking is again the same spatial strategy, but this time the noun is modified. Example (8) shows that the sign ONE-DISTR is repeated in several locations thereby producing the distributive interpretation 'one each'. However, it is not correct to say that RSL has a special morphological class of distributive numerals similar to some spoken languages (Balusu 2006), as nouns can be forced distributive interpretation through the same spatial strategy: see (9) and figure 9.3.

- (8) MAN BUY BEER ONE_{DISTR} [RSL]
 'Every man bought a beer.'

- (9) FLOWER_{DISTR} [RSL]
 'a flower each'

Finally, distributive quantification can also be expressed by a D-quantifier EVERY (10), which accompanies the distributive key NP. Note that in this example the quantifier is combined with distributive marking on the verb, but this is not always the case.



Figure 9.3: Stills for example (9). Sign FLOWER-DISTR.



Figure 9.4: EVERY_{DISTR}. The sign EVERY is repeated in several locations.

- (10) $\frac{\text{EVERY BOY INDEX}_{\text{PL}}^{\text{top}}}{\text{DISTR}} \text{GIVE-PRESENT}_1$ [RSL]
 ‘Every boy gave me a present.’

Interestingly, the sign EVERY can also be realized in several spatial locations, which we gloss as EVERY_{DISTR} (figure 9.4), but there seems to be no additional meaning associated with this inflection.

The facts discussed above seem to show that distribution in general can be expressed by spatial distribution in RSL. However, different constituents make use of this spatial strategy. First, the verb can agree with distributed spatial locations to express distributive key. Second, the nouns expressing distributive

share can be localized in the same manner. Finally, the distributive D-quantifier EVERY itself can be localized as well. This means that spatial distribution in RSL can be analysed as a general marker of distributivity (see also Quer 2012 for a similar claim for Catalan Sign Language).

Is distributive marking in RSL and other sign languages different from distributive markers in spoken languages? In fact, several parallels can be found between distributivity in RSL and distributivity in some spoken languages. One parallel is that in some spoken languages reduplication of the numeral is used to express distributive share. For instance, in Hungarian reduplication of the numeral *két* ‘two’ is used in this way (Szabolcsi 2010: 138).

- (11) A gyerekek két-két majmot láttak. [Hungarian]
 the children two-two monkey.ACC saw.3PL
 ‘The children saw two monkeys each.’

However, this parallel is superficial, because it is not the reduplication which creates distributive reading in RSL and other sign languages, but the distributive localization. Simple reduplication without localization is used to express verbal and nominal plurality in general, including both collective and distributive readings.

Another problem with this parallel is that reduplication for distributive readings seems to be used to mark distributed share only in spoken languages. For instance, Balusu (2006) analyzed numeral reduplication in Telugu, and showed that it is used to mark distributed share only. In this language, according to Balusu, the distribution can be over spatial or temporal subevents, not only over participants. In (12) both the subject and the object are marked with numeral reduplication, so they are both distributed shares, while the distributive key is either temporal or spatial. The sentence can mean that two kids in each time interval saw four monkeys in each time interval, or two kids in each time interval saw four monkeys in each location, but neither the set of monkeys nor the set of children has to be exhaustively used up (so there is not reading like ‘two kids saw four monkeys each’).

- (12) iddaru iddaru pilla-lu naalugu naalugu kootu-lu-ni cuuseeru [Telugu]
 two two kid-PL four four monkey-PL-ACC saw
 ‘Two kids saw four monkeys.’

In RSL, in contrast, the same strategy is used for both the distributive key and the distributed share. Distributive localization can attach either to the verb, or

to the noun phrase, thus marking the distributive key in the former case and the distributed share in the latter.

It seems that English *each* provides a better parallel to the spatial strategy of marking distributivity in RSL. *Each* can be used as the distributive key marker (*Each boy was happy*), or it can attach to the distributed share (*The boys have eaten one apple each*). The obvious difference between *each* and the distributive markers in RSL is the morphological status. The question that arises (for both *each* and RSL localization) is whether a unified analysis is possible for both distributive key and distributed share markers.

Zimmermann (2002) proposed an analysis for the binominal *each* as a regular quantifier. Informally, he suggested that the binominal *each* is a quantifier head that has an NP complement with a proform co-indexed with the distributive key. Thus, both in *each boy has eaten one apple* and *the boys have eaten one apple each*, *each* combines with the NP denoting *boys*. Intuitively this analysis is not very attractive for the RSL distributive marker, because the RSL marker combines both with verbs and with nouns, so it can hardly be a head of a quantifier phrase.

Beghelli & Stowell (1997) and Szabolcsi (1997b), based on the analysis of *every* and *each* in English, argue that distributivity is not expressed by these D-quantifiers. Instead it is expressed by a syntactic functional head *Dist*, while *every* and *each* are agreement markers, having the feature [dist], but not marking distributivity per se. This type of analysis can be applied to RSL data: the functional head *Dist* in RSL would then be not empty, but it would actually contain the spatial distributive morpheme. This morpheme can then be fused or agree with the verb, or with the distributed share NP, or even with the quantifier *EVERY*. The exact details of such a syntactic analysis need to be worked out, but it has an advantage of separating the distributivity from a particular host.

To return to the questions discussed in Partee 1995, the distributive localization in RSL seems not to be a D-quantifier, or an A-quantifier, nor is it specifically an argument-structure adjuster. It is a very general marker of distributivity with broad applicability. This marker can better be analyzed in the spirit of modern analyses of quantification where the quantification is often not expressed by the (lexical) quantifiers themselves (Szabolcsi 2010). This also means that the boundary between NP and non-NP quantification is not always rigid.

9.3 Compositionality in RSL

Partee (1995) used ASL to illustrate how a language can use the topic-comment structure to overtly express the tri-partite semantic structure of quantification. In (13) (adapted from Partee 1995: 551), the restrictor *STUDENT GROUP* is topicalized and also non-manually marked; it is followed by the operator – the quantifier *ALL*, and then comes the nuclear scope, which is separated from the quantifier by a prosodic break. Partee suggested that this type of overt marking is to be expected due to the functions of topic and focus. Quer (2012) claimed that the same tendency of separating the quantifier from the NP and placing the restrictor NP into a left-preipheral position also existed in Catalan Sign Language.

- (13) $\frac{\text{top}}{\text{STUDENT GROUP ALL, INDEX}_1 \text{ LIKE}}$ [ASL]
 ‘I like all (of the) students.’

At first sight, RSL often uses the same strategy. Consider example (14): the restrictor NP *BOY* is topicalized and marked non-manually, and the quantifier does not form a constituent with this NP. This is even more obvious in (15), where the quantifier is not even adjacent to the NP. Note however, that in both examples the quantifier is not separated from the nuclear scope by a prosodic break. Quer (2012) also does not report any special prosodic marking separating the quantifier in Catalan Sign Language. This fact itself should not be considered surprising: since the sentences contain a lexical quantifier, any overt syntactic marking of the quantifier seems redundant, because it is easily identifiable.

- (14) $\frac{\text{top}}{\text{BOY ALL LATE}}$ [RSL]
 ‘All boys were late.’
- (15) $\frac{\text{top}}{\text{BOY LATE ALL}}$ [RSL]
- (16) $\frac{\text{top}}{\text{BOY LATE ALL}}$ [RSL]
- (17) ALL BOY LATE [RSL]

However, RSL data is more complicated. Sometimes the nuclear scope and the restrictor are topicalized together (16), and sometimes the quantifier is pre-nominal and no topicalization occurs (17); thus the tri-partite structure is

not always overtly marked. Of course, one could not expect that a language would obligatorily mark the quantifier structure, as Partee (1995) also discussed for ASL.

More importantly, it seems that the construction with a topicalized restrictor is semantically different from the construction with a pre-nominal quantifier, and the latter seems to be basic. There are a number of facts that can demonstrate it.

Firstly, partitives are expressed by the post-nominal placement of quantifiers: in (18) the NP GIRL INDEX PLURALITY ‘the girls’ are topicalized.

- (18) $\overline{\text{GIRL INDEX PLURALITY}}^{\text{top}} \text{ HALF BEAUTIFUL}$ [RSL]
 ‘Half of the girls are beautiful.’

In addition, some asymmetry between post- and pre-nominal quantifiers emerges when we look at the number on the noun. Number is not marked obligatorily on nouns in RSL, so the sign APPLE can be interpreted either as ‘apple’ or as ‘apples’. The exception is some body-anchored signs such as RIB which have to be marked with repetitions to express plural. Some quantifiers can only combine with (semantically) plural nouns. One such quantifier is SOME, so it cannot be combined with a singular form of the sign RIB (19). However, if the restrictor is topicalized, this constraint can be violated (20).

If the noun is marked with plural, it can only be interpreted as plural, so some restrictions also apply. In particular, the numeral ONE cannot combine with the plural noun CHILDREN³ (21). Nevertheless, with the topicalization of the restrictor this numeral can be used, yielding the partitive interpretation (22). Finally, there are mass nouns in RSL, such as WATER. Such nouns can be combined with numerals, but the topicalization is preferred (23)⁴.

- (19) *SOME RIB [RSL]

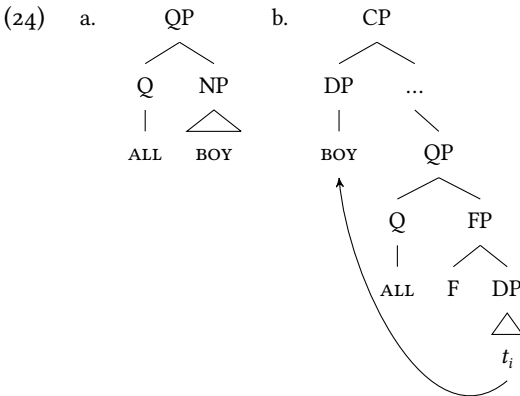
- (20) $\overline{\text{RIB}}^{\text{top}} \text{ SOME}$ [RSL]
 ‘some ribs’

3 We gloss this sign as CHILDREN because it is not morphologically related to the singular noun CHILD.

4 Note that the noun is not marked non-manually in this example. In general, in some of my data nouns that are in the sentence-initial position and followed by a quantifier are not marked non-manually. Further research is needed to find out the exact conditions on the use of the non-manual marking.

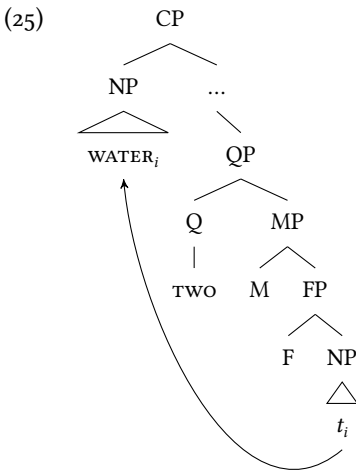
- (21) *ONE CHILDREN [RSL]
- (22) $\overline{\text{CHILDREN}}^{\text{top}}$ ONE SICK [RSL]
 ‘One of the children is sick.’
- (23) WATER TWO [RSL]
 ‘two glasses/bottles of water’

The facts above suggest that the structure where the restrictor is topicalized is not basic, but a more complex one derived from the structure with a prenominal determiner. In particular, for the prenominal determiner the structure in (24a) can be proposed, while for the topicalization construction the structure in (24b). Examples like (18) would be explained by the fact that pre-nominal quantifiers can only combine with NPs, not DPs. If a DP has to be quantified over, a partitive construction (with a silent partitive marker) is employed, but it is also accompanied with topicalization of the DP. Semantically the F head would be responsible for shifting the type of the DP to a type that can be compositionally combined with the quantifier.



In a similar way, the numeral ONE can only combine with a singular NP, and the quantifier SOME only with a plural NP; however, they can also participate in partitive constructions (‘one of the children’) followed by a topicalization of the DP. Again, the functional head F would be responsible for shifting the type of the NP to match the semantic requirements of the quantifier.

Similarly, in (23) the mass noun WATER cannot directly combine with a numeral quantifier, but it can combine with it through a (pseudo-)partitive construction as in ‘two [glasses of] water’. In this case an additional layer of Measure Phrase is necessary, as in (25) (Stickney 2007). Another difference would be that WATER is not a DP but an NP in this case, so TWO cannot directly combine with it not because of its syntactic category, but because numerals only combines with count nouns.



Further evidence for this structure of topicalized restrictors comes from numeral incorporation. In RSL, some signs can incorporate numerals (for more detail see Kimmelman to appear). One of such signs means PIECE (in Russian *штука*), and it is used as a numeral classifier⁵ (TWO+PIECE, THREE+PIECE). Interestingly, it can only be used in the construction with topicalization of the restrictor as well. It is possible to account for that if one can claim that PIECE is the Measure Phrase head in the structure in (25). When the quantifier TWO is combined with an MP [piece apple] headed by PIECE, the numeral and the classifier fuse, while the DP obligatorily undergoes topicalization (28). Note

⁵ It is indeed a numeral classifier and not a measure noun because it does not have a lexical meaning like ‘glass’ or ‘bottle’, but instead just means ‘a unit of N’.

that we have independent evidence that the sign *PIECE* occurs in the same position as measure nouns: as (29) shows, it is ungrammatical to use a measure noun *GLASS* in combination with the sign *TWO+PIECE*.

- (26) $\frac{\text{top}}{\text{APPLE TWO+PIECE}}$ [RSL]
 ‘two apples’
- (27) * *TWO+PIECE APPLE* [RSL]
- (28) [*APPLE_i*]_{NP} ... [*TWO+PIECE_j*] [*t_j* [*∅_{of}* [*t_i*]_{NP}]_{FP}]_{MP}]_{QP}
- (29) * *FLOUR GLASS TWO+PIECE* [RSL]
- (30) ^{OK} *FLOUR TWO GLASS* [RSL]
 ‘two glasses of flour’

Further details of the syntactic analysis have to be worked out; for instance, it should be explained why the DPs in the partitive and pseudo-partitive constructions undergo topicalization. However, it is clear that the topicalization of the restrictor in RSL has a complex structure, and, more importantly for the questions raised in Partee 1995, this position comes with a particular semantics, which can be characterized as partitive. Thus the generalization can be that the topic-comment structure in RSL is not used to overtly express the tri-partite quantifier structure per se, but rather some special cases when the restrictor is definite or otherwise semantically not directly compatible with the quantifier (i.e. in the case of number mismatch).

9.4 Conclusions

Partee (1995) showed among other things the importance of using sign language data (in that case, from ASL) within the typological approach to theoretical linguistics, in particular, to the study of quantification. In this paper I used the data from a different sign language, RSL, in order to further discuss Partee’s findings.

I have found that RSL also uses spatial distributive modification of verbal signs to express distributive quantification over an argument of such a verb. However, the same spatial modification can apply to nominal signs. In the former case the distributive key is marked, while in the latter it is the distributed share that is marked. Thus this strategy is similar to the English *each*

which can mark both as well; however, the RSL distributive marker is interesting as it can attach morphologically both to verbs and to nouns. The RSL facts show thus that the boundary between D-quantifiers and A-quantifiers may not be rigid. Furthermore, RSL data can be used as an argument in favor of analyzing distributive quantification as a clause-level phenomenon separate from lexical D-quantifiers, which has been also suggested for spoken languages (Szabolcsi 2010).

I have also discussed the question of overt expression of the tri-partite semantic structure of quantification, which according to Partee (1995) can manifest itself in the topic-comment structure. I found that RSL also uses the topic-comment structure in quantificational contexts; however, this structure is marked syntactically and it is semantically different from the unmarked pre-nominal use of quantifiers. I would therefore not classify RSL as a language that overtly marks the tri-partite quantificational structure, at least not in the simplest case. It would be interesting to know if ASL in fact has similar syntactic and semantic arguments in favor of the derived status of the topic-comment structure used in quantificational contexts.

Genitive of cause and cause of genitive

Julia Kuznetsova and Ekaterina Rakhilina

10.1 Introduction

This paper builds on the interpretation of the Russian genitive offered in the series of works by Barbara Partee and Vladimir Borschev (Partee & Borschev 1998, 2000a, 2003) and applies this analysis to the genitive construction of ‘cause’ that had previously received little attention in the literature. This construction can be exemplified by (1).¹

- (1) — *Nu, značit, esli ogromnoe krovoizlijanie v mozg — **pričina smerti**, a **pričina ogromnogo krovoizlijanja** v mozg — udar po golove, značit, tvoja babuška umerla ot udara po golove!*

‘Well, if the large hemorrhage stroke is the cause of death and the cause of the large hemorrhage stroke is the blow to the head, this means that your grandmother died from the blow to the head!’ [Tat’jana Solomatina. Bol’šaja sobaka, ili «Èklektičnaja živopisnaja vavilonskaja povest’ o zarytom» (2009)]

The meaning of the Russian genitive is the most varied among all Russian cases. Janda & Clansy (2002: 111) call genitive “the most complex case in Russian” because it is the most frequently used of Russian cases with various submeanings, which sometimes seem almost to contradict each other (cf. genitive of the Source *iz školy* ‘from school-GEN’ and genitive of the Goal *do tramvaja* ‘to the tram-GEN’), and it can be combined with over 100 prepositions.

¹ This article is an output of a research project implemented as part of the Basic Research Program at the National Research University Higher School of Economics (HSE).

The project entitled “Integration of lexical and compositional semantics: Genitives in English and Russian” (with Barbara Partee as the principal investigator) was especially intended for studying the Russian genitive in different constructions: subject genitive (Partee et al. 2012), object genitive (Partee & Borschev forthcoming, Rakhilina 2008), genitive of the container (Partee & Borschev 2012). Partee & Borschev (1998, 2000a, 2003) offer a unified description for the constructions with common nouns, such as *koška Niny* ‘Nina’s cat’, and relational nouns, such as like *učitel’ Niny* ‘Nina’s teacher’. They develop an idea first offered by Vikner & Jensen (1994) for genitive constructions in Danish and then explored in a later article by the same authors for English (Jensen & Vikner 2002). Jensen and Vikner analyze all genitives as argument constructions. Genitive assigns additional *qualia structure* (in terms of Pustejovsky 1993, 1995) and, as a result, non-relational nouns, such as *koška* ‘cat’, can be interpreted as argument nouns, which allows them to be used in a genitive construction. Partee & Borschev (2003) argue that this analysis cannot be applied to all genitives in all languages; for example, they propose non-unified analysis for English genitive constructions. However, uniform analysis is possible for the Russian genitive and “Russian genitive NPs are always arguments” (ibid.: 82).

This idea is pursued further in Rakhilina 2004, 2010, where it is proposed that Russian genitive construction can be used only if the relationship between two objects can be described as *stable*. The semantic component of stability, for example, allows us to explain the restrictions on the genitive of *nomina agentis*: **vor staruški* ‘the thief of the old lady’ is ungrammatical, because there is no stable relationship between the thief and the old lady – thieves normally steal from different people. Similarly, the genitive of time can be used only when there is a stable relationship between an object and a noun that refers to a time period. For example, *pesnja goda* ‘the song of the year’ is possible because the song is related to this particular year, because it is a song that has appeared and received an award during that year. By contrast, **odežda oseni* ‘fall clothing’ (literally, ‘clothing of the fall’) is not possible, because there is no relationship between clothes and a particular fall season. The lexically similar noun phrase, *osennjaa odežda* ‘fall clothing’, however, describes clothes that could be worn during any fall season. The Russian genitive of location follows the same restriction. The example, **ptica lesa* ‘the bird of the forest’, is not grammatical, because there is no stable relationship between the bird and the forest that the bird inhabits. However, the example, *pticy lesov* ‘forest birds’

(literally, ‘birds of the forest’), is grammatical, because birds that live in the forest have unique features that distinguish them from tundra birds, desert birds, etc. Other genitive constructions, e.g., genitive of the part, genitive of the container, etc., also follow the same restriction.

In this article, we investigate the Russian genitive of cause that has not received special attention in the literature thus far, and argue that the genitive of cause follows the patterns that have been established for the Russian genitive case in general. We suggest that the genitive of cause can be used only when a cause and its effect are strongly related, such that they form a stable, argument-like relationship; otherwise, the genitive construction cannot be used.

10.2 Semantics of the causal relationship

Let us first consider the semantics of the causal relationship. Event P can be called the cause of event Q , if event P is responsible for event Q : $P \Rightarrow Q$. In Russian, a causal relationship usually is marked with the conjunctions *potomu* ‘because’ and *potomu čo* ‘because’, and the question word *počemu* ‘why’.

- (2) *Kak-to raz ona zaplakala, **potomu čo** ejo unizili v domoupravlenii.*
‘Once she started crying, because she was humiliated at the house manager’s office.’ [Sergej Dovlatov. *Naši* (1983)]
- (3) *Na otcovskie den’gi mne bylo gluboko naplevat’, ja nikogda ne sčital ix svoimi i nikogda na nix ne rassčityval — i vovse ne **potomu**, čo ja takoj bessrebrenik.*
‘I did not care a damn about father’s money, I never had considered them mine, and never counted on them — and not because I am so completely unmercenary.’ [Vera Belousova. *Vtoroj vystrel* (2000)]
- (4) ***Počemu** ty думаеš’, čo ёто sdelali imenno oni?*
‘Why do you think that it is them who did this?’ [Anatolij Rybakov. *Bronzovaja ptica* (1955–1956)]

The conjunctions *potomu* and *potomu čo* are used in order to connect two events: the causal event P and the effect Q . For example, in sentence (2), the event P “the wife was humiliated at the house manager’s office” caused the event Q , “the wife started crying.” The question word *počemu* is used when the speaker is interested in the cause of the event in question: he or she asks what event P is responsible for the observed event Q .

The logical relationship $P \Rightarrow Q$ seems simple and can relate all types of events. However, if we turn to nominal causal constructions, we see that they have strong restrictions on the types of events that can be described via nominal causative constructions. For example, nominal examples parallel to (2) through (4) are ungrammatical: **pričina plača* ‘cause of weeping’, **pričina bezrazličija k den’gam* ‘cause of indifference towards money’, **pričina mysli* ‘cause of the thought’. In this article, we investigate these restrictions and show that the compatibility of the word *pričina* ‘cause’ follows the general rules for genitive constructions in Russian and that only stable causal relationships can be described via the construction *pričina X-a* ‘cause of Xgen’.

10.3 Nominal causal constructions: cause of genitive

What nouns can be used in nominal causal constructions? Boguslavskaja (2003b,a) lists five nouns that can express causal meaning in Russian: *pričina* ‘cause’, *povod* ‘occasion’, *predlog* ‘pretense’, *osnovanie* ‘ground’, *rezon* ‘reason’. Among these five nouns, the noun *rezon* ‘reason’ is infrequent; it has only 6 items per million (ipm) in the main part of the Russian National Corpus (RNC),² compare this to the other causal nouns: *pričina* ‘cause’ – 240 ipm, *povod* ‘occasion’ – 141 ipm, *predlog* ‘pretense’ – 20 ipm, *osnovanie* ‘ground’ – 151 ipm. In addition, this word is becoming obsolete, with examples diachronically distributed as follows: 28 ipm in the 18th century, 9 ipm in the 19th century, 4 ipm in the 20th century, and 5 ipm in the 21st century. Due to its infrequent usage and soon-to-be obsolete status, the word *rezon* ‘reason’ is excluded from the list of causal nouns investigated in this article.

Let us consider the constructions in which the four remaining causal nouns are used. The main construction for the noun *pričina* ‘cause’ is genitive: *pričina smerti, avarii, provala* ‘cause of death, accident, failure’. Each of the remaining three nouns is associated with its own causal construction that involves a preposition. The noun *povod* ‘excuse’ is used in construction with the preposition *dlja* ‘for’: *povod dlja spora* ‘occasion for dispute’, *povod dlja bespokojstva* ‘issue for concern’, and *povod dlja pokupki* ‘purchase occasion’. (Note here that different submeanings of the Russian word *povod* correspond to the English words *occasion* and *issue*, showing that the English semantic

² The Russian National Corpus (RNC) can be found at www.ruscorpora.ru, the searches were performed in April 2015 when the main part of the RNC contained around 230 million words and around 86 thousand texts.

field of causal nouns is more detailed than in Russian.) The noun *predlog* ‘pretext’ combines with the construction *pod predlogom X-a* ‘under pretense of X’: *pod predlogom ustalosti, proverki, nezdorov’ja* ‘under pretense of being tired, inspection, indisposition’. The noun *osnovanie* ‘ground’ is frequently used in the construction *na osnovanii X-a* ‘based on X’: *na osnovanii zakona, analiza, dannyx* ‘based on the law, analysis, data’. It is also used in construction with the preposition *dlja*, similar to the causal noun *povod* ‘occasion’: *osnovanie dlja otkaza, razvoda, optimizma* ‘grounds for rejection, divorce, optimism’.

However, genitive construction is not available for the nouns *povod* ‘occasion’, *predlog* ‘pretense’, and *osnovanie* ‘ground’: **povod bespokojstva* ‘issue of concern’, **predlog nezdorov’ja* ‘pretense of indisposition’, **osnovanie razvoda* ‘grounds of divorce’. Why is the genitive construction that is possible for *pricina* ‘cause’ not possible for the other three causal nouns? In order to answer this question, we employ Construction Grammar theory as a theoretical foundation. (The current state of development of this theory is summarized in Hoffmann & Trousdale 2013.) According to Construction Grammar, a construction is the basic unit of language, has specific semantics and poses semantically motivated restrictions on its slots. Constructions that have a similar form produce a radial network with a common semantic component; Goldberg (2006: 166–182) describes such a network for constructions with Subject-Auxiliary Inversion. We propose that Russian genitive constructions also form a radial network with the common semantic component of an argument-like stable relationship between two objects. Only causal nouns that mark an argument-like stable relationship between the cause and its effect can be used in a genitive construction.

What makes the other causal nouns different from the noun *pricina* ‘cause’? Boguslavskaja (2003a: 282) points out that the noun *povod* ‘occasion’ indicates an event that is juxtaposed with the effect in time; that is, it can be imagined as a cause for the effect, but actually the effect is already present, and the occasion serves only as an *a posteriori* justification for the effect; see (5).

- (5) *Vse obratili vnimanie na to, kak ja deržu nosilki. Nado bylo najti povod dlja vesel’ja, i povod byl najden. Okazalos’, čto ja deržu nosilki kak Otjavlennyj Lentjaj.* ‘Everyone observes how I carry the stretcher. They needed a laugh-in and the occasion was found. It turned out that I carry the stretcher as a Notorious Sluggard.’ [Fazil’ Iskander. Načalo (1969)]

Boguslavskaja (ibid: 281) also shows that when the speaker uses the word *predlog* ‘pretense’, the speaker claims that event *P* is the cause of event *Q*, which is not true. *Predlog* ‘pretense’ is used when the speaker is trying to conceal his true intentions; see (6).

- (6) *Pri vsjakom udobnom slučae ja staralsja uiti so služby pod predlogom bolesti.*
‘On every convenient occasion I tried to leave the office under pretense of illness.’
[M. A. Bulgakov. *Teatral’nyj roman* (1936-1937)]

Osnovanie ‘ground’ points to legal or scientific grounds on which someone can perform an action. Thus, *osnovanie* ‘ground’ indicates an event *P* that is necessary, but not sufficient, to cause event *Q*. Even though such grounds allow a subject to perform an action, they do not cause the action; see (7) and (8).

- (7) *Jasno, čto nužno najti pokazatel’, kotoryj na osnovanii analiza otkrytyx ili očevidnyx dannyx pozvoljal by ocenivat’ xozjajstvennuju dejatel’nost’ ljubogo internet-magazina.*
‘It is clear that we need to find a measure that is based on open and trivial data, would allow us to estimate the effectiveness of business activities of the Internet store.’ [Vasilij Auzan, Daniil Afrin. *Kak ocenit’ uspešnost’ internet-magazina* (2001) // «Èkspert-Internet», 2001.03.12]
- (8) *Naxodki, izobretenija praktikujuščix psixologov poka čto ne priznajutsja v kačestve osnovanij dlja prisuždenija učjonyx stepenej.*
‘Discoveries, inventions of the therapy practitioners are not admitted as grounds for a degree certificate.’ [E. A. Klimov. *Psixologija v XXI veke* // «Voprosy psixologii», 2003]

Thus, we see that only *pričina* ‘cause’ indicates a true causal relationship between two events. The other three causal nouns describe relationships that are similar, for example, an occasion that could be seen as a cause, a pretense that could be used as a cause, and grounds that allow a situation. Thus, *pričina* ‘cause’ is the only noun that implies a stable relationship between cause and effect, and this is the reason why only *pričina* ‘cause’ can be used in a genitive construction that requires an argument-like stable relationship between two objects. In the next section, we explore what provides such a stable relationship between two situations.

10.4 Collostructional profiling: genitive of cause

In order to deduce the restrictions that a genitive casual construction poses on its elements, we employ collostructional profiling, developed in Kuznetsova 2013. Collostructional profiling characterizes a construction via a list of the most frequent fillers of the constructional slot. Table 10.1 below provides a list of the most frequent fillers of the genitive slot in the construction *pričina X-a* ‘cause of Xgen’. The data in this table are culled from the database of bigrams (sequences of two words) in the RNC, where the first word of the bigram is *pričina* ‘cause’ and the second word is a noun in the genitive case. The second column shows the number of documents that contain such a bigram. The first row of the table indicates that the bigrams *pričina smerti* ‘cause of death’, *pričina vzniknovenija* ‘cause of origin’, *pričina gibeli* ‘cause of accidental death’, *pričina bolezni* ‘cause of illness’, *pričina pojavlenija* ‘cause of appearance’, and *pričina otkaza* ‘cause of rejection’ appear in the corpus in more than 100 documents each.

fillers of the genitive slot	number of documents
<i>smert</i> ‘death’, <i>vozniknovenije</i> ‘origin’, <i>gibel</i> ‘accidental death’, <i>bolezn</i> ‘illness’, <i>pojavlenie</i> ‘appearance’, <i>otkaz</i> ‘rejection’	≥ 100
<i>avarija</i> ‘accident’, <i>neudača</i> ‘misfortune’, <i>katastrofa</i> ‘catastrophe’, <i>otsutstvie</i> ‘absence’	50 – 99
<i>vzryv</i> ‘explosion’, <i>proval</i> ‘failure’, <i>zabolevanie</i> ‘sickness’, <i>obrazovanie</i> ‘formation’, <i>uxod</i> ‘leaving’, <i>uspex</i> ‘success’, <i>nedostatok</i> ‘shortage’, <i>rost</i> ‘increase’, <i>arest</i> ‘arrest’, <i>zaderžka</i> ‘delay’, <i>vojna</i> ‘war’, <i>požar</i> ‘fire’, <i>krizis</i> ‘crisis’, <i>ubijstvo</i> ‘murder’, <i>samoubijstvo</i> ‘suicide’, <i>padenie</i> ‘fall’, <i>poraženie</i> ‘defeat’, <i>tragedija</i> ‘tragedy’	20 – 49

Table 10.1: Most frequent fillers of the genitive slot in the construction *pričina X-a* ‘cause of Xgen’

Fillers that are frequent in the construction *pričina X-a* ‘cause of Xgen’ can be classified according to three parameters: evaluation, control, and aspectual class. In terms of evaluation, fillers that appear frequently in the construction *pričina X-a* ‘cause of Xgen’ can be divided into several subclasses. The first subclass contains words that describe negative situations, such as *smert* ‘death’,

gibel 'accidental death', *bolezn* 'illness', *otkaz* 'rejection', *vzryv* 'explosion', *proval* 'failure'. The second subclass contains nouns that are neutral and indicate different phases of the situation; these nouns refer either to the beginning of the process (*vozniknovenije* 'origin', *pojavenie* 'appearance', *obrazovanie* 'formation') or its development (*rost* 'increase'). These neutral nouns most frequently combine with the nouns of the first group: *pričiny vozniknovenija požarov* 'causes of fire origin', *pričiny pojavlenija virusov* 'causes of virus emergence', *pričiny obrazovanija zadopžennostej* 'causes of debt creation', and *pričiny rosta ubytkov* 'causes of increase in damages'; see (9) and (10).

- (9) *Imenno vozgoranie tekstil'nyx materialov začastuju javljaetsja **pričinoj** vozniknovenija požarov.*
 'Combustion of textile material is frequently the cause of fire break-out.' [È. Kolumejceva, A. Moryganov. Novye ekologičeski bezopasnye zamedliteli gorenija i ix primenenie dlja tekstil'nyx materialov iz celljuloznyx, poliëfirnyx i smešannyx volokon // «Tekstil'», 2003]
- (10) *Kakovy osnovnye **pričiny** rosta deficita?*
 'What are the main causes of the deficit increase?' [Egor Gajdar. *Gibel' imperii* (2006)]

The word *uspex* 'success' is unique, because it is the only positive situation that appears among the frequent fillers of the construction *pričiny X-a* 'cause of X'; see (11).

- (11) *Glavnuju **pričinu** uspexa — čelovečeskij faktor — obsuždat' nečego: talanty neob"jasnimy.*
 'It does not make sense to discuss the main cause of the success - the human factor - it would be impossible to explain the talent.' [Gennadij Gorelik. Andrej Saxarov. *Nauka i svoboda* (2004)]

It is well known that negatively evaluated situations are discussed more frequently than positively evaluated situations. For example, according to the tag *evaluation*, the RNC contains 318 positively evaluated adjectives as opposed to 560 negatively evaluated adjectives. So, Russian has almost twice as many negatively evaluated adjectives as positively evaluated adjectives. However, in the case of the genitive causal construction we are dealing with a prohibition rather than a tendency: cf. *pričina nesčast'ja* 'cause of disaster' as opposed to ^{??}*pričina sčast'ja* 'cause of happiness', and *pričina neudači* 'cause of misfortune' as opposed to ^{??}*pričina udači* 'cause of fortune'. Thus, whereas fortune

is seen as spontaneous, misfortune is viewed as being caused by someone or something.

Stubbs (1995) reports a similar distribution for the English word *cause* in the Lancaster-Oslo/Bergen (LOB) Corpus.³ Collocations of *cause* are presented in (12). Stubbs summarizes his findings as follows: Among the words that co-occur with *cause*, 80 percent have negative connotations, 18 percent are neutral, and only 2 percent are positive. Therefore, similar to speakers of Russian, English speakers are interested in the causes of disasters.

- (12) *abandonment, accident, alarm, anger, annoyance, antagonism, anxiety, apathy, apprehension, breakage, burning, catastrophe, chaos, clash, commotion, complaint, concern, confusion, consternation, corrosion, crisis, crowding, damage, danger, death, deficiency, delay, despondency, destruction, deterioration, difficulty, disaster, disease, disorganization, disruption, disturbance, disunity, doubt, errors, frustration, habituation (to a drug), harm, hostility, hurt, inconvenience, interference, injury, interruption, mistake, nuisance, pain, pandemonium, quarrel, rejection, ruckus, rupture, sorrows, split, suffering, suspicion, trouble, uneasiness, upset, wholesale slaughter*

All of the situations that frequently appear in the genitive slot of the cause construction are either non-controllable or are controlled by a person who is not the focus of empathy. Non-controllable situations can be exemplified by *smert* 'death', *gibel* 'accidental death', *otkaz* 'rejection', *vzryv* 'explosion', *proval* 'failure', *voznikovenije* 'origin', and *uspex* 'success'. In addition to these examples, the collostructional profile of the cause construction also contains situations that are controlled by an agent. However, all such situations are characterized by a non-standard pragmatic structure; that is, these nouns describe situations where the patient is the focus of empathy, whereas the agent is not. These situations can be exemplified by the nouns *uxod* 'leaving', *arrest* 'arrest', *ubijstvo* 'murder'. When arrest, murder, or leaving are discussed, usually the person who is arrested, murdered, or staying is the focus of empathy, not the person who is making the arrest, committing the murder, or exiting; cf. (13).

- (13) *No v čem **pričina** aresta Ismailovoj? Razve dejstvie, soveršennoe eju, javljaetsja osobo opasnym?*
 'What is the cause of Ismailova's arrest? Were her actions especially dangerous?'
 [Anatolij Kučerena. Bal bezzakonija (2000)]

³ The LOB Corpus contains 500 samples of 2,000 words each from written genres, e.g., newspapers, reports, academic articles, and novels.

Thus, the person who is the focus of empathy cannot control the situation that appears in the genitive slot of the construction *pričina X-a* ‘cause of X’. These situations are either uncontrollable or controlled by someone else.

Not all aspectual classes are present among the nouns that frequently appear in the construction *pričina X-a* ‘cause of X’. Although the aspectual classification of verbs in general and Russian verbs in particular has long been discussed in the literature (Vendler 1967, Dowty 1979, Maslov 1948, Bulygina 1982, Paduceva 1996), aspectual classes of Russian nouns have received less attention. In this study, we build on the aspectual classifications of Russian nouns developed in Tatevosov & Pazelskaya 2003, Pazelskaya 2006, and Paduceva & Lyashevskaya 2011.

Fillers of the genitive slot of the causal construction belong to two aspectual classes: punctual events and states. Punctual events can be exemplified by nouns such as *smert* ‘death’, *gibel* ‘accidental death’, *otkaz* ‘rejection’, *vzryv* ‘explosion’, and *proval* ‘failure’. States can be exemplified by nouns such as *bolezn* ‘illness’, *zabolevanie* ‘sickness’, and *krizis* ‘crisis’. For punctual events, the construction *pričina X-a* ‘cause of X’ points to the immediate cause of the event. For states, the causal construction points to the cause of the beginning of the state. For example, the cause of an illness is the event that entails the beginning of the illness, and the cause of a crisis is the event that brought about the beginning of the crisis. Thus, we can conclude that *pričina X-a* ‘cause of X’ always combines with the punctual event: either the event that is punctual itself, or the initial point of the state. Such a shift indicates a starting-point metonymy (i.e., the name of the whole state is used to indicate the beginning of the state), as opposed to an endpoint metonymy that is frequently discussed in the literature (cf. Panther, Thornburg & Barcelona 2009, among many others). The fact that the causal genitive construction attracts a starting-point metonymy coincides well with the fact that *pričina X-a* ‘cause of X’ frequently combines with nouns that point to the beginning of an event (*vozniknovenije* ‘origin’, *pojavenie* ‘appearance’, *obrazovanie* ‘formation’). In such cases, *pričina* ‘cause’ also combines with the punctual event. Although the cause of a punctual event and the cause of the initial point of a state are puzzling and therefore intriguing, the cause of an activity (a controlled and fully expected situation) is usually clear. As a result, nouns that denote activities do not appear in the genitive causal construction: e.g., ^{??}*pričina xod’by* ‘cause of walking’, ^{??}*pričina risovanija* ‘cause of painting’, and ^{??}*pričina poleta* ‘cause of flying’.

Thus, we see that speakers of Russian tend to use the genitive construction of cause to discuss causes of negative events. These events are not controlled by a person who is the focus of empathy; they are either non-controllable or they are controlled by someone else. *Pričina* ‘cause’ mainly combines with punctual events. That is, when the filler of the genitive slot refers to a state, *pričina* ‘cause’ points to the beginning of such state. We can conclude that native speakers of Russian use the genitive construction *pričina X-a* ‘cause of X’ in order to discuss sudden unexpected disasters, especially when the causes of such disasters are unclear.

10.5 Conclusions

This article explores the Russian genitive causal construction *pričina X-a* ‘cause of X’. We show that this construction belongs to the larger network of genitive constructions in Russian. All these constructions share an important semantic component, as pointed out by Partee and Borschev, i.e., that two objects in a genitive construction have an argument-like (“stable”, according to Rakhilina 2004) relationship. Among the near synonyms that describe causal relationships between two situations, only *pričina* ‘cause’ points to a causal relationship between two events. The other three nouns (*predlog* ‘pretense’, *povod* ‘occasion’, and *osnovanie* ‘ground’) denote situations that are juxtaposed in time, but are not the true cause of the discussed situation. Thus, only the word *pričina* ‘cause’ indicates that two situations form a stable relationship, and only the word *pričina* ‘cause’ uses the genitive construction. We analyzed the list of frequent fillers of the genitive slot of the causal construction and have shown that this slot usually is filled by punctual events that describe unexpected and uncontrollable disasters. The causal genitive construction is used in order to express interest in the causes of such disasters. Thus, human interest provides the stable relationship that allows the word *pričina* ‘cause’ to be used in genitive constructions.

On how compositionality relates to syntactic prototypes and grammaticalization

Yury Lander

To Barbara,
to whom I owe the knowledge of the beauty of compositionality

11.1 Introduction¹

The principle of compositionality, according to which the semantics of a complex expression can be regarded as a function of the meanings of its parts and syntactic relations between them, is central for many semantic theories, including formal semantics (see, e.g., Partee 1996 for brief discussion). Yet it has been severely attacked during the last decades, especially by proponents of *constructional* approaches, who argued that speakers actively use idiomatic, and therefore non-compositional patterns (see discussion in Kay & Michaelis 2012).

¹ This work was supported by a grant from the Russian Foundation for Humanities (RGNF, No. 14-04-00580). Some of the ideas proposed here were earlier presented at a workshop on possessives organized as a part of the Uralic Typology Days (Tallinn, 2009) and at the conference “The typology of morphosyntactic parameters” (Moscow, 2012). I am grateful to the audience of these conferences for discussion and to Ivan Kapitonov and Natalia Tyshkevich for their useful comments on an earlier draft of the paper. All errors are mine.

Still, it is obvious that in order to show non-compositionality, construction grammarians often deal with peripheral constructions and/or uses. This is often accepted by the proponents of constructional approaches themselves. For example, Lakoff (1987: 463) insists that “the category of clause structures in a language is radially structured, with a central subcategory and many noncentral subcategories” and states that there are *central principles* which are only necessary for central subcategories. Among these principles Lakoff (1987: 495) mentions the one according to which “parts of a semantic structure correspond to parts of the corresponding syntactic structure”, an obvious counterpart of the compositionality principle. Since central principles are not given a universal status, compositionality may not work for more peripheral clause structures.

In what follows, I will complement this picture with diachronic speculations. In particular, I will try to make the intuition that compositionality is most expected in “central contexts” (syntactic prototypes) more fine-grained by linking the discussion to diachronic processes and illustrate this by adnominal possessives.

The core part of the paper consists of discussion of syntactic prototypes and grammaticalization (sections 11.2 and 11.3) and the relations between compositionality and grammaticalization (section 11.4 and 11.5). The last section contains conclusions.

11.2 The necessity of syntactic prototypes

I assume here that syntactic patterns may be associated with syntactic prototypes (which I understand as certain contexts, or conditions of use).

Prototype-based approaches, which state that categories are not homogeneous and consist of prototypes and deviations from prototypes, are widely used in lexical semantics and morphology (see van der Auwera & Gast 2010 for a survey and Kamp & Partee 1995 for an attempt of a formal treatment), but are somewhat less popular in syntax.² Nonetheless there exist a number of studies that analyze syntactic patterns in this vein. Probably the most well-known early attempt of this kind is Hopper & Thompson’s (1980) paper on semantic transitivity, where they established the prototype of transitive clauses and

² An exception is the discussion of syntactic categories and parts-of-speech. See, for example, Croft 1991 for an example of a (partly) prototype-based approach and Newmeyer 2000 for criticism of treatments of this kind.

described the change in marking transitive clauses in terms of deviations from this prototype. The issue of the syntactic prototypicality was specifically addressed by Ross (1987), Lakoff (1987), Winters (1990) and Taylor (1995, 1998), among many others, see also Aarts 2007 for some discussion. To be sure, these works differ in many respects. Some approaches using the concept of syntactic prototype are typologically-oriented and consider such prototypes universal, while others rely on prototypical effects within a single language. Here I will consider a prototype which pretends to be universal, namely the syntactic prototype of adnominal possessive constructions.³

For adnominal possessives, the need in a prototype-based approach is obvious. Consider examples (1a) and (2a) from Udi, a Northeast Caucasian language originally spoken in Azerbaijan, and its Russian (1b), (2b) and English (1c), (2c) equivalents.⁴

- (1) a. andik-i k:ož
Andik-GEN house
- b. dom Andik-a
house Andik-GEN:SG
- c. Andik's house
- (2) a. q:onši-n rajon
neighbor-GEN district
- b. soosed-n-ij rajon
neighbor-ADJ-NOM:SG district
- c. a neighbor(ing) district

The Udi example (1a) has more chances to be considered a possessive than (2a). The meaning of (2a) is expressed by patterns which are usually not considered possessive in Russian (which uses a construction with a derived adjective) and English (which uses a compound construction or a participle construction). But in Udi the two meanings are expressed by the same pattern. How can we deal with it? One can think of (1a) as being closer to the prototype of adnominal possessives than (2a) (in fact, the same can be said of the Russian and English pairs, even though they employ different constructions). The

³ I should emphasize that I do not consider the prototype discussed below applicable to predicative possession, even though for the sake of simplicity I will use the term 'possessive prototype'.

⁴ Abbreviations used in glosses: ACC accusative, ADJ adjectivizer, AOR aorist, DAT dative, DEF definite, GEN genitive, NOM nominative, OBJ object, POSS possessive, PTCF participle function, SG singular.

farther the context is from the syntactic prototype, the more probable is it that a language uses a non-possessive construction for it.

Most prototype-based approaches to possessives proposed a prototype not for the construction but for the possessive relation (i.e. the relation expressed by the construction); cf. Taylor 1989, 1996, Rosenbach 2002 *inter alia*. However, here I will follow another approach, which presumes that the prototypical context of use of the adnominal possessive includes two components described below (cf. also Lander 2008).

The first component is that the prototypical adnominal possessive is an unmarked construction reflecting the relations between individuals.⁵ This idea relies on the work by Partee (1997), Barker (1995) and others, who argued that the possessive relation is normally not provided by the construction but is taken either from the lexical semantics of its participants or from the context. If the possessive relation is specified, e.g., by means of adjectives like *favorite* (but see Partee & Borschev 2000b for a different perspective) or dedicated possessive classifiers (Lichtenberk 1983, Aikhenvald 2000), the construction deviates from the prototype; cf. (3), again from Udi, where the relation is specified by the verb *ak:-i* used in a participial function (Lander 2011).

- (3) bez ak:-i k:ož
 I:GEN see-AOR(PTCP) house
 ‘the house where I was seen’

Since individuals are normally associated with nouns, possessives are frequently employed where there is some (unmarked) relation between nouns. However, such constructions need not reflect relations between individuals; cf. non-prototypical constructions like *that idiot of a doctor* (see, e.g., Matushansky 2002). Finally, the concept of individual itself shows prototype-based effects. For instance, events are less prototypical individuals than humans, etc. Therefore the use of possessives with verbal nouns and gerunds like *Peter’s going out* is non-prototypical.

The second component is the reference-point (or anchoring) function of possessives: prototypically they are used in order to establish the reference of the possessum via some relation of it to the possessor, its “anchor” (Keenan

⁵ We can also take markedness as a gradual concept, as, for example, in Croft 2002. Then, the prototypical adnominal possessive is the most unmarked if compared with other candidates according to variety of criteria such as frequency, paradigmatic complexity, etc. The issue is tricky, however, and I leave it beyond this paper.

1974, Langacker 1993, 1995, Taylor 1996). If anchoring is successful, we expect the possessum to be definite (or at least specific), cf. Haspelmath 1999. Consequently, indefinite possessa appear in less prototypical contexts. The prototypical possessor in this picture has a somewhat technical role. This makes the constructions which specifically emphasize the relevance of the possessor (being often diachronically related to the external possession constructions) less prototypical (Lander 2004). Most importantly, however, the possessor should be as topical as it can be, since topical possessors are better anchors due to their high accessibility. In particular, the prototypical possessor should occupy the highest position in the topicality hierarchies (4).

- (4) NP-type: Pronouns > Proper nouns > Common NPs
Person: 1st and 2nd person > 3rd person
Animacy: Human > Non-human animate > Inanimate
Referentiality: Definite > Specific indefinite > Non-specific
Individuation: Singular > Plural > Mass > Non-individuated

In this perspective, (2a) is less prototypical than (1a): it is not clear whether it refers to a relation between individuals, the possessor is low in most of the hierarchies (4) and the matrix NP is indefinite.

Winters (1990) listed a number of properties of syntactic prototypes. Importantly for us, this list included transparency, which presumably can be related to compositionality. Another relevant property of syntactic prototypes mentioned by Winters is high frequency. This property will become important in the next section.

11.3 Grammaticalization and syntactic prototypes

Like many other linguistic concepts, the concept of grammaticalization became vaguer as it became more popular. For a long time, understanding of grammaticalization was based on a definition by Kuryłowicz (1965: 69): “Grammaticalization consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from less grammatical to a more grammatical status”. Later it was noticed that grammaticalization usually operates not with morphemes but with constructions (see, for example, Lehmann 2002). Now, if constructions are associated with prototypes, we may hypothesize that the latter affect grammaticalization.

Indeed, there are links between grammaticalization and syntactic prototypes. First, new constructions come from non-prototypical contexts (cf. Company Company 2002). This is due to the fact that the use of a construction in a prototypical context is most frequent and hence the most stable. Second, prototypes are more likely to be separated from other contexts by grammatical means than non-prototypical contexts are.

Two scenarios can be proposed therefore:

- (i) either the prototypical context is separated first, a new construction appears in a non-prototypical context and only then attacks contexts that are closer to the prototype (prototype-marked scenario),
- (ii) or a new construction intrudes into a non-prototypical context even if the prototypical context is not separated (prototype-unmarked scenario).

Both scenarios are observed with adnominal possessives. Sometimes we find that the most prototypical possessives employ a highly grammaticalized construction, and there is another construction which is less grammaticalized and is used in less prototypical contexts. An example is presented by the contrast between the “Saxon genitive” ’s and the “Norman genitive” *of* in English (pronominal possessors are disregarded). The construction with ’s is clearly more archaic, and although the principles that govern the choice between the two constructions are debatable (see, for example, Deane 1987, Rosenbach 2002, Stefanowitsch 2003, Lander 2004), it is clear that the more grammaticalized “Saxon genitive” construction prefers contexts which are more prototypical for adnominal possessives and the new “Norman genitive” construction easily allows contexts that are less close to the possessive prototype. For example, unlike the “Norman genitive” construction, the “Saxon genitive” construction tends to be definite, allows context-dependent interpretation, and is preferred with more topical possessors.

However, in some languages, the most prototypical possessives are similar in some respects to other unmarked attributive constructions (e.g., adjectival modification) but a distinguished possessive is used in non-prototypical contexts. For example, in Vietnamese both adjectival and possessive modification often remain unmarked. Nonetheless, there is a dedicated possessive marker, whose use with the most prototypical pronominal possessors is restricted, though (Glebova 1982). This can be explained by a prototype-unmarked scenario, according to which the construction involving overt marking appeared

in non-prototypical contexts while the prototypical context had not got any marking distinguishing it from other attributive patterns.⁶

Syntactic prototypes affect grammaticalization in yet another respect. An already grammaticalized construction used in prototypical contexts sometimes expands to new contexts and even forces out patterns that are less grammaticalized. This expansion should be distinguished from grammaticalization directed towards the prototype. Hence below I will distinguish between two views on grammaticalization:

- *Forward grammaticalization* of a construction is its development towards a syntactic prototype;
- *Backward grammaticalization* of a construction is its development from a syntactic prototype.

We will see later that a single process can be treated as forward grammaticalization and backward grammaticalization at the same time, depending on the relevant syntactic prototype.

11.4 Backward grammaticalization and compositionality

Backward grammaticalization extends a pattern to new contexts that are farther from a syntactic prototype due to the pressure of regularity and frequency of morphosyntactic patterns associated with the contexts that are closer to the prototype. Hence backward grammaticalization may result in violating compositionality because of putting the grammatical rules before the semantic transparency.

For adnominal possessives, backward grammaticalization is observed especially in marking definiteness. As said above, the syntactic prototype of adnominal possessives presupposes definiteness of the possessum. Backward grammaticalization can lead to a situation where a semantically indefinite possessive is nonetheless treated as definite by grammar.

⁶ Alternatively, it may be that the use of the possessive marker in Vietnamese extended from the most prototypical context but remained formally optional in all contexts. Then, the restrictions observed with pronominal possessors can be explained by other factors that lead to the unmarkedness; cf. Lander 2010.

For example, Tucker & Bryan (1966: 368) reported that in Komo (Nilo-Saharan) possessives involve marking of the possessum with a demonstrative which usually expresses the distance near the speaker (see also Otero 2014). Cf. the following examples (as they are given by Tucker and Bryan):

- (5) a. *gùbí ba* 'this house, these houses' (Tucker & Bryan 1966: 362)
 b. *gubí ba kuna'* 'house of Kuna' (Tucker & Bryan 1966: 362)

The translations provided for various possessives by Tucker & Bryan (1966) and Otero (2014) do not evidence that such possessives are necessarily definite. However, if the demonstrative is obligatory in Komo possessives (and if it is taken as a marker of definiteness), then they are always “grammatically definite” irrespective of their semantic definiteness. This can be counted as violation of compositionality.

More obvious examples of this kind are found in Hungarian. Here there are two basic possessive constructions. In both the possessor is cross-referenced on the possessum (sometimes with null suffixes) but the possessor nominal can be either marked with the dative case or remain unmarked. The dative construction as described in detail by Szabolcsi (1994) is less grammaticalized (it allows more syntactic freedom of the possessor) and covers both the prototypical possessive context (although its use is unlikely with pronominal possessors) and many non-prototypical contexts. Curiously, as (6–7) show, the indefinite possessive with the dative behaves as if it were definite, in particular it triggers the definite conjugation marking in the verb, which normally appears with definite objects. Such constructions are non-compositional, presumably because of their non-prototypical nature.

- (6) Csak egy diáknak két dolgozatát talált-a / *talált
 only one student-DAT two papers-ACC found-3SG:OBJ.DEF / *found
 jutalomra méltónak a zsüri
 of.prize worthy the jury
 'The jury found only one student's two papers worthy of a prize.' (Kiss 2002: 173)
- (7) Chomsky-nak nem olvast-ad vers-é-t
 Chomsky-DAT not read.PST-2SG.OBJ.DEF poem-POSS-ACC
 'You haven't read any poem of Chomsky's.' (Szabolcsi 1994: 226)

Chisarik & Payne (2001) showed a similar phenomenon for the construction with the unmarked possessor. Here the non-obligatory correlation between

pronominal possessors and definiteness appeared to be presented as if it were obligatory, as indicated by the fact that the definite article became obligatory even with indefinite possessives.

- (8) az-én egyik lány-om
the-I one daughter-POSS.1SG
'a daughter of mine'

However, Chisarik and Payne argued that the definite article in this construction had been reanalyzed as a marker of possessor. If this is the case, compositionality was recovered, since there is no need to postulate a “false” marker of definiteness in patterns like (8). Similarly, the “demonstrative” *ba* in Komo possessives can be described as a possessive marker and not a demonstrative anymore. This means that a language may “repair” the violation of compositionality resulted from backward grammaticalization.

11.5 Forward grammaticalization and compositionality

Forward grammaticalization also normally involves a stage when a given item (a word, a morpheme or a construction) starts to be used in contexts which do not correspond to its original semantics and hence violates compositionality. However, the subsequent development of a construction can be regarded as rehabilitation of compositionality.

Heine (1997: 144) observes that adnominal possessives usually arise from one of the following five “conceptual schemas” listed below: (i) Location schema ‘Y at X’, (ii) Source schema ‘Y from X’, (iii) Goal schema ‘Y for/to X’, (iv) Companion schema ‘X with Y’, (v) Topic schema ‘(As for) X, X’s Y’. Leaving aside the last schema for a moment, grammaticalization of adnominal possessives could be represented in the following way. At some time, a pattern which was earlier intended to express one of the schemas (i)-(iv), is used non-compositionally for the expression of some other relation. The subsequent increase in regularity of the construction should correlate with the expansion of a construction from contexts farther from the possessive prototype to more prototypical contexts. While the construction is grammaticalized this way, it gets more chances to become compositional, i.e. to be interpreted not as a location/source/goal/companion construction used in a special way but as a possessive construction. Then, a new construction may be compositional even if its use is restricted to non-prototypical contexts. The main factor that goes

against this is that a construction may have not lost the relations to its previous use and is still felt as its non-compositional extension (see Section 11.4).

This poses an interesting problem. The extension of a construction to new contexts may be regarded as backward grammaticalization but its development towards another prototype can be thought of as forward grammaticalization. As announced earlier, this means that the notions of forward grammaticalization and backward grammaticalization should not be considered two different kinds of grammaticalization, since they always exist in relation to some syntactic prototype.

Curiously, the Topic schema proposed by Heine does not fit the picture, since its development into a possessive construction does not start from non-prototypical contexts. I hypothesize that its appearance as a possessive is usually related to the separation of the prototypical possessive context from other contexts and reflects not much semantic evolution but the reanalysis of a syntactic structure.

11.6 Conclusion

I conclude that it is most reliable to look for compositionality in the contexts corresponding to syntactic prototypes. In non-prototypical contexts we can find constructions resulted from backward grammaticalization either in respect to its former prototype or in respect to its present prototype. Semanticists should thus not be afraid of finding non-compositionality in some contexts, because it can be diachronically motivated. In fact, the picture described above also explains the intuition I began this paper with: non-compositional constructions are peripheral.

This is not to say that compositionality cannot be found in non-prototypical contexts. Here one can remember, for example, various studies of the Russian genitive of negation construction, a pattern where a subject-like argument or an object-like argument is marked with genitive rather than with nominative or accusative. This construction is likely to deviate from basic clausal syntactic prototypes, yet as shown by Partee et al. (2011), it may follow the compositionality principle.

An important conclusion of this paper is that languages aspire to be compositional, both in forward grammaticalization and at the last stages of backward grammaticalization, even though their aspiration cannot be realized because of permanent changes.

Factivity and unreal contexts: the Russian case

Alexander Letuchiy

The article is focused on marking factive complement clauses in Russian (in particular, in constructions with emotional verbs) in unreal contexts. Contexts like these are especially problematic, since non-reality and factivity by nature constitute a logically strange combination. Factivity is associated with real contexts, and the degree of reality is equal for the matrix factive predicate and the complement event. However, as I will show, the two values are combinable. Importantly, the two ways of marking differ semantically, one of them being a default one, and the other one having *de dicto* special interpretation in most cases. This *de dicto* reading is facilitated by a sort of ‘agreement’ taking place between several components of the utterance: the participant NPs tend to have a non-specific reading, while the complement clause tends to be marked with subjunctive and has a maximally possible degree of non-reality.

12.1 Introduction

12.1.1 *The notion of factivity*

The notion of factivity and factive verbs has a long history in formal semantics and other semantic and grammatical studies (see P. Kiparsky & C. Kiparsky

1970, Karttunen 1971, Beaver & Geurts 2014).¹² It has been noted that the use of some verbs, such as *znat* ‘know’, requires that their complement is true:

- (1) Peter knows that his mother is ill.
 (2) Peter doesn’t know that his mother is ill.

The dependent clause must represent a situation which takes place in reality. If Peter’s mother isn’t ill, than (1) and (2) are not true or false – they don’t make sense. The complement of factive verbs has an important feature of presuppositions – the sentential negation does not influence it. (2) is a negation of (1), but the presupposition is still there: it is true that Peter’s mother is ill.

In contrast, verbs like *believe* or *claim* are non-factive. Constructions like *Peter believes that his mother is ill* gives no clue if Peter’s opinion is true or false – the sentence reflect nothing but his opinion. Cf. examples from Russian, where verbs of mental states like *dumat* ‘think’ or *somnevat’sja* ‘doubt’ do not require that their complement is true:

- (3) Ja dumaj-u, ty neprav-Ø.
 I.NOM think-PRS.1SG you.NOM wrong-M.SG
 ‘I think that you are wrong.’

In (3), the dependent clause can come to be either true or false in reality.

A number of theoretical accounts have been proposed for the presupposition semantics and similar matters. For instance, van der Sandt (1989, 1992) proposed that presupposition is a type of anaphora. Simons et al. (2010) claim that a number of meaning components, other than a presupposition, behave in the same way (are projected, in authors’ terms). Here belong, for instance, non-restrictive relative clauses and comment constructions, such as *Peter Martin, a teacher of linguistics, knows the problem very well*.

1 I don’t consider here the distinction of strong vs. weak factive verbs, elaborated since Hooper 1975.

2 The article was prepared within the framework of the Academic Fund Program at the National Research University Higher School of Economics (HSE) in 2015- 2016 (grant № 15-01-0150) and supported within the framework of a subsidy granted to the HSE by the Government of the Russian Federation for the implementation of the Global Competitiveness Program.

12.1.2 Factive verbs in non-real contexts

In this article, I will consider one problem related to factivity: namely, the behavior of factive verbs in ‘non-real contexts’. The question is how factive verbs behave in contexts which imply non-reality of the whole situation, including the main and the embedded event.

One of the contexts like this is the context of condition. Consider the following situation: Peter wants to visit Jasmin and discusses with his friend, Lars, how Jasmin will react. Lars is sure that Jasmin will be glad to see Peter. In this case, he must say (see also Arutyunova 1976):³

- (4) Jasmin obradu-et, esli ty pried-eš.
 Jasmin.SG.ACC rejoice-FUT.3SG if you.SG.NOM come-FUT.2SG
 ‘It will rejoice Jasmin if you come.’

Lars can hardly choose to say (5), with the default complementizer *čto* ‘that’, which normally marks complements of factive verbs in real contexts (such as ‘I know that you are here’ or ‘He was upset that I was not here’).⁴

- (5) #Jasmin obradu-et, čto ty priexa-l-∅.
 Jasmin.SG.ACC rejoice-FUT.3SG that you.SG.NOM come-PST-SG.M
 ‘It will rejoice Jasmin that you came.’

The same is true if the matrix verb is in the subjunctive form. The variant with *čto* is not fully acceptable if it is not presupposed in the real word that the hearer came. In contrast, *esli* is possible:

- (6) #Jasmin by obradova-l-o, čto ty priexa-l-∅.
 Jasmin.SG.ACC IRR rejoice-PST-SG.NEUT that you.SG.NOM come-PST-SG.M
 ‘It would rejoice Jasmin that you came.’

3 Let’s say a few words on verb form choice in Russian argument clauses. In clauses with *čto*, the tense form is typically interpreted **relatively** to the time of the main event: for instance, the present tense is used to mark simultaneity of the event in the embedded clause to the event in the matrix clause. In argument clauses with *esli*, there are two options, the same as in conditional *esli*-clauses: (i) the subjunctive mood marked with the particle *by* + *l*-form (‘past tense form’) of the verb (ii) an indicative mood form, which is normally interpreted absolutely (mostly based on the speech act time).

4 Along with *čto*, there is a variant *to*, *čto* (a combination of the complementizer with the correlative *to*). The distribution of these variants is beyond the scope of my paper (see Knyazev 2012, Letuchiy 2012 for different accounts of this opposition).

- (7) Jasmin by obradova-l-o, esli by ty priexa-l-Ø.
 Jasmin.SG.ACC IRR rejoice-PST-SG.NEUT if IRR YOU.SG.NOM come-PST-SG.M
 ‘It would rejoice Jasmin if you came.’

Weinreich (1963), Paducheva (1985, 2005), Giannakidou (2002) and others call this class of contexts *suspended assertion contexts* or *non-veridical contexts*. In non-real contexts of this sort (condition, imperative, subjunctive and so on) some factive predicates can become non-factive, because the presupposition is not valid for contexts like this. For instance, the predicate *pomnit* ‘remember’ can be used as non-factive: saying ‘I don’t remember him writing this letter’ can mean ‘I don’t remember it, because he didn’t do it at all’. Thus, the presupposition ‘the letter was written’ is suspended (not valid) here.

However, the same is impossible for emotional verbs like *obradovat* ‘rejoice’ in in examples like (5) and (6). Due to their semantics, emotional verbs like ‘be glad’ can only be used, if the stimulus situation takes place in reality. Otherwise we will not use the lexeme like English *glad* or Russian *radovat’sja* – we will simply say that a person is in a good humor. It is not possible either to say that the stimulus is a projected, in terms of Simons et al. (2010), not being a presupposition. If the speaker says, as in (5), that Jasmin would be glad, his/her utterance can only have a truth value if in a world where Jasmin is glad, it is presupposed that the addressee has come. Here and below I will use only emotional verbs which normally require a stimulus to be presupposed, at least in some possible world.

Thus, though it may seem that (5) and (6) are awkward in the ‘non-real’ use due to the fact that it is a non-factive context, this is not the case in reality. Note that the construction with a deverbal noun is possible both in a real contexts of the type (8) and a non-real context, such as (9):

- (8) Jasmin obradova-l-Ø tvoj-Ø priezd-Ø.
 Jasmin.SG.ACC rejoice-PST-M.SG your-M.SG.NOM coming-SG.NOM
 ‘Your arrival rejoiced Jasmin was glad because of your coming.’
- (9) Jasmin obradova-l-Ø by tvoj-Ø priezd-Ø.
 Jasmin.SG.ACC rejoice-PST-M.SG IRR your-M.SG.NOM coming-SG.NOM
 ‘Jasmin would be glad because of the fact that you (would) come.’

In (8), the speaker knows that the hearer came, thus, a canonical real context is represented here. In (9), the hearer has not yet come (and perhaps won’t come at all), but the speaker knows that if the hearer came, the Jasmin would

be glad because of it. Thus, in the non-real context, a deverbal noun can also be used. In contrast, in situations where the matrix verb denotes a situation which has already occurred, but the presupposition does not hold, the deverbal noun is ungrammatical, just as the sentential argument:

- (10) #Jasmin ne zna-et o priezd-e Petr-a.
 Jasmin.SG.NOM NEG know-PRS.3SG about coming-SG.LOC Peter-SG.GEN
 Ved' Petr-∅ ne priexa-l-∅.
 PRT Peter-SG.NOM NEG come-PST-SG.M

'Jasmin does not know about Peter's coming, in fact, Peter did not come.'

- (11) #Jasmin ne zna-et, čto Petr-∅. priexa-l-∅. Ved'
 Jasmin.SG.NOM NEG know-PRS.3SG that Peter-SG.NOM come-PST-SG.M PRT
 Petr-∅ ne priexa-l-∅.
 Peter-SG.NOM NEG come-PST-SG.M

'Jasmin does not know that Peter came. In fact, Peter did not come.'

Note that examples (5) through (7) are not non-factive: it is impossible to say something like 'Jasmin would not be glad because of your coming, though / even if you didn't come'. If the stimulus situation does not occur, the whole sentence cannot be assigned a truth value – thus, the stimulus is presupposed in a possible world where Jasmin is glad. We discuss Jasmin's emotional reaction in a world where the stimulus event took place, yet we must mark it explicitly that the stimulus event will not necessary come true (if not, there is no sense to discuss Jasmin's reaction).

Thus, it is impossible that contexts like (5–7) are non-factive. The embedded event is simply non-real. The presupposition is valid only **in one of possible worlds** which will not necessarily come to be true.

Let us interpret (5) in the following way: 'In the possible world where you will come, Jasmin will be glad because you came'. In this way, we see that the predicate *rad* 'glad' does not cease to be factive: the emotion 'be glad' can only emerge if the stimulus event took place. Note that in the world where you came, the component 'you come / came' holds even if the matrix predicate is negated, as in (12), which also points to its presupposition status:

- (12) Jasmin ne bud-et rad-a, esli ty pried-eš.
 Jasmin.SG.NOM NEG be-FUT.3SG glad-F.SG if you.NOM.SG come-FUT.2SG
 'Jasmin won't be glad if you come.'

In (12), as in (6), we discuss the possible world where it is presupposed that

the addressee will come. In this case, the negation does not influence the fact that the embedded event is true.

In other words, *rad* is factive in (12), and a non-standard marking of the sentential argument is due to the fact that *čto*-arguments with factive verbs can only restrictedly appear in the real context.

12.2 *Esli* as argument and adjunct marker

Let me now say a few words concerning the conditional and the ‘argument’ use of *esli* ‘if’.

In its main (the most frequent and prominent) use, *esli* marks the antecedent of conditional clauses. It is used in all types of conditional clauses: real (13), unreal (14) and counterfactual (15):

- (13) *Esli* ty pried-eš, my pogovor-im.
if you.SG.NOM come-FUT.2SG we.NOM talk-FUT.1PL
‘If you come, we will talk.’
- (14) *Esli* by sečas vpa-l-∅ sneg-∅ my by poš-l-i
if IRR now fall-PST-SG.M snow-SG.NOM we.NOM IRR go-PST-PL
kata-t'-sja na lyž-ax.
ride-INF-REFL on ski-PL.LOC
‘If it snowed now, we would go skiing.’
- (15) *Esli* by ty včera ne opozda-l-∅, mog-∅ by
if IRR you.SG.NOM yesterday NEG be.late-PST-SG.M can.PST-SG.M IRR
pozdravi-t' Petj-u.
congratulate-INF Petja-SG.ACC
‘If you had not been late, you would have been able to congratulate Petja.’

The conditional clause marked by *esli* is a canonical case of adjunct clause: it can usually be omitted and does not contribute to the valency of the matrix verb.

The construction with *esli*, analyzed in this paper, can be termed ‘argument’ *esli*-construction, since it fills a valency slot of the matrix predicate. Constructions of this type with generalized conditional markers are found in many European languages, such as German, English and so on (see Fabricius-Hansen 1980, Schwabe 2013 for details). Here I do not consider the question of

syntactic relation between argument and non-argument uses.

The construction under analysis could in principle be claimed to be a subtype of conditional adjunct clauses. Semantically, *esli* in adjunct clauses, such as (13–15) is very close to its argument uses in (4) and (7). In both cases, *esli* introduces a possible world component into the meaning of the utterance.

However, some properties of argument *esli*-clauses make it close to adjunct conditional clauses.

- Argument *esli* is not interchangeable with other conditional markers, while adjunct *esli* is. For instance, *v slučae esli* ‘in the case if’ is possible in (16):

- (16) V slučae esli ty pried-eš, tebja arestuj-ut.
in case-SG.LOC if you.SG.NOM come-FUT.2SG you.SG.ACC arrest-FUT.3PL
‘In the case if you come, you will be arrested.’

The same is not true for argument uses. Only *esli*, but not *v slučae esli*, can be used in contexts like (17).

- (17) *Jasmin obradu-et, v sluča-e esli ty
Jasmin.SG.ACC rejoice-FUT.3SG in case-SG.LOC if you.SG.NOM
pried-eš.
come-FUT.2SG

Intended: ‘Jasmin will be glad if you come.’

In other words, only *esli* has a use we are talking about, i.e. the argument use. The other conditional marker is only used in an standard adjunct conditional clause, but not in argument constructions like (17).

- Argument *esli* is impossible if the predicate lacks a valency slot for a sentential argument.

- (18) Esli my vyigra-em et-o povys-it naš-i
if we.NOM win-FUT.1PL this-NOM.SG.NEUT increase-FUT.3SG our-PL.ACC
šans-y.
chance-PL.ACC

‘If we win, it will make our chances higher.’

- (19) *Naš-i šans-y povys-it esli my vyigra-em.
 our-PL.ACC chance-PL.ACC increase-FUT.3SG if we.NOM win-FUT.1PL

Intended: 'If we win, it will make our chances higher.'

The verb *povysit'* cannot have a reason argument expressed by an embedded clause. This is why, while (18) with an adjunct clause is perfect, (19) with an argument clause is ungrammatical. Thus, the use of *esli* we deal with here must fill a valency slot of the matrix verb, and its combinational potential is restricted to a subset of predicates and contexts, which is more typical of argument than of adjunct clauses.

- For argument *esli*-clauses, the position after the matrix clause is obligatory, while conditional proper clauses can be situated before, after or inside the main clause. For instance, in (20), the embedded clause can be posed after the main one. The same is impossible for (21), where the argument *esli* (see Pekelis 2008, Serdobolskaya 2011 showing that in Russian, as well as typologically, the linear position is more rigid for sentential arguments than for sentential adjuncts):

- (20) Esli ty pried-eš, my pogovor-im.
 if you.SG.NOM come-FUT.2SG we.NOM talk-FUT.1PL
 'If you come, we will talk.'

- (21) *Esli ty pried-eš, Jasmin ne ponrav-it-sja.
 if you.SG.NOM come-FUT.2SG Jasmin.SG.DAT NEG like-FUT.3SG-REFL
 Intended: 'If you come, Jasmin will not like it.'

Note that in what follows, I consider the use of *esli* both in the IO position of intransitive Experiencer-subject verbs, such as *obradovat'sja* 'be glad' and in the subject position of transitive Stimulus-subject verbs, such as *obradovat'* 'rejoice'. In reality, the syntactic status of *esli*-clauses can be different. For instance, with Experiencer-subject verbs *esli*-clauses can sometimes occupy the initial position, thus not entirely corresponding to the criteria of 'argument' *esli* (see property 3 in the list above). However, this difference is not really relevant for me, because I primarily address the relations existing between *esli*- and *čto*-constructions.

12.3 The use of *čto* in unreal contexts

In this section, which is central for my paper, I will consider the cases where the default argument clause marker *čto* can be used in unreal contexts, thus violating the general rule, formulated for examples like (5) and (6). I will show that some semantic features of the sentence (de dicto reading of some elements, non-specificity of participants) facilitate the use of *čto*.

12.3.1 Non-specific participant context

The first case where the use of *čto* in unreal contexts are not prohibited is constituted by constructions with a non-specific experiencer. Consider the following pair:

- (22) Vs-ex bes-it, #čto / esli on-i ne priznan-y.
 all-PL.ACC drive.crazy-PRS.3SG that / if they-NOM NEG recognized-PL
 Intended: ‘It drives everyone crazy if he is not recognized (i.e. by the society).’

- (23) Každ-ogo bes-it, ?čto / esli on ne priznan-Ø.
 each-SG.ACC drive.crazy-PRS.3SG that / if he.NOM NEG recognized-SG.M
 ‘It drives anyone crazy if he is not recognized (i.e. by the society).’

In (22), the use of *čto* seems to be fully prohibited in the non-specific meaning ‘It drives anyone (of not known class of people) crazy if they are not recognized’, because the pronoun *vse* ‘everyone’ typically refers to a specific set of persons. The variant with *čto* in this example can only be possible if the situation in the embedded clause is real: we are speaking of a specific class of people of whom we know that they are not recognized (e.g., ‘In our group of students, nobody is recognized. It drives everyone of us crazy’). In (23), *čto* can be used (though maybe a bit worse than *esli*) due to the fact that *každyj* ‘anyone’ can refer to a non-specific set of persons. (23) can even be understood as a logical law, though at some particular time there can be no individual, for whom the formulation is valid.

It is also important that *čto* is as felicitous as *esli* in contexts including experiencer-oriented components. For instance, in (24) the diminutive form *mamočka* ‘mummy’ is apparently oriented to the experiencer (the child who calls his mother in such a way). Another experiencer-oriented component is *opjat’* again: only the child, and not the speaker can interpret the occurrence of

the situation as repeated. This is why *čto* is well compatible with the context:

- (24) Ljub-ogo rebenk-a ogorča-et, čto mamočk-a opjat'
 any-M.SG.ACC child-SG.ACC upset-PRS.3SG that mummy-SG.NOM again
 serd-it-sja.
 be.angry-PRS.3SG-REFL
 'It upsets any child that his mummy is angry again.'

Therefore, it should be claimed that the use of *čto* in unreal contexts creates or facilitates a *de dicto* reading. For instance, the use of *ty* 'you' in (24) is much less probable than *mamočka* 'mummy'. This results from the fact that *mamočka* is interpreted *de dicto* ('experiencer's mummy'), while *ty* is interpreted *de re* ('the addressee of the speaker').

12.3.2 The 'role' context

Importantly, there is a context which is compatible with *čto* even under an unreal operator, which I call the 'role context'. I mean the context where the speaker takes on a mask of another person, proposes the addressee to do it or imagines any other (most typically, non specific) person to be in the same situation. For instance, utterances like *And you, would you be happy if you son fell ill one day before the trip* belong to the role type.

I distinguish two subtypes of the role context: in the first one, the role-taker is specific (usually it is the addressee, as in the example above, or the speaker), in the second one, (s)he is non-specific (cf. *Who would reject a plan like this?!*, meaning 'Nobody would reject a plan like this').

12.3.2.1 The addressee / speaker subtype

Let us first consider the subtype where the role-taker is specific. For instance, (25), with *čto*, and (26), with *esli*, are both felicitous in the context where the addressee is supposed to take over someone's role:

- (25) [Petja is worried by the fact that his son is last in the class].
 A ty by ne pereživa-l-∅, čto tvoj-∅ syn-∅
 and you.SG.NOM IRR NEG worry-PST-SG.M that your-M.SG.NOM son-SG.NOM
 postojanno poluča-et dvojk-i?
 constantly get-PRS.3SG F-mark-PL.ACC
 'Wouldn't you worry about the fact that your son constantly gets F-marks?'

- (26) A ty by ne rasstroj-l-∅-sja, esli by tvoj-∅
 and you.SG.NOM IRR NEG be.upset-PST-SG.M-REFL if IRR your-M.SG.NOM
 syn-∅ postojanno poluča-l-∅ dvojk-i?
 son-SG.NOM constantly get-PST-SG.M F-mark-PL.ACC
 ‘Wouldn’t you be upset if your son were constantly getting F-marks?’

The context is unreal, because the speaker does not claim that the addressee really has a son who really gets F-marks. (S)he only asks if the addressee would be upset by his/her son’s marks in a possible world where his/her son gets F-marks. However, the marker *čto* can be used here, as in (25).

The same is true for ‘role’-constructions where the speaker poses himself to the place of the subject:

- (27) Mne by ne ponravi-l-o-s’ čto v mo-ix vešč-ax
 L.DAT IRR NEG like-PST-SG.NEUT-REFL that in my-PL.LOC thing-PL.LOC
 ry-l-∅-sja postoronn-ij čelovek-∅.
 rummage-PST-SG.M-REFL alien-M.SG.NOM person-SG.NOM
 ‘If a stranger rummaged in my things, I wouldn’t like it.’

There is an important property of role contexts which is responsible for their ability to choose *čto* instead of *esli*. Consider (28), where the *čto*-clause contains a possessive phrase:

- (28) Tebe by ponravi-l-o-s’ čto tvoj-a devuš-k-a
 you.SG.DAT IRR like-PST-SG.NEUT-REFL that your-F.SG.NOM girl-SG.NOM
 kur-it?
 smoke-PRS.3SG
 ‘Would you like it if your girlfriend smoked?’

Possessive phrases normally have a presupposition that the possessor has a possessee, marked in the sentence. For instance, the NP ‘your girlfriend’ presupposes that the addressee has a girlfriend. However, in constructions like (28), this requirement is not valid. Moreover, the default reading of (28) is that even if the addressee does really have a girlfriend, the speaker does not mean any specific girlfriend.

In *esli*-clauses, the situation is different. A construction, analogous to (28), but with *esli*, can denote either the specific girlfriend or a non-specific one.

- i. The addressee really has a girlfriend. The speaker asks him whether he liked it if his girlfriend smoked.

- ii. The speaker asks the addressee if he liked (hypothetically) that a girlfriend he would have smoked.

The following tendency, which may seem counterintuitive, seems to regulate the use of *čto* and *esli* in the role context: the less specific the possessee is, the more probable is the use of *čto*. It is a bit unexpected, given that in examples like (5) and (6) it is *esli*, and not *čto*, which is possible in unreal context.

Note that the use of *čto* is also probable if the experiencer is non-specific (see on *kto*-constructions below) and if the situation has a very low reality degree. The real explanation of a strange combination of *čto* with non-specific participants is that *čto* in examples like (25) and (27–28) is intended to introduce an unreal situation, which is non-characteristic of this complementizer. This is why the referential status of NPs in the embedded clause should be non-specific, since the non-specific status is better compatible with unreal situations.

The use of an NP referring to a specific object facilitates the *de re* reading and the ‘real’ interpretation of the utterance, which the speaker in (25–28) did not mean. If the NP refers to a non-specific object, this facilitates the *de dicto* reading (see Kallfelz 2007, Cieśluk 2010 for similar analysis of the relation between the *de re* / *de dicto* interpretation and the use of pronouns).

It is well-known that the specificity feature is correlated with the narrow vs. wide scope distinction (see Lyons 1999: 168–169, among others). For instance, Lyons points out that existential quantifiers can be interpreted as specific (in this case they have wide scope) or non-specific (with narrow scope).

(29) John didn’t meet a stranger.

a. **Specific interpretation, wide scope:**

$\exists x(\text{stranger}(x) \wedge \neg \text{met}(\text{John}, x))$ (‘John didn’t meet some specific stranger’)

b. **Non-specific interpretation, narrow scope:**

$\neg \exists x(\text{stranger}(x) \wedge \text{met}(\text{John}, x))$ (‘John didn’t meet any stranger’)

It seems that the narrow scope facilitates the *de dicto* reading, which, in turn, makes the use of *čto* in unreal contexts possible. In (30), the narrow scope reading of (29) is represented, where the girlfriend is non-specific.

(29’) the non-specific reading of (29):⁵

$\text{QUEST}(\text{like}(\text{you}, p) \wedge p = \exists! x(\text{girlfriend}(\text{you}, x) \wedge \text{smoke}(x)))$

5 I use the *QUEST* abbreviation to mark the utterance as a question.

The hypothetical wide scope reading is given in (30), yet this interpretation is much more natural for the unreal complementizer *esli* than for *čto*: here the girlfriend the speaker means is specific:

- (29'') the specific reading of (29):⁶
 $\exists!x(\text{girlfriend}(\text{you}, x)) \wedge \text{QUEST}(\text{like}(\text{you}, p) \wedge p = \text{smoke}(x))$

12.3.2.2 The non-specific subtype: *kto*-constructions

Along with the role context where the actual situation is hypothetically applied to the hearer or the speaker, there is another variant of the role construction with the interrogative pronoun *kto* ‘who’ and the negative polarity item *nikto* ‘nobody’. The speaker estimates the existing situation and claims that nobody will react to it in a particular way.

- (30) Da i k-omu by ponravi-l-o-s' čto ljubim-yj
 PRT and who-DAT IRR like-PST-SG.NEUT-REFL that beloved-M.SG.NOM
 ispolnja-et kapriz-∅ neznakom-oj devuš-k-i?
 fulfil-PRS.3SG caprice-SG.ACC unacquainted-F.SG.GEN girl-SG.GEN
 ‘Who would like that the person they love obey all commands (lit. caprices) given by a girl they do not know?’ (i.e., ‘nobody would like it’).

Notably, the percent of speakers which judge the use of *čto* in modal contexts like (30) in *kto*-constructions is much greater than for the hearer- or speaker-subtype, illustrated by (25) and (27)-(28). Constructions like (25) and (27)-(28) of the speaker/addressee subtype are accepted by 40% native speakers with future in the main clause and 74% with subjunctive forms in the main clause, while for *kto*-constructions the proportion is 81% for the future and 86% for the subjunctive.

This difference calls for an explanation. It may seem more natural if *kto*-constructions tended to be only compatible with *esli*: the subject of the mental act is non-specific, thus, the mental act itself is even ‘less specific’ than in the cases when the speaker or the hearer must imagine themselves in the same situation (cf. (28)). Note, however, that the tendency lying beyond the distribution of clause types with *kto* is the same as the one holding for the

⁶ The same opposition between the specific and non-specific readings of the possessee is relevant for *kto*-contexts (see the next section). Details are omitted there due to the lack of space.

possessee in role contexts: the less specific a participant is, the more probable is the use of *čto*.

The situation is not as paradoxical as it may seem. With *kto* and *nikto*, the pronoun itself shows that the situation is unreal. This is what makes the use of *čto* possible: no parasitic ‘real’ reading is possible. In contrast, if the speaker or the hearer is posed as a hypothetical participant of the situation, the construction with *čto* can well be interpreted as ‘Will you be surprised that your son smokes?’ (‘the speaker knows that the hearer’s son really smokes’). Recall that non-specific elements tend to have narrow scope, which, in turn, facilitates their *de dicto* interpretation.

12.3.3 Future vs. *irrealis paradox*

The heterogeneity of the class of unreal contexts becomes evident if we compare the uses of complementizers with future tense and with subjunctive mood.

Future tense has been long claimed to be a mixed category, combining tense and modal components (see Fleischman 1982, Bybee, Perkins & Pagliuca 1994, Plungian 2011 on the intermediate place of future between tense and modality). If a person says: ‘I will go to London tomorrow’, he cannot claim it with the same degree of certainty as he does when describing a past event (‘I went to London yesterday’).

At the same time, if we compare the use of the Russian future with the subjunctive mood form, which includes a past tense form with the suffix *-l* and the particle *by*, we will find out that the degree of reality is much greater for future forms. Future can express objective claims about events which will necessarily take place (e.g., *Zavtra budet prazdnik* ‘Tomorrow will be a holiday’). In contrast, the uses of subjunctive, such as condition, volition, necessity and so on, have to do with hypothetical, unreal or counterfactual semantics.

It may seem that unreal and counterfactual TAM forms constitute a more natural context for the use of unreal complementizers like *esli*, than real ones. However, rather unexpectedly, both *esli* and *čto* are found with conditional forms in the main clause. In contrast, if the main verb has a future form, *esli* is much more probable in the embedded clause and is judged as much more acceptable by native speakers.

The survey shows that only 39% of the native speakers consulted (18 out of 46) regard the sentence with future marking of the matrix verb (31) as

acceptable. In contrast, example (32) with the subjunctive form in the matrix clause are accepted by 33 out of 46 native speakers (72%):

- (31) A tebe ponrav-it-sja, što tvo-ego syn-a v
 and you.DAT like-FUT.3SG-REFL that your-M.SG.ACC son-SG.ACC in
 škol-e bj-ut?
 school-SG.LOC beat-PRS.3PL
 ‘Will you like it if your son was beaten at school (constantly)?’

- (32) A tebe by ponravi-l-o-s’, što tvo-ego syn-a
 and you.DAT IRR like-PST-SG.NEUT-REFL that your-M.SG.ACC son-SG.ACC
 v škol-e bj-ut?
 in school-SG.LOC beat-PRS.3SG
 ‘Would you like it if your son was beaten at school (consistently)?’

The variants with *esli* do not differ from each other in the speakers’ rate of acceptability (93% for the variant with the subjunctive form and 85% for the one with the future form).

Note that the distinction between the future and the subjunctive is basically of the same type as the one observed between specific vs. non-specific participants (recall that with specific participants, the use of *što* is less probable). The subjunctive explicitly marks that the situation is non-real – thus, the irreality does not obligatorily have to be marked by the complementizer choice. The future is not restricted by non-specific unreal situations, thus, *esli* is used to mark that the situation is unreal.

In other words, in the mood domain, the same paradox is observed, as in the domain of specificity (see above): the less specific / real is the situation (in the former case, we dealt with the specificity / real existence of participants), the more probable is the use of *što*. This paradox is accounted for, provided that non-specific components have a narrow scope and facilitate *de dicto* readings. The use of *što* is possible if the embedded situation is interpreted *de dicto*, from the point of view of the experiencer in a possible world.

12.3.4 Aspectual class of the complement situation

As I have shown, the TAM marking of the matrix verb is relevant for the choice of complementizer. In turn, the features of the stimulus situation, namely, the aspectual class, also influence this choice. With repeated and habitual

situations, *čto* is more felicitous than with states and dynamic situations taking place. For instance, (34) with a repeated situation, is better than (33), where the situation occurred once (33% of positive judgements for (33), and 47% for (34)):

(33) A ty by ne rasserdi-l-∅-sja, čto tvoj-∅
 and you.SG.NOM IRR NEG get.angry-PST-SG.M-REFL that your-M.SG.NOM
 syn-∅ priše-l-∅ domoj pjan-yj?
 son-SG.NOM come-PST-SG.M home drunk-M.SG.NOM
 ‘Wouldn’t you be angry if your son came home drunk?’

(34) A ty by ne serdi-l-∅-sja, čto tvoj-∅
 and you.SG.NOM IRR NEG be.angry-PST-SG.M-REFL that your-M.SG.NOM
 syn-∅ prišod-it domoj pjan-yj?
 son-SG.NOM come-PRS.3SG home drunk-M.SG.NOM
 ‘Wouldn’t you be angry if your son used to come home drunk?’

Again, the distinction observed here matches the referentiality and modality distinctions pointed at above. The less specific is the situation (repeated situations are less specific than punctual and stative ones), the more probable is the use of *čto*. It seems that the specificity of the situation makes the real interpretation of a construction with *čto* more probable.

12.3.5 ‘Specificity agreement’

As shown above, the use of *čto* in unreal contexts is subject to several restrictions (though neither of them are to be interpreted as strict grammatical rules):

- non-specific experiencer;
- non-specific possessee, if there is any (the existence of the possessee is not presupposed);
- mainly unreal (subjunctive) marking of the matrix verb;
- mainly iterative or habitual aspectual meaning.

These tendencies seem to be paradoxical when applied to *čto*. The complementizer is specified for factive real contexts with verbs like *radovat* ‘rejoice’.

So why are its uses in unreal contexts specified for the “most unreal” and the “least specific” readings? Let us repeat the possible answer here.

In reality, there is no paradox in all cases listed above. **If the maximal set of non-real diagnostic contexts feature in the sentence, no ambiguity seems to occur: the ‘real’ semantics of *čto* does not conflict with the non-reality of the embedded situation, since the situation is interpreted ‘de dicto’: the emotional attitude of the experiencer is real in a possible world, where the embedded situation (with its participants) takes place at all.**

For instance, if both the experiencer and the possessee are non-specific (as, for instance, in ‘Who would like it if his/her son were beaten’), it is evident that the situation is non-real. If no specific participants are listed, no specific real situation can be meant by the speaker. This facilitates the possible world reading of the *čto*-construction. No element is real, nothing disagrees with the possible world contexts.

If there is a specific component of the situation (for instance, the experiencer is definite and specific, or the situation takes place only once), the presuppositions do not agree with each other. One can, of course, imagine a reading like ‘Would you like it if your (non-existing) son were beaten’. However, the fact that one of the participants (the experiencer ‘you’) is real and specific, facilitates a real reading. This is partially due to the fact that specific components of the utterance often have wide scope, and the unreal reading is easier if all elements have narrow scope.

Thus, the opposition between real vs. unreal contexts is relevant for the sentential argument marking. Normally, *čto* is used if the complement of the factive verb denotes a real situation, and otherwise *esli* should be chosen. However, *čto* is sometimes used in unreal contexts if the embedded event is interpreted *de dicto*, inside the possible world where this event is supposed to take place.

The difference between *čto* vs. *esli* seems to reflect a perspective difference: *esli* marks irreality and its interpretation is based on the **irreality of the whole situation**. It is not obligatory for the use of *esli* that the participants of the embedded situation are non-specific – only this situation is unreal. *Čto* marks the situation as real, because the situation is interpreted from the point of view of the experiencer, **who is herself inside the possible world**. This is why the participants of the embedded situation have to be interpreted *de dicto* and, most typically, to be specific.

Contrary to argument clauses, deverbal nouns normally do not show sensitivity to the real vs. unreal opposition, as can be seen in (8) and (9). In the following section I will demonstrate that the same difference between sentential arguments with complementizers vs. deverbal nouns manifests itself in another type of contexts, called ‘radical negation’: these contexts are compatible with deverbal nouns and incompatible with sentential arguments.

12.4 Radical negation

Kustova (1996), Paducheva (2005) discuss so-called radical negation. This type of negation is specific in that not only the assertion, but also the presupposition is denied. For instance, in (35), the usual negation shows up:

- (35) On-∅ menja sovsem ne rasstroj-l-∅ t-em, što
 he-NOM I.ACC at.all NEG upset-PST-SG.M that-SG.INS.NEUT that
 opozda-l-∅.
 be.late-PST-SG.M
 ‘He didn’t upset me at all by his being late.’

The assertive component of semantics of the verb *rasstroj* ‘upset’ is denied here: the speaker is not upset. The presupposition is left intact, as it is usually the case with presuppositions: example (35) is only interpretable and has a true value, if it is true that the person spoken about was late.

The radical negation is exemplified by example (36). Not only the assertion (‘the teacher is upset’) is negated here, but the same is true for the presupposition: Petja will not be late at all:

- (36) Petj-a bol’she ne bud-et obiza-t’ učitel-ej
 Petja-SG.NOM more NEG AUX-FUT.3SG offend-INF teacher-PL.ACC
 svo-imi opozdanij-ami.
 own-PL.INS being.late-PL.INS
 ‘Petja will never more offend the teachers by his being late.’

Paducheva (2005) shows that the (im)possibility of the radical negation depends on many factors including the verb itself, the TAM form and the context in the wide sense.

Importantly, the description of the radical negation given by Paducheva and Kustova is mainly built on examples with deverbal nouns, such as

opozdanie ‘being late’ in (36). Crucially, the situation with sentential arguments introduced by complementizers is rather different.

The negative construction with factive verbs combined with the factive complementizer *čto* is normally unable to have a radical interpretation. If it were available, we would expect (37) with the given interpretation to be possible:

- (37) #Petj-a bol'se ne bud-et obiza-t' učitel-ej
 Petja-SG.NOM more NEG AUX-FUT.3SG offend-INF teacher-PL.ACC
 t-em, čto opazdyva-et.
 that-SG.INS.NEUT that be.late-PRS.3SG
 ‘Petja will never more offend the teachers by his being late.’

However, this interpretation is impossible. Example (37) can only mean that Petja will be late, but this will no longer offend his teachers. In other words, negation of the factive sentential argument with *čto* can only have the usual, and not the radical interpretation. Only the ‘normal’ negation, as in (38), is allowed.

Note that the contrast between (36), with a radical negation reading, and (37), which lacks this interpretation, cannot be addressed in terms of factivity. With factive verbs like *serdit'sja* ‘be angry’, *besit* ‘drive crazy’, and so on, both deverbal nouns and sentential arguments denote a situation which is presupposed. We cannot claim that the construction with *čto* in (37) is in any sense ‘more factive’ than the deverbal noun construction in (36).

- (38) Petj-a ne obide-l-∅ menja t-em, čto
 Petja-SG.NOM NEG offend-PST-SG.M I.ACC that-SG.INS.NEUT that
 opozda-l-∅.
 be.late-PST-SG.M
 ‘Petja did not offend me by his being late.’

The explanation seems to lie in the fact that sentential arguments, contrary to deverbal nouns, are marked for tense. Since the noun *opozdanija* in (36) is not tense-marked, it can be interpreted as a non-specific event. In (36) and similar examples, the NP *svoimi opozdanijami* denotes ‘being late as a class of events, some of which have already taken place, while some could hypothetically occur in the future or will not occur at all’.

The same is impossible for sentential argument constructions. Both constructions with the complementizer *čto* ‘that’ and with a combination *to, čto*

‘the fact that’ are marked for tense. Thus, whenever a sentential argument is used, it is anchored to some temporal localization, depending on which form is used (of course, if the matrix verb is factive). In other words, if we use a sentential argument in (37), the embedded clause being marked for the present tense, this means that Petja is late in some moment simultaneous to the moment of speech or time of the main event ‘insult the teachers’, thus having one of the regular readings of present tense forms. In any case, it is impossible to use sentential arguments in contexts like (37) without any temporal localization at all, in the same way as the deverbal noun is used in (36).⁷

The same distinction seems to lie behind the fact that *čto*-clauses are only used in unreal contexts like (30) under a special *de dicto* interpretation and mainly when the participants of the embedded situation are non-specific. Since *čto*-clauses are tensed, they mark by default an event which took place at some time in reality. Note, though, that the prohibition for the use of *čto* with radical negation is stricter than the restriction on unreal contexts, where *čto* is sometimes used in examples like (30). The difference can be formulated in the following way:

- Radical negation requires a presupposed component to be negated. By default, it is excluded for sentential arguments, since the tense-markedness requires that the situation has a temporal localization;
- In contrast, the use in an unreal context does not require that the presupposition is canceled. Though the whole construction is interpreted in a possible world, in this world, the situation can be localized. For instance, in the sentence ‘Who would be glad that his son gets F-marks’ the sentential argument means ‘his son gets F-marks at the reference point’ – in other words, the situation has a temporal localization, simultaneous to the localization of the main event (‘who would be glad’).

12.5 Conclusions

In this paper, I have addressed the behavior of factive verbs in non-real contexts: I have focused on contexts where the complement of factive verbs comes to

⁷ In Russian argument clauses with *čto*, the tense form is interpreted relatively, i.e., based on the localization of the situation with respect to the situation in the main clause.

be true only in a possible world. I have found out that nominal and sentential arguments behave in a very different way in this sort of contexts. While nominal arguments are marked in the same way when marking a real situation and when being under an entailment-cancelling operator, sentential arguments are marked in different ways.

Nonetheless, there is no reason to claim that predicates become non-factive in contexts like this. We should rather consider that tense-marked constituents, when combined with factive predicates, by default get a real temporal interpretation. To use factive predicates in a possible world, a special marker *esli* is used, which marks that the whole situation (the factive mental act and the presupposition) occurred in a possible world.

Thus, it turns out that the real / unreal opposition of the components of factive verbs exists separately from the factive / non-factive opposition. Verbs like *radovat'sja* 'be glad' or *nravit'sja* 'like' are by nature factive – however, the default complementizer *čto* marks the reality of the complement situation (and not factivity). This is why a special marker *esli* must be used when the embedded situation is unreal.

However, the use of the factive complementizer *čto* is not fully excluded either. The difference between *čto* vs. *esli* reflects a perspective difference: *esli* marks irreality and its interpretation is based on the irreality of the whole situation. *Čto* marks the situation as real, because the situation is interpreted from the point of view of the experiencer, who is herself inside the possible world.

Note that the use of *čto* is the more possible, the more non-specific and unreal the situation is. It may seem rather unnatural and counterintuitive, given that normally *čto* denotes a real situation, and, correspondingly, is compatible with specific participants more than *esli*. The reason seems to be that the use of *čto* requires a *de dicto* reading. The speaker marks the situation as real, because she observes the situation from the perspective of the experiencer. To facilitate the *de dicto* reading, all components of the embedded clause must be 'agreed' to each other in that they have a non-specific reading: in that way, the precise identity of the participant or the instance of the situation can be chosen *de dicto*, for the possible world where the experiencer participates in a situation and perceives and estimates its components in a particular way. This is why the experiencer itself is mainly non-specific (i.e., interpreted separately for each instance of the situation), the possessee is non-specific too (its existence is not presupposed), the mental act is most often unreal (marked by the subjunctive),

and the stimulus situation is repeated (i.e., it is also non-specific).

This ‘agreement’ in non-specificity seems to be a strategy which the language uses in order to make the non-standard (unreal) interpretation of *čto* easier for the speakers.

Recall that non-specific components can have a narrow scope reading (see, for instance, Lyons 1999: 168–169). This, of course, facilitates the *de dicto* reading. In contrast, the specific interpretation makes the *de re* reading easier due to the wide scope that specific components have (though the *de dicto* reading is also possible for many native speakers).

Semantics of poetical tropes: Non-Fregeanity and paraconsistent logic

Basil Lourié and Olga Mitrenina

...καὶ παράδοξον θαῦμα

To our dear and paradoxal Barbara Partee.

13.1 Introduction

The sentence “There is a bag of potatoes in my pantry” is true if and only if there is a bag of potatoes in my pantry, as truth-conditional semantics defines (Heim & Kratzer 1998: 1).¹ Such examples are often quoted with a reference to Alfred Tarski’s 1933 article, in which his famous truth definition was proposed.² However, when applied to the natural languages, such truth conditions cease to be properly Tarskian. The long first paragraph of Tarski’s 1933 paper is dedicated to the statement that, to him, “the very possibility of a consistent use of the expression ‘true sentence’ which is in harmony with the laws of logic and the spirit of everyday language seems to be very questionable” and, consequently, such definitions as “‘it is snowing’ is a true sentence if and only if it is snowing” are not, *strictly speaking*, logically meaningful (Tarski

¹ The present study was supported by the Russian Foundation for Basic Research, project № 13-06-00832.

² Heim and Kratzer refer to the 1936 (although mistakenly dating it to 1935) German translation from the Polish original as if it were the original article itself: (Heim & Kratzer 1998: 1, 11).

1956: 156, 165). Due to these constraints, Tarski's truth definition was applied to the formal languages only.

Nevertheless, Irene Heim and Angelika Kratzer do not seem to be uneasy in applying Tarskian definitions to natural languages. In this, they follow Richard Montague's conviction that "[t]here is... no important theoretical difference between natural languages and the artificial languages of logicians" (Montague 1974b: 222) (first published in 1970). In this presumption, Tarski's definition becomes applicable to natural languages (Montague 1974a: 208–210) (first published in 1970). Montague proposed a strategy to overcome the difficulties noticed by Tarski (especially those caused by the vagueness of natural languages) with recourse to PWS (possible worlds semantics, briefly discussed in the concluding chapter of Heim & Kratzer 1998).

Taking into account the necessity of understanding our sentence about the bag of potatoes within the PWS framework, we can hope that we could understand what such things as "potatoes" and "pantry" mean. The condition *sine qua non* for this is to become able to define the meanings ("intensions" in Montague's sense of the word) of the corresponding lexemes as functions from possible worlds to extensions of the appropriate sort.

Now, let us slightly complicate the task. How might one draw such functions ("intensions") in the case of Boris Pasternak's poem "Improvisation" (1915):

I fed out of my hand a flock of keys
 To clapping of wings and shrill cries in flight.
 Sleeves up, arms out, on tiptoe I rose;
 At my elbow I felt the nudging of night³.

This text includes poetical tropes that are quite typical not only for poetry, but for colloquial and literary language as well. Not so long ago, in 1990, Jaakko Hintikka and Gabriel Sandu proposed a semantic theory of poetical tropes which they considered to be, on the one hand, a successful application of Montague's and David Lewis's ideas concerning the possible world semantics⁴ and, on the other hand, a strategy to overcome the stagnation in semantic studies that continue the line of Montague and Lewis. Below we will have occasion to re-examine the relation of the Hintikka-Sandu theory to the Fregean scholarly program as such, not only to its PWS modifications.

³ Translated by Eugene M. Kayden.

⁴ See below, starting from section 13.3. Cf. Lewis 1986.

Since the 1950s, the study of metaphor and other indirect meanings has been approached from different perspectives. Some of them are certainly relevant for the formal semantics of natural language. Nevertheless, the more our studies advance, the further we are from any consensus. The only exception is the so-to-say “phenomenological” description of the variety of indirect meanings, that is, not an analysis but rather a description of what metaphor, metonymy, and other poetical tropes are.

According to the approach first proposed in 1956 by Roman Jakobson, the variety of indirect meanings can be reduced to two types, metaphor and metonymy.⁵ Metaphor, according to Jakobson, is based on the relation of similarity, whereas metonymy is based on the relation of contiguity. Both of them form together the two “poles” of the spectrum of indirect meanings. This is not the only possible way of representing the variety of indirect meanings within a unique scheme, but, at least, it is basically equivalent to the theory of metaphor/metonymy based on the theory of conceptual spaces by Peter Gärdenfors (who, in turn, elaborated on George Lakoff’s understanding of metaphor as cross-domain mapping).⁶

Thus, there is no problem with defining metaphor/metonymy (or indirect meaning in general). The problems begin when we ask whether these phenomena have anything to do with language at all or, if the answer is positive, with its semantics.

It is a bit embarrassing to admit that the main purpose of the present notice is to put forward one more semantic theory of indirect meaning, in addition to the too many theories now under discussion. By way of an apology, however, we note that our theory will not be completely new but rather an extension of the Hintikka–Sandu theory of metaphor and metonymy.

13.2 Pre-1990s theories of indirect meaning

A very short sketch of the presently available theories of metaphor and other kinds of indirect meaning is unavoidable. We need ultimately to discuss the Hintikka–Sandu theory, but this is impossible without explaining why we

5 Jakobson 1971 (esp. section V, “The Metaphoric and Metonymic Poles,” pp. 254–259). For a modern interpretation of Jakobson’s approach, see Peirsman & Geeraerts 2006 .

6 On this equivalency, see esp. (Gärdenfors & Löhhndorf 2013: esp. 453–454). Cf. (Gärdenfors 2014: 39–41).

consider it to be better than the others. Therefore, in this section, we will list these others.

13.2.1 *Cognitive semantics: metaphors outside language*

In the 1970s, several scholars put forward the theory that metaphor is fundamental for the cognitive sphere as a whole but not encompassed by language.⁷ On the contrary, it is language that depends on metaphors, whereas there are no mechanisms specific to language that regulate our metaphorical thinking. George Lakoff became the most influential proponent of this approach (shared and developed, among others, by Peter Gärdenfors). In Lakoff's words,

...the locus of metaphor is not in language at all, but in the way we conceptualize one mental domain in terms of another. The general theory of metaphor is given by characterizing such cross-domain mappings. And in the process, everyday abstract concepts like time, states, change, causation, and purpose also turn out to be metaphorical.

The result is that metaphor (that is, cross-domain mapping) is absolutely central to ordinary natural language semantics, and that the study of literary metaphor is an extension of the study of everyday metaphor. Everyday metaphor is characterized by a huge system of thousands of cross-domain mappings, and this system is made use of in novel metaphor (Lakoff 1993: 203)

However, the treatment of metaphors and metonymies within the cognitive sphere as a whole does not prevent us from asking whether there are any metaphorical/metonymic mechanisms within the sphere of language. Indeed, even if “[m]etaphors and metonymies are primarily [to be – L&M] seen as *cognitive* operations, and their linguistic expression is only a secondary phenomenon” (Gärdenfors 2000: 164), this is not to say that this “secondary phenomenon” could not have some rules of its own.

The cognitive approach has certainly contributed a great deal to our understanding of the continuity (and even the basic unity) between “indirect”

⁷ The manifesto of this approach was the article by Reddy (1979) (first published in 1979). According to Lakoff, “Reddy showed, for a single, very significant case, that the locus of metaphor is thought, not language...” (Lakoff 1993: 204).

and “direct” meanings, but it is simply not specific enough to settle our questions about the possible existence of the metaphorical/metonymic mechanisms embedded into the logic of natural language. No wonder, therefore, that the current popularity of the cognitive theories of metaphor did not prevent the development of several theories much closer to linguistics.

13.2.2 *Descriptionistic approaches*

Descriptionistic approaches to poetical tropes go back to Aristotle (*Poetics* XI, 1457b), who considered metaphor as a kind of analogy assuming that, in the metaphor, the words pointing out a comparison (“as if”, “looks like”, etc.) are omitted, although they are implied. Such an approach — notwithstanding several modifications put forward during the twentieth century — is now largely abandoned by philosophers of language, especially after the critiques by John R. Searle and Donald Davidson.⁸ Most of its twentieth-century modifications (critiqued by Searle and Davidson) had taken into account the Fregean distinction between *Sinn* and *Bedeutung*; therefore, the “regular” and “metaphorical” meanings were treated as different *Bedeutungen*, as if they were homonyms.

There is no need, after Searle and Davidson, to go too deeply into critiquing the theories advocating the existence of any specific “metaphorical” meaning. Instead, we would like to mention a unique consideration that will be relevant to our own approach (articulated by different authors but in an especially helpful manner by Davidson).

In most cases, we cannot retell a poetical text through prose, whereas this could easily have been done if the words of comparison were merely omitted or if there were some “metaphorical meanings” that could be described in an ordinary lexicographical way. The most important part of the text is lost when one attempts such a retelling: “I was playing the piano, the music was noisy, it resembled the sounds of (sea?) birds...”, and the second part of the strophe is even more difficult to retell. Such attempts show that metaphor has “more meaning” than simply a comparison or a kind of “homonymy”.

⁸ Searle (1979: 76–103). Cf. also (especially in connexion with Fregean heritage) Davidson 1984. Moreover, there are important criticisms of the Aristotle-inspired theories of metaphor in the paper by Hintikka and Sandu (see below).

13.2.3 *Semantic-pragmatic approach*

The attempts to avoid merely descriptionistic approaches are connected with semantics or pragmatics, or with a combination of both. The idea to consider metaphor as a partially pragmatic phenomenon was suggested by Paul Grice in the 1960s.⁹ According to Grice, the words in metaphor or irony do not have their regular meanings. Instead they have some *ad hoc* meaning that the speaker “implicates” to them. Grice called all these additional meanings *implicature*, and we can understand them out of context by means of pragmatics. So his was a semantic-pragmatic approach.

The ideas set out by Grice were developed by John Searle within his more general theory of speech acts. Searle proposes two opposing notions:

1. *word meaning* (or *sentence meaning*) as the meaning that words (or sentences) have in regular non-poetical language, and
2. *speaker meaning* (or *utterance meaning*) as the new meaning that the speaker adds to this word or sentence.

This approach was criticised, among other reasons, because the derivation of sentence meaning is not clear if some words are used in their *word meaning* and others in their *speaker meaning*. The question remains how these numerous speaker-meanings interact with regular word meanings. No general semantics was presented for these meanings, because the speaker/utterance meanings result from pragmatics. However, a theory that would encompass both semantics and pragmatics is not provided by Searle.

The main objection to any “speech acts” treatment of metaphor as well as to the Davidsonian purely pragmatic approach (see next section) is the demonstrable fact that, as Hintikka and Sandu put it, “[m]etaphor is a matter of meaning, not of use”.¹⁰ To show this, Hintikka and Sandu provide, among other examples, a number of instances where the understanding of metaphor is clearly independent from the context.

⁹ His seminal article (written already in 1967) is Grice 1975; see this and other his articles on the topic reprinted as Part I of Grice 1989.

¹⁰ Hintikka & Sandu (1994: 172–177); Hintikka and Sandu mention Searle as the author of “[o]ne such hopeless approach to metaphor” that they criticise (*ibid.*, p. 185, n.12). As an example of a recent modification of the Gricean approach without paying any attention to these criticisms by Hintikka and Sandu, see Ernie Lepore’s and Matthew Stone’s recent (although somewhat anachronistic) article Lepore & Stone 2010.

13.2.4 *Pragmatic approach*

The most influential pragmatic theory of metaphor was suggested by Davidson (1984). He denied the idea of any “metaphoric meaning” in the sense of Searle or Grice. He denied as well the descriptionistic approach. Davidson insists that the words and phrases that form metaphors do not have any other meanings apart from their regular “dictionary” meaning. However, metaphor does not belong to the domain of semantics at all, being a phenomenon of pragmatics.

According to Davidson, metaphor is a case of a direct reference, albeit not that of a simple “token” (in Ruth Barkan Marcus’ sense). It is rather like a picture:

How many facts or propositions are conveyed by a photograph?
None, an infinity, or one great unstatable fact? Sad question. A
picture is not worth a thousand words, or any other number.
Words are the wrong currency to exchange for a picture. (Davidson
1984: 263)

Davidson believes that understanding metaphors goes beyond language communication and syntax: “Metaphor makes us see one thing as another by making some literal statement that inspires or prompts the insight” (*Ibid.*) – notwithstanding the fact that (or, rather, precisely because of the fact that) they are patently false or absurdly true.

Of course, there is an “easy” way to disprove Davidson’s theory: to propose any working semantic theory of metaphor. We do believe that this could be possible, with the help of Hintikka and Sandu. However, even if not acceptable in full, Davidson’s theory has a unique merit: it underlines the idea that an “insight” is a necessary part of metaphor. Elaborating on this, Davidson states that the meaning of metaphor could never be covered by the meanings of words. Regarding this latter point, we will take Davidson’s side against even Hintikka and Sandu.

13.3 “Meaning lines” by Hintikka and Sandu

A new attempt to integrate poetical tropes into semantics was undertaken by Jaakko Hintikka and Gabriel Sandu.¹¹ According to them, the metaphor is

¹¹ Hintikka, Sandu, “Metaphor and Other Kinds of Nonliteral Meaning”. This is an expanded and corrected version of a 1990 paper.

neither reducible to a comparison based on the similarity of properties nor understandable without comparison. Like the comparison, metaphor points out similar properties (predicates). In the same manner, metonymy points out relevant relations of contiguity. But, then, both metaphor and metonymy go further in establishing so-called “meaning lines” between the proprietaries of properties (subjects of predicates)¹² The meaning lines are based on their relevant properties (predicates). The meaning lines drawn from world to world (in the PWS sense) connect the characteristic sets of individuals in each world corresponding to the relevant predicate, but without identification of the individuals themselves. Otherwise, these meaning lines would be the lines of transworld identification of the individuals.

Therefore, Hintikka and Sandu interpret these meaning lines as establishing some kind of transworld identity, although not an existential one. The meaning lines are not transworld lines, which would be based on neither similarity nor contiguity, but rather on the continuity (as David Kaplan has coined this term as early as 1967 (D. Kaplan 1979, but cf. the footnote on p. 88)), because it is the continuity which is the criterion of the transworld identification of the individuals. The recourse to PWS is the key feature of the Hintikka-Sandu approach. They propose it as a way out from precisely the problem that Davidson had described before he started to construct his own theory – which, according to Hintikka and Sandu, turned out to be “a non-theory of metaphor”. They agree with Davidson that, in the one-world semantics, his decision has no reasonable alternative, but they prefer to abandon the one-world semantics (Hintikka & Sandu 1994: 154).

In dealing with the necessity of adding something to the ordinary meaning of words, we have to either postulate a possibility of different *Bedeutungen* for the unique *Sinn*, or push this “something” outside the area of meaning, thus, into pragmatics. If we opt for the first alternative, we would have either

¹² Hintikka’s and Sandu’s treatment of meaning lines has been cautiously criticised by Anders Engstrøm, who noticed that some metaphors could not be interpreted *via* the similarity relation because they are based on the metaphorical mapping and integration in Lakoff’s sense (Engstrøm 2001). This detail does not affect the logical nature of the meaning lines, as Engstrøm acknowledges himself, and, probably, such problems could be overcome within a more universal description of metaphor and metonymy, e.g., the definition by Peter Gärdenfors and Simone Löhndorf in the terms of cognitive science: “Metaphors refer to mappings between domains, metonymies to meronomic relations within domains” (Gärdenfors & Löhndorf 2013: 452). As Engstrøm noticed, the Hintikka-Sandu PWS approach allows one to deal with cognitive definitions of metaphor and metonymy, too.

a problem of conflicting *Bedeutungen* within a unique world (which is already shown to be insurmountable in any logically consistent way) or the necessity of having different worlds, that is, PWS. Therefore, PWS provides a consistent way to deal with various kinds of indirect meaning.

13.4 Dispelling “the paradox of the PWS”?

What do meaning lines mean logically? Hintikka and Sandu call them “cousins” of the “intensions” of Montague; both belong to the truth-conditional semantics and allegedly behave in the same way:

Can metaphorical statements (i.e., statements containing metaphorically used words or expressions) be said to be true or false? On the basis of the account we have given the answer is unmistakably: yes. This account shows that the only unusual thing about a metaphoric sentence is that the meaning lines of one of its constituent expressions are drawn in a way different from its literal cousin. But in all other respects, the same semantical rules must apply to it. Otherwise we could not account for its meaning. And these semantical rules imply the applicability of the notions of truth and falsehood to the sentence (Hintikka & Sandu 1994: 170).

The “literal” meaning lines mentioned here are the same things as “intensions” in Montague’s PWS, that is, the functions assigning extensions to the terms and the propositions in each of the possible worlds. The metaphorical meaning lines work, according to Hintikka and Sandu, exactly in the same way. This means that, as they say, “the same semantical rules must apply to” both kinds of meaning and, therefore, both kinds of meaning lines. This, in turn, means for these authors that the statements containing words used in indirect meanings “can... be said to be true or false”. Thus, they insist that there is not a “metaphoric truth different from literal truth. A sentence can have a metaphorical meaning, and this meaning decides whether it is true or not in the normal gardenvariety sense of truth” (Hintikka & Sandu 1994: 170–172).

It is only the fact that the meaning lines are compatible with “the normal sense of truth” that would guarantee, in the eyes of Hintikka and Sandu, that the semantical rules governing them are the same as in Montague’s PWS (we will see, in the next section, that this is not the case, however).

For Hintikka and Sandu themselves it is vital to remain within the realm of Montague's and David Lewis's semantics. They open their article with a discussion of the phenomenon they call "the paradox of the possible world semantics". The paradox is as follows: there is an apparently extremely helpful idea that "...the meanings of different types of lexical items and other expressions are... functions from possible worlds to extensions".

On the basis of this success in handling the general concept of meaning, one is justified to expect that PWS should offer an excellent framework for the actual analyses of lexical meanings, either analyses of the meanings of particular lexical items or analyses of interesting concrete problems in the theory of lexical meaning. Yet this justified expectation remains largely unfulfilled by what we can find in the literature. We find in the PWS-oriented literature relatively few semantical analyses of particular lexical items and few informative discussions of interesting problems concerning some types of lexical meaning. This strange state of affairs is what we propose to call the paradox of PWS. We can put it in the form of a question. As far as lexical meaning is concerned, is PWS an instance of false promises or unused opportunities? (Hintikka & Sandu 1994: 151–152).

This is why Hintikka and Sandu turn to the "metaphor as a counter-example to the paradox" (title of section 2 of their article), trying "to dispel the paradox of PWS by means of a concrete example" (Hintikka & Sandu 1994: 152).

If we agree with the authors, as we do, that they succeeded in demonstrating that the semantical rules governing both literal and non-literal meaning are the same, we have to acknowledge that, in fact, they created a powerful argument against PWS in the sense of Montague or Lewis or in any other sense fitting with the Fregean program. To "dispel the paradox of PWS", it would be not enough to demonstrate that the sentences containing words used in indirect meanings have truth values. One would have to demonstrate, moreover, that these truth values are the denotations of the appropriate sentences — otherwise no Fregean semantics, be it one-world or PWS, would work. Hintikka and Sandu overlooked this problem¹³. Thus, instead of dispelling

¹³ There is one point where they touch it tangentially, when acknowledging that in the actual use of the metaphorical statements "the question of truth and falsity normally does not arise", and

“the paradox”, they rather “dispelled” the Fregean semantics as such. Let us consider the situation a bit more deeply.

13.5 Shift to situational semantics

To begin with, we can consider once more our example from Pasternak to show that the truth values of the metaphorical and similar sentences have little to do with their meaning. The sentences “I fed out of my hand a flock of keys” and “I was playing the piano” have the same truth values (independent from our definition of the very notion of truth value) but obviously quite different meanings (denotations), because the metaphoric meaning belongs to the first sentence but not to the second.

By the way, this is why we are not even interested to know whether the lyrical character of the poem really did (in the possible world of the poem)¹⁴ play the piano. We are interested in the process *per se*, regardless of whether it did occur in any of the possible worlds (or, to say it differently, it is sufficient to us to know that there is some world, imaginary at least, where these things did occur).¹⁵ This is why, as Hintikka and Sandu noticed, the question of the truth or falsity of such sentences most often does not arise.

Let us take a step to a more formal substantiation of this conclusion. According to Hintikka and Sandu, their meaning lines behave according the same semantical rules as the intensions of Montague. This is not the case. The difference appears in the fact that the meaning lines, unlike the intensional functions of Montague, hold against the permutations used in the demonstration of the theorem proposed by Putnam.

Putnam’s theorem (or, as David Lewis termed it, “paradox”)¹⁶ demonstrates “...that there are always infinitely many different interpretations of the predicates of a language which assign the ‘correct’ truth values to the sentences in all possible worlds, *no matter how these ‘correct’ truth values are singled*

this is “a consequence of their nature” (Hintikka & Sandu 1994: 171). This constatation would be a good point to start wondering whether these truth values could really be the denotations of the corresponding statements.

14 On this application of PWS see, e.g., Elena Semino’s monograph 1997

15 For a general view of the relevant PWS, see Priest 2005.

16 Lewis 1984; cf.: “Hilary Putnam has devised a bomb that threatens to devastate the realist philosophy we know and love”; the kernel idea for this, in Lewis’ wording, is “...that there is no semantic glue to stick our words onto their referents, and so reference is very much up for grabs” (p. 221).

out” (Putnam’s italics; Putnam 1981: 34–35). In the course of the demonstration, Putnam operates with intensions in the sense of Montague, somewhat artificially but without breaking any rule of Fregean semantics, to obtain an absurd confusion of meanings. In his own example, the sentence “a cat on a mat” turns out to mean “a cherry on a tree” (it turns out to be true if and only if there is a cherry on a tree). Putnam’s “devastating”, for Fregean semantics, permutations of Montague’s intensions are based on the Fregean supposition that the sentences denote their truth values.

Let us suppose that the same permutations are performed with the meaning lines. Thus, we obtain that a cat is the same as a cherry. Such a result is not necessarily absurd, because this could be a metaphor or another poetic trope. For instance, Вишенка (“Little Cherry”) is a popular Russian nickname for cats, which has an obviously metaphorical origin (based on the similarity between a cherry and a small kitten that has rolled itself up into a ball). This example is enough to show that Putnam’s demonstration, as “devastating” for the Fregean semantics of Montague as it may be, is of absolutely no harm for the meaning lines. And this means, in turn, that the meaning lines are non-Fregean, that is, they engender the sentences whose denotations are not their truth values.

Finally, let us try to show what kind of non-Fregean semantics the meaning lines imply.

The theory of Hintikka and Sandu can be formalised by means of the so-called “metaphorical logic” recently elaborated by Vladimir Vasjukov for the purpose of formalising the ontology of Alexis Meinong (Vasjukov 2004, 2005), without any particular interest in natural language, although the relations he describes actually correspond to the meaning lines. Namely, Vasjukov provides the following “metaphorical” analogue to Leibniz’s principle of identity of indiscernibles, which he calls “the principle of similarity of indiscernibles from a preconceived viewpoint” (PSIPV):

$$(1) \quad (\text{PSIPV}) (a \supseteq b) \leftrightarrow \exists \varphi (\varphi(a) \Rightarrow \varphi(b))$$

To put this into words: in some preconceived aspect a referentially leads to b . Here \supseteq means “indiscernibles from a preconceived viewpoint”. Connective \Rightarrow means “referentially leads to from some preconceived viewpoint”. It means that, at least, one situation where a does occur must be involved, in some sense (from a preconceived viewpoint), into the situations where b does occur.

It is the principle PSIPV that seems to fit quite well with the meaning lines

of Hintikka and Sandu. Indeed, both comparison and contiguity (as well as mapping or other cognitive mechanisms) are able to result in a preconceived viewpoint which, in turn, allows grasping some new meanings and expressing them with poetical tropes.

The connective “referentially leads to from some preconceived viewpoint” on which PSIPV relies is evidently non-Fregean. In fact, it is non-Fregean twice over, and, therefore, Vasjukov calls it “non-non-Fregean”. It is obtained with the weakening of a non-Fregean connective “referentially leads to” by Roman Suszko, whose situational semantics (Suszko 1975)¹⁷ provided a general framework for Vasjukov’s “metaphorical logic”.

In Suszko’s semantics, the stronger correspondent of PSIPV is the following form of the principle of identity of indiscernibles (PII):

$$(2) \quad (\text{PII}) (a \sqsubseteq b) \leftrightarrow \forall \varphi(\varphi(a) \Rightarrow \varphi(b))$$

where φ is a formula, $a \sqsubseteq b$ means “ a situationally entails b ”, \Rightarrow is a non-Fregean connective “referentially leads to”.

The Suszkean connective “referentially leads to” is defined via his Non-Fregean Axiom (NFA) for the formulae (sentences) p and q :

$$(3) \quad (\text{NFA}) (p \equiv q) \rightarrow (p \leftrightarrow q)$$

To put this into words: the sentences are identical (their denotations are the same) if and only if the situations they describe are the same. Here the sign \equiv “(extensionally/referentially) identical to” is written instead of \Leftrightarrow , the above connective “referentially leads to” in both directions.

Suszko formulated his NFA after having made explicit what he called the Fregean Axiom (FA):

$$(4) \quad (\text{FA}) (p \leftrightarrow q) \rightarrow (p \equiv q)$$

This formula means: the logical equivalence of the formulae (sentences) p and q entails their identity (the identity of their denotations). Thus, the denotations of all sentences are their truth values. In situational semantics, on the contrary, the denotations of the sentences are the *situations* they describe (and *not* their truth values).

FA was not discussed or even explicated in Montague’s or David Lewis’s works, and so it leaked unnoticed into the Hintikka-Sandu theory of meta-

¹⁷ Cf. also, as a useful introduction, Wójcicki 1984.

phor – in the way that they constructed a non-Fregean theory when thinking that they were acting *ad majorem gloriam* of the Fregean semantics...

In fact, Hintikka and Sandu provided a situational semantics theory of indirect meaning. Given that they insist (rightly, in our opinion) that their theory is an integral – and not separate – part of the natural language semantics as a whole, their theory became a challenge to the whole Fregean programme in formal semantics. There is no room here, however, to explore these infinite semantical horizons, because we have to finalise, instead, our own theory of poetical tropes.

13.6 Paraconsistent logic for poetical tropes

Even if poetical tropes work along meaning lines, this fact would not explain why they are so expressive and meaningful. The “insight” marked by Donald Davidson as the main feature of poetical tropes is absolutely unexplainable with recourse to the meaning lines. Thus, either this “insight”, as Davidson thought, does not belong to the realm of semantics at all, or the Hintikka–Sandu semantics is incomplete. The former alternative would mean that we need to revisit the semantic-pragmatic paradigm and propose a new theory of indirect meaning within it. But we would prefer to pursue the latter alternative.

One could dare to say that Hintikka and Sandu did explain the anatomy of poetical trope but not its physiology. They transformed poetical trope into a description, although a perfectly correct one. Meaning lines are phenomena which we can observe during the autopsy of the corpse of a poetical trope when it no longer lives for us.

The poetical trope is alive when meaning lines are already established but still not explained in the sense of avoiding contradiction – to take famous Putnam’s example, when we still call our kitty “Cherry” but have not yet rationalised this metaphor with the picture of a small kitten rolled up into a ball.

This means that the logic of a poetical trope is necessarily paraconsistent: it invalidates the logical principle *ex contradictione quodlibet* [$\{A, \neg A\} \models B$ for every A and B], that is, it is non-explosive.

As a standard situation, poetical tropes imply a contrary contradiction, that is $A \wedge B$, but not a contradictory contradiction, that is $A \wedge \neg A$. The contrary contradiction is weaker, because, even if the consistent logics do not accept a cat to be a cherry, they easily accept that something is neither a cat nor a

cherry, that is, the conjunction of the negations of the two parts of the contrary paraconsistent conjunction. The stronger contradictory contradiction (e.g., somebody is a cat and not a cat) is not typical for poetical tropes. Even when it appears in some highly poetical texts (such as, e.g., *De divinis nominibus* by Dionysius the Areopagite), it belongs rather to philosophy and theology than to poetics.

If we adopt, for our theory of tropes, paraconsistent logic, we are no longer obliged to work in PWS. Let us recall that PWS was called for by Hintikka and Sandu in order to avoid inconsistencies. In the paraconsistent framework, both PWS and one-world reasoning are equally available, providing that, in the latter case, the meaning lines would become not inter-worldly but, for instance, they would be established between different mapping domains of a unique possible world.

Among the paraconsistent logics the most studied are those based on the contrary contradiction¹⁸ We do not intend to go deeper into the technical details at present. Our main purpose is pointing out that the paraconsistent logics satisfy Davidson's condition of pulling our mind beyond the direct meanings of words and of ensuring an insight. As the mathematician James Joseph Sylvester (1814–1897) put it,

“[a]s a lightning clears the air of unpalatable vapors, so an incisive paradox frees the human intelligence from the lethargic influence of latent and unsuspected assumptions. Paradox is the slayer of Prejudice.” (Quoted as an epigraph to da Costa, Krause & Bueno 2007: 791.)

13.7 Conclusion

The theory of poetical tropes proposed above is an extension of the Hintikka-Sandu theory of meaning lines with the addition of paraconsistent logic. It is the paraconsistent element that is responsible for the key feature of poetical trope that Davidson called “insight”.

It was argued that the semantics of poetical tropes is situational and, therefore, non-Fregean, and this feature is already implied in the Hintikka-Sandu theory, although Hintikka and Sandu consider their theoretical framework as Fregean.

¹⁸ As an up-to-date introduction to these logics, see, e.g., da Costa, Krause & Bueno 2007.

Tsakhur as a case-stacking language

Ekaterina Lyutikova

14.1 What is case?

Recently, significant research has been done to clarify the nature of case, one of the most controversial among grammatical categories.¹ On the one hand, case is unique in that it is the only syntactic feature that enters the derivation unvalued and gets its value in the course of derivation, whereas other unvalued features (i.e. person or number) are valued under *AGREE* operation. The absence of a syntactic unit which would bring case as a valued feature into the derivation is due to another peculiar characteristic of case: there is no constituent on which the case feature could be reasonably interpreted. Thus, the existence of case is offending to the Radical Interpretability Principle (Brody 1997), which states that each feature must receive a semantic interpretation in some syntactic location.

Therefore, several attempts have been made to reduce the category of case to some more familiar feature that would be interpretable somewhere else. In their pioneering paper, Pesetsky & Torrego (2001) proposed that case is an (uninterpretable) Tense feature on a DP, and that Nominative case assignment is the agreement in Tense of a subject DP with (finite) T. In a similar vein, Accusative was suggested to represent a Telicity feature of Asp (Svenonius

¹ This paper is my homage to Barbara Partee and her unrelenting efforts to make western and Russian linguistics mutually comprehensible. The research has been supported by Russian Scientific Foundation (PHФ), project № 14-18-03270 “Word order typology, communicative-syntactic interface and information structure in the world’s languages”.

2001, Richardson 2003), and Genitive – a quantificational feature of Q (Bailyn 2004). These proposals led to a reasonable question: if particular cases are rather different formal features associated with different functional heads, why do we have case as a uniform grammatical category, with mutually exclusive values? Indeed, nothing is wrong with a noun phrase which is, say, an internal argument of a telic verb (hence [Telicity: telic], or “accusative”) and at the same time a subject of a finite clause (hence [Tense: finite], or “nominative”).

In principle, there are at least two ways to approach this challenge. The first solution is to think of a single interpretable feature that would be responsible for case assignment; the differences between case values might reflect the particular syntactic head the DP agreed with to value this feature. Thus, both Nominative and Accusative can be viewed as a Tense feature on a DP, so that Accusative is valued by V while Nominative is valued by T (Pesetsky & Torrego 2004). The second approach is to allow a DP to bear more than a single feature associated with case. This approach is advocated by Ora Matushansky (2008a, 2010) who claims that what has been called “Case” corresponds to the uninterpretable counterparts of interpretable features of multiple functional heads involved in the derivation and dominating a DP. If so, we expect to find instances where several pieces of case morphology stack on a DP.

This is exactly the case in Tankgic languages of Australia, such as Kayardild and Lardil, that coherently mark their DPs with case morphology associated with higher heads (Evans 1995, Round 2009, 2013, Richards 2007, 2013, Arkadiev 2015). In Kayardild example (1) case affixes on the DP ‘man’ reflect its possessor position (GEN), the instrumental function of the higher DP ‘the man’s net’ (INS) and the grammatical tense of the predicate (ABL).

- (1) maku [yalawu-jarra yakuri-na [[dangka-karra-nguni-na] mijil-nguni-na]].
 woman catch-PST fish-ABL man-GEN-INS-ABL net-INS-ABL
 ‘A woman caught a fish with this man’s net.’ (Kayardild; Evans 1995)

Tankgic languages are of particular interest for case theory not only because they show an exclusively consistent realization of Suffixaufnahme (“suffix copying”, Plank 1995), but also because they clearly demonstrate that case markers are associated (and often share their shape) with interpretable features of syntactic heads, such as Tense, Aspect, Modality, Force, etc.

Case stacking, however, is a rare grammatical phenomenon. The common pattern is “one DP – one case”. How does it come that a DP in, say, Russian or Latin ends up with only one case morpheme? If we want to maintain

the assumption that a DP can host multiple case morphology, we need a (morphophonological) rule that would erase all pieces of case morphology except for one (e.g. the outermost, the innermost, etc.).² Alternatively, we may associate the case morphology with one feature and allow higher heads to re-value this feature on a given constituent, unless it undergoes spellout.

The analysis of Russian case morphology undertaken in Pesetsky (2013) seems to share both approaches. On the one hand, it attributes case marking to a realization of a single feature – the syntactic category (part of speech, POS) of the head: *N* marks the constituent it merges with genitive, *D* – nominative, *v* – accusative, *P* – oblique. On the other hand, the realization of this feature on a given lexical item can be thought of as an array of POS labels reflecting its own syntactic category as well as syntactic categories of all constituents that dominate it: thus, the noun *stolu* ‘table.DAT’ in (2) bears *NGEN* (as a lexical noun), *DNOM* (as dominated by DP) and *PDAT* (as dominated by PP). At Spellout, the One-Suffix Rule deletes all but the outermost case affix, yielding the correct form *stol-u* ‘table-DAT’.

- (2) [... [... [*stolu*_{NP}] ..._{DP}] ..._{PP}]
 POS: <NGEN>
 <NGEN-DNOM>
 <NGEN-DNOM-PDAT>
 Spellout: stol-~~NGEN-DNOM-PDAT~~

Pesetsky’s analysis effectively solves a persistent problem of Russian grammar – the unintelligible weirdness of the numeral construction, thus proving the claim the book starts with: “It is the oddest facts that sometimes provide the most useful clues to significant properties of language” (p. 1). The obvious question, however, is whether this successful analysis can be extended to data from other languages, and if yes, which components of the proposal are language-specific and which are universal. After a brief overview of French data in 9.2, Pesetsky tentatively suggests that some of the assumptions, including the main idea that case is a morphological realization of the features’ matrix, or prototype, of a head copied onto its sister constituent under merge, are cross-linguistically valid.

² A slightly different way to deal with the single-morpheme spellout of multiple uninterpretable features on a DP is to consider the case morpheme as the realization of a feature bundle rather than of a single feature and to rely on complex Vocabulary Insertion rules which include impoverishment and context specification (Matushansky 2008a).

The aim of this paper is to elaborate on the problem by discussing data from Tsakhur (Lezgian/Dagestanian). I will propose an analysis of Tsakhur case morphology based on the approach of Pesetsky (2013). I will argue that Tsakhur is a case-stacking language which has no One-Suffix Rule, thus being more similar to Lardil than to Russian.

The rest of the paper is organized as follows. Section 14.2 is an overview of the Tsakhur case system. In section 14.3, I develop an analysis of Tsakhur based on the assumption that case morphology on a given constituent is the realization of the POS features of heads dominating this constituent. Section 14.4 elaborates the concept of the prototype of a syntactic category and argues for more “degree of freedom” in its featural composition. In Section 14.5, I address the problem of locality of POS feature assignment. Section 14.6 concludes the paper.

14.2 Tsakhur case system

Tsakhur is a language with a rich case system. In Kibrik (1999), the 18 case categories of Tsakhur are divided into two groups: relational cases (nominative, ergative, dative, affective, comitative, possessive) and spatial cases.³ Nominal categories also include number (singular, plural) and noun class. Tsakhur has 4 noun classes; the class membership is partly interpretable: class I nouns denote human males, class II nouns – human females, inanimate and non-human nouns are idiosyncratically distributed between class III and class IV.

With a few exceptions, case morphemes in Tsakhur are attached in the agglutinative manner (see Table 14.1). Nominative singular is the unmarked form of the noun; in plural, nominative is unmarked with the plural stem ending in *-bi* and marked *-r* with the plural stem ending in a long vowel. All other case affixes are attached to the oblique stem.

Relational cases are primarily used to mark arguments of verbs and predicatives. Thus, ergative is the case of the transitive agent, affective marks transitive experiencer, dative encodes the addressee and benefactive, possessive marks the possessor in the predicative possessive construction (as in ‘I’ve got a horse’), comitative is used with symmetrical predicates, as well as in

³ Here I follow Kibrik’s (1999 and elsewhere) terminology so that the term ‘absolutive’ is reserved to denote the thematic macro-role incorporating the theme argument of the transitive verb and the sole argument of the intransitive verb. The morphological case that realizes this macro-role in ergative languages is referred to as ‘nominative’.

	<i>jaIq</i> ‘way’		<i>jed_j</i> ‘mother’	
	SG	PL	SG	PL
NOM	<i>jaIq</i> √	<i>jaIq-bi</i> √-PL	<i>jed_j</i> √	<i>jed-ā-r</i> √-PL-NOM
ERG	<i>jaIq-i-n</i> √-OBL-ERG	<i>jaIq-b-iš-e</i> √-PL-OBL-ERG	<i>jed-ē</i> √-OBL-ERG	<i>jed-ā-š-e</i> √-PL-OBL-ERG
DAT	<i>jaIq-i-s</i> √-OBL-DAT	<i>jaIq-b-iši-s</i> √-PL-OBL-DAT	<i>jed-i-s</i> √-OBL-DAT	<i>jed-ā-ši-s</i> √-PL-OBL-DAT
COM	<i>jaIq-i-k_oa</i> √-OBL-COM	<i>jaIq-b-iši-k_oa</i> √-PL-OBL-COM	<i>jed-i-k_oa</i> √-OBL-COM	<i>jed-ā-ši-k_oa</i> √-PL-OBL-COM

Table 14.1: Partial paradigm of nouns *jaIq* ‘way’, *jed_j* ‘mother’

instrumental function. Nominative is the default case, that is, it is found on the sole argument of intransitive verbs and on the internal argument of transitive verbs. Dative and comitative are also governed by a few postpositions. Spatial cases are used to encode location, source and goal.

Unlike other Dagestanian languages, Tsakhur lacks genitive case. All the adnominal DPs bear a specific morphology that Kibrik (1999) refers to as attributive. Attributive-marked DPs fall into various semantic types associated with the genitive construction cross-linguistically; in (3), some of them are exemplified:

- (3) a. *bajram-i-n* *Gel_j*
 Bajram-OBL-ATTR leg
 ‘Bajram’s leg’
- b. *bajram-i-n* *Xaw*
 Bajram-OBL-ATTR house
 ‘Bajram’s house’
- c. *jazič-i-n* *kitab*
 writer-OBL-ATTR book
 ‘the writer’s book’
- d. *daraR-i-n* *gurt*
 silk-OBL-ATTR dress
 ‘silk dress’
- e. *Xol-ji-n* *ki_lo*
 flour-OBL-ATTR kilo
 ‘kilo of flour’
- f. *ku_lfat-i-n* *paltar*
 child-OBL-ATTR clothing
 ‘children’s wear’

As we see in (3), attributive suffix, similarly to case suffixes, attaches to the

oblique stem of a nominal. However, Kibrik (1999) argues that attributive is not a (genitive) case. The reason is that attributive suffix appears on every NP-internal constituent, be it an adjective, a demonstrative, a case-marked DP, a postpositional phrase or a relative clause. Thus, in (4a) *jug* ‘good’ is used as an adjective and therefore receives the attributive suffix (cf. the form *jug-da* ‘well’ in adverbial uses). In (4b), the demonstrative pronoun obligatorily bears the attributive morphology. (4c–d) show NP-internal case-marked DP and PP, respectively. Finally, (4e) is an example of a relative clause which is formed by adding the attributive suffix to one of the three verbal stems, in this case, the imperfective one.

- (4) a. *jug-un* *Xaw*
 good-ATTR house
 ‘a good house’
- b. *ma-n* *gurt*
 this-ATTR dress
 ‘this dress’
- c. *t’et’-b-iši-k_oa-n* *gurt*
 flower-PL-OBL-COM-ATTR dress
 ‘a dress with flowers’
- d. *č’ij-e-l_j* *uRa-n* *sama_jot*
 earth-OBL-SUPES above-ATTR airplane
 ‘an airplane above the ground’
- e. *aq_o-ē-nčē* *nur* *gjä-n* *šejIX-ā-r*
 face-IN-EL light come.IPF-ATTR saint-PL-NOM
 ‘saints whose faces emanate light’

The obvious analysis of the attributive is that it is a functional head which enables a constituent to become an NP modifier. The data fit perfectly within the system proposed by Edward Rubin (2002, 2003) where all the modifiers are structurally identical in that they are embedded in the functional shell, ModP, which in some languages surfaces as some additional morphology like Chinese particle *de* or Russian “long form” of adjectives.

	SG	PL
Class I	-na	-(i)n
Class II	-na	-(i)n
Class III	-na	-(i)n
Class IV	-(i)n	-(i)n

Table 14.2: Attributive suffix agreement

- (5) a. [_{ModP} Mod [_{XP} ...]]
- b. na yiben zai zhuozi-shang de shu Chinese
 that one at table-TOP Mod book
 ‘that book on the table’
- c. vysok-oye derevo Russian
 tall-Mod.AGR tree
 ‘a tall tree’

The analogy with Rubin’s data is further supported by the fact that Tsakhur attributive suffix shows agreement with the head noun in class and number, as shown in Table 14.2. In the examples above, the head noun is plural or belongs to class IV; accordingly, the attributive suffix has a form *-(i)n*. With a class I–III singular head, however, the attributive suffix *-na* (glossed thereafter as AA, animate attributive) is used.

- (6) a. XoI-ji-n kil,o
 flour-OBL-ATTR kilo.IV
 ‘kilo of flour’
- b. XoI-j-na mašuk
 flour-OBL-AA sack.III
 ‘a sack of flour’

What is unusual with Tsakhur attributive suffix is that it distinguishes between the nominative form of the head noun and all other forms; the non-nominative forms trigger the invariable oblique form of the attributive suffix *-ni*, glossed as AOBL (7b, 8b). Attributive form of a head noun counts as oblique (7c, 8c).

- (7) a. XoI-j-na mašuk
 flour-OBL-AA sack.III
 ‘a sack of flour’
- b. XoI-j-ni mašuk-a-k_oa
 flour-OBL-AOBL sack.III-OBL-COM
 ‘with a sack of flour’
- c. XoI-j-ni mašuk-a-na q’imat
 flour-OBL-AOBL sack.III-OBL-AA price.III
 ‘the price of a sack of flour’
- (8) a. Xe-b-na mašuk
 big-III-AA sack.III
 ‘a big sack’
- b. Xe-b-ni mašuk-a-k_oa
 big-III-AOBL sack.III-OBL-COM
 ‘with a big sack’
- c. Xe-b-ni mašuk-a-na q’imat
 big-III-AOBL sack.III-OBL-AA price.III
 ‘the price of a big sack’

Let’s suppose that the “direct” attributive suffix is indeed an exponent of a syntactic head mediating the embedding of an XP under the nominal projection. The “oblique” attributive suffix then signals not only this embedding, but also the syntactic position of the higher NP. In (7c), for instance, *-ni* spells out the double embedding: that of the NP *XoI* ‘flour’ under the NP *XoIjna mašuk* ‘sack of flour’, and that of the NP *XoIjna mašuk* ‘sack of flour’ under the biggest NP *XoIjni mašukana q’imat* ‘the price of a sack of flour’. This reasoning cannot be implemented in the Mod agreement analysis in an obvious way; however, it fits perfectly into the case-stacking analysis put forward in Pesetsky (2013). In the next section, I develop the proposal in more detail.

14.3 Proposal

I adopt the main idea of Pesetsky (2013) that case morphemes are exponents of a syntactic category the given constituent merges with. The case – POS correspondence for Tsakhur is given in (9).

the nouns in numeral constructions.⁵ On the contrary, Tsakhur bare nouns (e.g. presumably incorporated components of complex predicates) show nominative singular morphology exclusively. We can conclude, therefore, that if Tsakhur noun is “born attributive”, it is in the same sense as Russian transitive verb is born accusative or Russian preposition *k* ‘to’ is born dative. If a Tsakhur root is categorized as N in the lexicon, it has a suppletive form of the “primeval attributive” (10a).

The next step is embedding of the NP under D (10b). I remain agnostic about whether the characterization of Tsakhur as a DP-language is independently motivated in syntax. However, it seems that the case-stacking system I’m developing here necessitates the DP-projection. One of the arguments has to be postponed until section 14.5; the other argument that we are turning to now is morphological. Let’s come back to Table 14.1 and consider the nominal paradigm. We can observe that nominative is either unmarked or overtly marked, and in the latter case it is complementarily distributed with the oblique stem suffix. Suppose that the unmarked nominative form contains a null suffix; if so, all the case forms of a noun contain either a nominative suffix or an oblique suffix. I suggest that this is an exponent of a category D which is assigned to an NP after it merges with D. Accordingly, the nominal paradigm is to be reinterpreted as in Table 14.3.

In (10c), the DP *Xol* ‘flour’ merges with the noun *mašuk* ‘sack’. Being inherently N, the head noun marks the DP attributive. The noun *Xol* ‘flour’ ends up bearing an array of suffixes D-N. (10d) repeats the step in (10b); this time, the higher NP is embedded under D. Finally, the DP ‘a sack of flour’ merges with a null postposition assigning comitative. The postposition PCOM marks this DP as PCOM, and the morphological exponents of this feature end up on both *Xol* ‘flour’ and *mašuk* ‘sack’.

Now we are in a position to formulate the rules of case realization. Let’s start with (10d) representing the nominative (= independent) form of the DP ‘a sack of flour’. It is clear that there is no such thing as One-Suffix Rule operating in Tsakhur. Were it so, (10d) would be spelled out as two unmarked nominal stems with null nominative case suffixes, as in (11).

determiner as “born nominative”, and every preposition as “born oblique”. (Pesetsky 2013: 8)

⁵ Pesetsky argues that the genitive form of the post-numeral constituent (e.g. *èti dva molodyx aktëra* ‘these two young actors’, *èti pjat’ novyx stolov* ‘these five new tables’) is a realization of the primeval genitive which the nouns *aktër* ‘actor’ and *stol* ‘table’ entered the derivation with, and which the higher head D was unable to overwrite as nominative.

	<i>jaIq</i> ‘way’		<i>jed_j</i> ‘mother’	
	SG	PL	SG	PL
Root	<i>jaIq</i> √.N	<i>jaIqbi</i> √.PL.N	<i>jed_j</i> √.N	<i>jedā</i> √.PL.N
NOM	<i>jaIq-∅</i> √.N-D	<i>jaIqbi-∅</i> √.PL.N-D	<i>jed_j-∅</i> √.N-D	<i>jedā-r</i> √.PL.N-D
ERG	<i>jaIq-i-n</i> √.N-D-V _{TR}	<i>jaIq-b-iš-e</i> √.PL.N-D-V _{TR}	<i>jed-ē (<-i-e)</i> √.N-D-V _{TR}	<i>jed-ā-š-e</i> √.PL.N-D-V _{TR}

Table 14.3: Nominal paradigm reinterpreted

- (11) *flour.N-D-N-D sack.N-D
 √.N -NOM/OBL √.N -NOM/OBL
 XoI -∅ mašuk-∅
 ‘a sack of flour’

Therefore, we conclude that all the POS exponents on the nominal stem contribute to the morphological makeup of the nominal. With (10d), this contribution is rather straightforward: N is spelled out as an attributive suffix, the “final” D is a nominative suffix, and the “intermediate” D is an oblique suffix. The representation in (12) results.

- (12) flour.N-D -N -D sack.N-D
 √.N -NOM/OBL-AA-NOM/OBL √.N -NOM/OBL
 XoI -j -na-∅ mašuk-∅
 ‘a sack of flour’

Turning to (10e), we can easily build the right form of the noun *mašuk* ‘sack’ by making use of the same correspondence rules we applied to (12): thus, P_{COM} is spelled out as a comitative case suffix, and the “intermediate” D is mapped into the oblique suffix. The spellout of the noun *XoI* ‘flour’ is more complicated. The array of four POS labels – D-N-D-P_{COM} – is required to be mapped into two pieces of morphology: an oblique stem suffix and an oblique attributive suffix. I propose that the spellout process starts with the stem and proceeds rightwards, to the effect that the first “intermediate” D is mapped into the oblique suffix. Then, any array of POS labels starting with N and containing at

least one label distinct from D (that is, V, P, or N) is spelled out as an oblique attributive suffix (13).⁶

- (13) flour.N-D -N-D-PCOM sack.N-D -PCOM
 √.N -NOM/OBL-AOBL √.N -NOM/OBL-COM
 XoI -j -ni mašuk-a -k_oa
 ‘with a sack of flour’

The theory generating the derivation in (10) and the mapping matrices in (12)–(13) is certainly incomplete: first, it lacks a mechanism that determines the agreement of the attributive suffix with the head noun in class and number (cf. Table 14.2); secondly, it fails to determine whether the POS label stacking is restricted in some way, or the label array grows monotonically in the apparently infinite recursive procedure. I will address these issues in due course in sections 14.4 and 14.5; at this stage, however, I turn to the relational cases that are associated with the syntactic category of verb in (9).

Being an ergative language, Tsakhur shows the ergative case marking on the external argument of the transitive verb (14a). A special type of transitive construction emerges with experiential verbs (14b) and the possessive *be* (14c).

- (14) a. all-ē jaIq aljaʔ-a.
 Ali.I.OBL-ERG road.IV IV.build-IPF
 ‘Ali is building a road.’
- b. bajram-i-k’le jiš-da miz w-ac’a.
 Bajram.I-OBL-AFF we.OBL-AA language.III III-know.IPF
 ‘Bajram speaks (=knows) our language.’
- c. bajram-i-qa-d jug-un Xaw wo-d.
 Bajram.I-POSS-IV good-ATTR house.IV be-IV
 ‘Bajram has got a good house.’

Crucial for the current proposal is that relational case assignment in Tsakhur is completely independent of the presence of the (finite) T: whatever verbal

6 I believe that this preliminary sketch of how the spellout in Tsakhur works can be further elaborated within whatever reasonable spellout theory, e.g. Distributed Morphology or some version of nanosyntax. It should be emphasized that even in coherently case-stacking languages like Kayardild, some combinations of morphemes are prohibited; in this case, one of them is deleted, or the non-legitimate array is replaced by a portmanteau morpheme (Evans 1995: 129ff). For the time being, I do not want to commit myself to a particular solution and leave the formulation rather vague.

category α belongs to. All the features but POS feature are unvalued on the prototype, to the effect that when the prototype merges with a paucal DP in (18), it agrees with it in number and then imposes the valued features' matrix on the paucal DP. The relevant part of the feature assignment rule is given in (19).

(19) **Feature Assignment (FA)** (Pesetsky 2013: 99 (121))

Copying: When α merges with β , forming [$_{\alpha}$ $\alpha\beta$], if α has satisfied its complementation requirements and is designated as a feature assigner for β , its prototype α' is immediately merged with β , forming [$_{\alpha}$ α [$_{\beta}$ α' β]].

The analysis outlined above raises an important question: which features can be copied from α to β besides the POS feature? In other words, is the POS feature the only valued feature of the prototype?

It appears that for Pesetsky, the answer is clearly positive. Indeed, among the grammatical features of the Russian DP, only the case feature (that is, POS feature of the head in the current system) is determined outside of this DP. However, this is not universally true. First of all, we should distinguish between the two kinds of the same feature: interpretable (and valued on a head before entering into derivation) and uninterpretable (and valued by agreement). Usually, these two "flavors" of a feature are distributed between syntactic categories. Thus, the person or number feature is interpretable for a DP but uninterpretable for V or T. But it is also possible that both kinds of a feature are present on the same syntactic category. In many languages, the head noun in the possessive construction shows agreement with the possessor DP in person, number or noun class. In Tatar example (20) the head noun *bala* 'child' bears the possessive affix triggered by the genitive-marked possessor. No matter whether this morphology sits on N or rather D; what is crucial is that α can agree with β in a feature F that is already valued on α . Needless to say, valuing the uninterpretable flavor of F (Fu) via agreement on α does not change the value of the interpretable flavor of F (Fi) on α : (20) clearly shows that despite the 1PL affix on the head noun *bala* 'child', the DP *beznej balabız* 'our child' itself is clearly 3SG.

(20) bez-nej bala-bız kil-de- \emptyset / *kil-de-k / *kil-de-lär. Tatar
 we-GEN child-1PL come-PST-3SG / *come-PST-1PL / *come-PST-3PL
 'Our child came.'

The reasoning above suggests that, in principle, nothing prevents the prototype

from containing a valued grammatical feature besides the POS feature. If the prototype α^* contains a feature F valued as φ , it can be realized on β as an uninterpretable feature Fu. I believe that this is exactly what happens in Bagwalal (Andic/Dagestanian) where the genitive suffix shows agreement with the possessee in noun class and number (Kibrik 2001).

- (21) a. ima- \bar{s} u-b X_oan
 father-OBL-GEN.NH horse.NH
 ‘the father’s horse’
- b. ima- \bar{s} u-r X_oan-i
 father-OBL-GEN.NH.PL horse.NH-PL
 ‘the father’s horses’
- c. ima- \bar{s} u-j ja \bar{s}
 father-OBL-GEN.F sister.F
 ‘the father’s sister’

Going back to Tsakhur, we can derive the agreeing attributive suffix of a prototype containing valued POS feature, as well as valued class and number features that are realized on the constituent merged with this prototype as uninterpretable features.

With this in mind, let us discuss the realization of the N’ prototype in Tsakhur. Based on the striking parallelism between Russian genitive case marking and French preposition *de*, Pesetsky suggests (p. 99 ff) that there can be different ways of realizing the prototype. Russian-style realization makes use of the word-level case morphology that characterizes every subconstituent of a DP. French-style realization is an opposite extreme when the prototype is realized phrasally, on the level of the maximal projection. How can we characterize Tsakhur in this respect?

It seems that Tsakhur represents an intermediate stage between Russian and French. On the one hand, case and attributive suffixes land on a noun as pieces of word-level morphology; moreover, the “first-level” maximal projections in a DP show exponents of the prototype merged with this DP. In (22b), the P_{DAT}’ prototype (which emerged when the DP in (22a) merged with a silent P_{DAT} postposition) is realized on the head noun *gade* ‘boy’ (as a dative case affix) and on every modifier in this DP (as an oblique attributive affix).

- (22) a. haj-**na** āli malktab-ē-qa ark'in-**na** akel-i-k_oa-**na** gade
 this-AA high school-IN-ALL I.GO.PFV-AA wit-OBL-COM-AA boy
 'this smart boy that entered the high school'
- b. haj-**ni** āli malktab-ē-qa ark'in-**ni** akel-i-k_oa-**ni**
 this-AOBL high school-IN-ALL I.GO.PFV-AOBL wit-OBL-COM-AOBL
 gade-j-s
 boy-OBL-DAT
 'to this smart boy that entered the high school'

On the other hand, constituents of other syntactic categories are opaque with respect to the eventual realization of a higher prototype on an XP dominated by them. Thus, in (23a) the N* prototype merges with a small clause headed by a particle *na* (homonymous to one of the attributive suffixes). The DP *zerana n_jak* 'cow's milk' is nominative, as signaled by the form of the attributive suffix. If it were the case that the N* prototype had percolated through the PredP, we would find attributive morphology on the noun 'milk' and, consequently, the oblique attributive affix on the dependent DP 'cow's'. Example (23b) demonstrates that CP is also opaque and does not allow the N* prototype to surface on the clause-internal DPs. Finally, in (23c) the N* prototype is realized adjacent to the postpositional phrase but cannot percolate to the DP it dominates.

- (23) a. [_{PredP} [_{DP} zer-a-na n_jak] -na] -na jiq'
 COW-OBL-AA milk.III -PRED -AA soup.III
 'soup of the cow's milk' (Kibrik 1999: 387 (109a))
- b. [_{CP} Xalq'-i-n k'art'if-ā-r ajʔe] -n žiga
 people-OBL-ERG potato-PL-NOM plant.IPFV -ATTR place.IV
 'the place where people plant potatoes'
- c. [_{PP} č'ij-e-l_j uRa] -n samal_{ot}
 earth-OBL-SUP_{ESS} above -ATTR plane.IV
 'a plane above the ground'

To sum up, Tsakhur grammar makes a clear distinction between nouns and other syntactic categories. First, only nouns allow prototype realization by the word-level morphology. If we notice that the N* prototype itself is a noun, the simple generalization emerges: only heads of the category N can realize POS prototypes at the word level. Secondly, only nominal constituents (NP and DP)

are transparent for the prototype percolation. We can tentatively suggest that these two properties are not independent from each other. This suggestion, however, requires a more detailed investigation.

Our last question concerning the structure of the prototype relates to the interpretability of its features. As I stated above, if the prototype α' contains a feature F valued as φ , it can be realized on β as an uninterpretable feature FU: φ . On the view that β agrees with the (silent) prototype valuing β 's uninterpretable feature FU and realizing it as the word-level morphology, the feature F on the prototype can be both interpretable and uninterpretable. But if the phrase-level morphology adjacent to β is a realization of the prototype itself, the feature F of the prototype can only be uninterpretable.

Merging a DP with a masculine plural noun by no means makes this DP denote a group of men. In the similar vein, merging a DP with a postposition does not make this DP become a postposition. What the postpositional morphology on the DP signals is that it is *in the projection* of the postposition. This is a purely syntactic, or configurational, information that has no impact on the interpretation of this DP. Therefore, the POS feature of the prototype is generally uninterpretable.

Can we think of a situation when the POS feature of the prototype is interpretable? I believe that this is exactly the case of conversion, or category changing. Merging a constituent of the category X or a category-neutral root with a prototype containing an interpretable POS feature will make this constituent or root acquire this POS.

Interestingly, Tsakhur possesses a very productive mechanism of substantivization which can be thought of as merging a constituent of whatever category with the N' prototype containing interpretable POS (and noun class) features. In (24), some examples of substantivized constituents of different categories are represented. (24a) shows a deictic pronoun (*ma-* 'this') which is used as an anaphoric pronoun when substantivized. (24b) is an example of the free relative. Some substantivized phrases get idiomatic – thus, the word for footwear is literally “on the foot” (24c).

- (24) a. ma-n-Gi-s
 this-ATTR-OBL.II-DAT
 ‘to her’
- b. [mič’áIr ek’ra suRoc] -in-Gu-s
 in.the.morning early get.up.PFV -ATTR-OBL.I-DAT
 ‘to (the male person) who got up early in the morning’
- c. Gel-i-l-in
 foot-OBL-SUPESS-ATTR
 ‘footwear’

The morphological structure of the substantivized phrases suggests that it is the attributive affix that converts constituents into nouns. In light of our previous claim that the attributive affix spells out the N^* prototype, it is N^* that makes a constituent a noun. However, we have to distinguish between the two flavors of the N^* prototype: the “substantivizing” prototype N^*_I with an interpretable POS_I feature and the “agreeing” prototype N^*_U with an uninterpretable POS_U feature. This distinction is crucial for the spellout: thus, the word *ma-* ‘this’ in (25a) and (25b) bears the same array of labels (that is, of prototypes), as (26a–b) demonstrates. The only difference between the two arrays is that for (25a), the array starts with the “agreeing” prototype N^*_U (26a), whereas for (25b), its first label is the “substantivizing” prototype N^*_I (26b).

- (25) a. ma-ni zalʔfa-j-s b. ma-n-Gi-s
 this-AOBL woman-OBL-DAT this-ATTR-OBL.2-DAT
 ‘to this woman’ ‘to her’
- (26) a. this $-N^*_U$ $-D^*$ $-PDAT^*$ woman.N $-D^*$ $-PDAT^*$
 √ $-AOBL$ √.N $-NOM/OBL$ $-DAT$
 ma -ni zalʔfa -j -s
 ‘to this woman’
- b. this $-N^*_I$ $-D^*$ $-PDAT^*$
 √ $-AA$ $-OBL$ $-DAT$
 ma -n -Gi -s
 ‘to her’

Now we can restate our realization rules in the following way: an array of prototypes starting with N^*_U prototype and containing at least one more

prototype out of the set $\{V^*, P^*, N^*\}$ is realized cumulatively as an oblique attributive suffix. Otherwise, every prototype is realized separately with a dedicated piece of world-level or phrase-level morphology.

14.5 Locality and the timing of feature assignment

The aim of this section is to explore eventual locality conditions on the feature assignment in Tsakhur. It shall be noted that the putative locality restrictions are to a significant degree obscured by the specific rules of the prototype realization. As we noted in section 14.4, the non-nominal constituents only allow the prototype to be realized at the phrase level, and do not let it percolate inside. The only type of constituents allowing the morphology to percolate across their boundaries are NP and DP. Unfortunately, NP-internal modifiers are realizing N^*_U prototype. Thereby, when the further morphology lands on them, it invariably yields a cumulative portmanteau morpheme *-ni* (oblique attributive suffix), so that we cannot tell apart different prototype arrays, such as $-N^*_U-D^*-PDAT^*$, $-N^*_U-D^*-N^*$, $-N^*_U-D^*-PDAT^*-N^*$, $-N^*_U-D^*-PDAT^*-N^*-D^*-VTR^*$ etc. For this reason Tsakhur lacks a clear evidence for locality-induced fails of feature assignment.

What is interesting about Tsakhur, however, is the unusual “non-locality” of feature assignment across the DP boundary. Suppose that the timing of feature assignment (FA) and spellout is as proposed in Pesetsky (2013: 88) and represented here in (27):

(27) **Timing of operations relevant to Spell-Out of a phase Φ**

Step 1: The syntax constructs Φ .

Step 2: Merge (α , Φ).

Step 3: FA applies.

Step 4: Spell-Out applies to Φ (freezing it for further applications of FA).

For both Russian and Lardil, (27) together with the assumption that DP is a phase correctly predicts that feature assignment across a DP boundary is restricted to the element with which that DP merged. In other words, to predict the morphology on a DP we have to wait as long as it undergoes the next merge.

With this in mind, let's consider the Tsakhur example in (28). What we are interested in is for how long the spellout of a DP *Xol* ‘flour’ must be postponed. (28a) shows the first merge of this DP with the noun *mašuk* ‘sack’.

The feature assignment process adds an N'_U prototype. Had the DP undergone spellout at this stage, it would have the form *Xoljna*, as in (28a). But the resulting morphological shape of this DP can change after the dominating DP undergoes merge and feature assignment (28b). Only at this moment, the lower DP is immune to further applications of feature assignment, or, more precisely, cannot realize them morphologically.

- (28) a. $[_{DP} [_{DP} \text{XoI-j-na}] \text{ma}\check{\text{s}}\text{u}\check{\text{k}}]$
 flour-OBL-AA sack.III
 ‘a sack of flour’
- b. $[_{DP} [_{DP} [_{DP} \text{XoI-j-ni}] \text{ma}\check{\text{s}}\text{u}\check{\text{k}}\text{-a-na}] \text{q}'\text{i}\text{m}\text{a}\check{\text{t}}]$
 flour-OBL-AOBL sack.III-OBL-AA price.III
 ‘the price of a sack of flour’

How can we account for this “delayed activity” of the DP? One way out is to say that DP is not a phase in Tsakhur. In the absence of syntactic evidence for the eventual phase-hood of the Tsakhur DP we shall not dismiss this possibility. Yet suppose that DP turns out to be a phase. In this case, I see two potential solutions of the puzzle. First, we can slightly adjust (27) to allow the head (and specifiers) of the phase to survive the spellout:

(29) **Timing of operations relevant to Spell-Out of a phase Φ**

Step 1: The syntax constructs Φ .

Step 2: Merge (α , Φ).

Step 3: FA applies.

Step 4: Spell-Out applies **to the complement of Φ** (freezing it for further applications of FA).

(29) will freeze not the DP, but rather its complement NP. In order to save the head N from an early spellout we shall assume its movement out of NP. The obvious goal of this movement is D, which is plausible if we keep in mind that the features of N influence the selection of the nominative case affix and the form of the oblique stem.

Secondly, we can think of a possibility that sending a phase to the spellout only freezes its syntactic representation, whereas the spellout itself, that is, forming the PF representation, is postponed until the sentence processing is complete.⁹ It is only at this stage that the realization rules come into play. If

⁹ This is essentially what David Pesetsky proposes for Lardil genitive puzzle (Pesetsky 2013: 102–110).

so, we can consider oblique attributive morphology in (28b) as a realization of the concatenation of (phase-internal) word-level morphology and (phase external) phrase-level realizations of prototype, as the representation in (30) shows.

- (30) [DP [DP [DP flour.N -D [-N]-D'-N*] sack.N -D-N]-D' price -D]
 √.N -OBL -AOBL √.N -OBL-AA-NOM √.N -NOM
 XoI -j -ni mašuk -a-na-∅ q'imat -∅
 'the price of a sack of flour'

14.6 Concluding remarks

This paper is an attempt to extend the empirical coverage of an appealing idea that case is an interpretable feature after all, and that case morphology on a DP is the realization of the POS features of heads dominating this DP. Since a DP can be in principle dominated by more than one maximal projection, case morphemes are not mutually exclusive. This gives rise to the second idea – that case morphology can stack on a constituent reflecting the hierarchy of projections this constituent is embedded under. Case stacking can be covert, if realization rules suppress all but one case affix, or overt, if no such rules apply. In this respect, Tsakhur data is of significant interest because it displays the overt case stacking phenomenon.

Another characteristic of Tsakhur is that it demonstrates both word-level and phrase-level realization of the prototype. Moreover, Tsakhur allows us to clarify significantly the possible featural composition of the prototype: thus, I argued that the prototype can in principle contain other valued features besides the POS feature. Furthermore, there is evidence that the prototype is indeed involved when a constituent changes its syntactic category – e.g. gets substantivized. However, Tsakhur seems to give the two N* prototypes – the “substantivizing” prototype and the “agreeing” prototype – a slightly different spellout.

The very similar idea is implemented in Norvin Richards' (2007) analysis of Lardil where PF Spellout of a constituent can be delayed and take place after its LF Spellout, to the effect that phase-external morphology may surface on this constituent in PF. I'd like to thank Peter Arkadiev for drawing my attention to the similarity of the two proposals, as well as for other useful suggestions.

I admit that the case-stacking theory and its application to Tsakhur may seem odd. As a response to such objections I want to paraphrase the statement by David Pesetsky that I cited in the introductory section: “It is the oddest theories that sometimes are the most useful tools in the study of language.”

Русские местоимения и снятая утвердительность

Елена Викторовна Падучева

Посвящается Барбаре, дорогой и любимой

Барбара Парти занимает уникальное место в моей жизни и науке. Разумеется, не только моей, а многих и многих лингвистов разных стран и континентов — все мы вместе образуем некий натуральный класс: это класс людей, которые — кто по транзитивности через Барбару, а кто и просто так, непосредственно, — любят друг друга.

Барбара приложила немалые усилия к тому, чтобы сблизить позиции лингвистов формальных и неформальных направлений в семантике. В данной работе ставится задача, на которой можно показать, что это сближение действительно дает плоды.

15.1. Местоимения и отрицание

Я буду апеллировать к докладу (Partee 2012), который посвящен русским кванторным словам *много* и *многий*.¹ Моя конечная задача — дать объяснение следующему примеру употребления слова *многий* (в среднем роде, т.е. *многое*):

¹ Данная работа была выполнена при финансовой поддержке РГНФ, грант №14-04-00604а.

- (1) <...> она [Анна Григорьевна Достоевская], “чтобы *многого не забыть*, обещала завести записную книжку” (Из письма А. Г. Достоевской матери — цит. по: А. Устинов Путешествие из Петербурга в Ленинград: Послесловие к книге: Л. Цыпкин Лето в Бадене. М.: НЛЮ, 2003).

Писавшая, очевидно, имела в виду следующую интерпретацию своих слов: ‘она, чтобы <потом> не оказалось так, что многое забыла, обещала завести записную книжку’.

Строго говоря, сейчас так сказать нельзя и едва ли можно было во времена Достоевского. В то же время, нельзя сказать, что это предложение неправильное. Оно соответствует неким частным правилам взаимодействия местоименных слов с отрицанием. Эти правила для разных контекстов разные. В частности, они особые для модальных контекстов. Кроме того, они разные для разных классов местоимений. Надо понять, каковы эти правила. Так, близкое по структуре к (1) предложение (2) нормально²:

- (2) И еще сказал, чтобы *многого не ждали*: и роль-то у него небольшая, и самое интересное не роль, а то, что он обнаружил за кадром.

[Елена Жарова. Тупик Горевого (2002) // «Домовой», 2002.11.04]

На тему об английском *many* и его взаимодействии с отрицанием есть известный пример в (Есперсен 1958):

- (3) а. *Not many* of us wanted the war ‘Не многие из нас хотели войны’: не > ∃ > P;
б. *Many* of us *didn't* want the war ‘Многие из нас не хотели войны’: ∃ > не > P.

В (3а) присловное отрицание; семантически — общее; в (3б) сентенциальное отрицание; семантически — частное. Этих противопоставлений недостаточно для описания закономерностей, действующих в примерах (1) и (2). Причем уточнения требует и семантика местоимений, и семантика отрицания.

В английском языке есть термины *sentential negation* и *constituent negation*, про которые часто предполагается, что они обслуживают синтаксис и семантику одновременно: *sentential negation* — это семантически общеотрицательное предложение, *constituent negation* — семантически

² Здесь и далее примеры со ссылкой в квадратных скобках — из Национального корпуса русского языка, ruscorgora.ru.

частноотрицательное. Однако уже на примере (3) ясно, что такого совпадения может не быть. Предлагается поэтому последовательно использовать разные термины в применении к синтаксическому и к семантическому плану предложения (см. Падучева 2013, 41ff).

Термин **предикатное** отрицание (от англ. predicate ‘сказуемое’) будет использоваться в синтаксическом смысле — как отрицание при сказуемом. Отрицание при других членах предложения я называю **присловным**. Есть необходимость в понятии **клаузального** отрицания — это отрицание, которое выражается отдельным предложением — *неверно, что*.

В семантическом плане различаются общеотрицательное и частноотрицательное предложение. Предложение называется **общеотрицательным**, если оно допускает перефразировку, в которой входит в сферу действия клаузального отрицания; и **частноотрицательным**, если какая-то его часть не входит в сферу действия клаузального отрицания, см. (Jackendoff 1972), (Падучева 1974: 145ff). Так, предложение *Он в течение пяти дней не умывался* частноотрицательное, поскольку оно перефразируется как *В течение пяти дней было неверно, что он <хоть раз> умылся*, а не *Неверно, что он умывался течение пяти дней*. В (Падучева 2013: 41–45) показано, что предикатное отрицание может быть в семантическом плане и общим, и частным. И то же верно для присловного отрицания: оно может быть и частным, и общим.

Термин «сентенциальное отрицание» (от англ. sentential negation) предлагается использовать как синоним для термина предикатное отрицание, т.е. в применении к синтаксической структуре предложения. В термине «конституэнтное отрицание» (от англ. constituent negation) русская терминология, которая ориентирована на грамматику зависимостей, как представляется, потребности не испытывает — можно обойтись термином присловное отрицание.

Предикатное отрицание может иметь целый набор семантических интерпретаций. Из них нам понадобятся **стандартное** предикатное отрицание (т.е. отрицание со стандартной интерпретацией) и отрицание **с широкой сферой действия** (Богуславский 1985: 60), иначе **глобальное**. Оно **нестандартное**. Определение понятия отрицания с широкой сферой действия см. в разделе 15.4. Есть еще **смещенное** предикатное отрицание (Падучева 1974: 149, Богуславский 1985: 40–52), которое в семантическом плане во многом совпадает со стандартным предикатным, а

формально отличается от предикатного специфической просодией. Так что стандартное предикатное отрицание охарактеризовано не только синтаксически, но и просодически.

Термины общее и частное отрицание (т.е. отрицание, соответственно, в обще- и частноотрицательном предложении) относятся к семантическому плану. Между тем термин глобальное отрицание гибридный: это предикатное отрицание, которое имеет нестандартную интерпретацию — широкую сферу действия.

Ключевую роль в последующем изложении играет понятие **снятой утвердительности**. Это понятие мы рассмотрим на примере местоимений на *-нибудь*. Дело в том, что местоимения на *-нибудь* имеют весьма примечательный набор контекстов употребления; можно думать, он поможет разобраться и с контекстами слова *многое* в примерах (1), (2). В (Fitzgibbons 2011) говорится: “many of the environments where *-nibud'* is licensed are also environments where other languages license NPIs or FCIs. This calls for a serious examination of the question whether *-nibud'* -items are NPIs or FCIs.” Есть основания считать, что местоимения на *-нибудь* не принадлежат ни к тому, ни к другому классу, а образуют свой, но вполне естественный класс.

Ниже в разделах 15.2 и 15.3 речь идет о местоимениях на *-нибудь* и вводится понятие контекста снятой утвердительности, иначе — неутвердительного. Раздел 15.4 посвящен нестандартному отрицанию и местоимениям на *-нибудь* в контексте этого особого типа отрицания. В разделе 15.5 я вернусь к примерам со словом *многое* и покажу, что они связаны с тем же нестандартным отрицанием.

15.2. Местоимения на *-нибудь*

Местоимения на *-нибудь* выражают **экзистенциальную квантификацию**, т.е. позволяют упоминать объект из того или иного класса (множества), не индивидуализируя его, например:

Остаётся разве что завернуть в ближайшую деревню и спрашивать у *какой-нибудь* тётки, где находится партизанская база? [Василь Быков. Болото (2001)]

В (Haspelmath 1997) (см. также рецензию Dahl 1999) местоимения на *-нибудь* отнесены к **нереферентным неопределенным** (англ. non-specific indefinite).

Про местоимения на *-нибудь* известно (Падучева 1985), что они невозможны в утвердительном контексте, а употребляются только в **неутвердительно**м — иначе, в контексте **снятой утвердительности** по У. Вейнрейху (Weinreich 1963). Термин Вейнрейха «снятая утвердительность» (который получил распространение в русскоязычной литературе, см. Падучева 1985: 94–97, Падучева 2004: 297–8, 328–9, Падучева 2005, 2011, 2013; в Богуславский 2001, 2008, Борщев et al. 2008, Добровольский 2011 и др.) может пониматься двояко.

1. Первое понимание исходит из того, что **утвердительно**й является пропозиция, которая может быть использована в речевом акте утверждения — когда говорящий берет на себя ответственность за истинность высказывания. Например, пропозиция предложения *Маша вернулась* утвердительная. Тогда **неутвердительно**й — **в широком смысле** — является пропозиция, которая используется в речевом акте вопроса или побуждения (*Маша вернулась?* *Маша, вернись!*), а также во всех модальных и гипотаксических контекстах — не только в контекстах типа *Иван думает, что Маша вернулась* или *Может быть, Маша вернулась*, но и, например, в контексте *Иван знает, что Маша вернулась*, где пропозиция ‘Маша вернулась’ составляет презумпцию, и говорящий обязан считать ее истинной.
2. Во втором понимании пропозиция употребляется **неутвердительно**, если говорящий не несет ответственности за ее истинность — т.е. не утверждает ее как истинную, а также не предполагает в виде презумпции или следствия. В этом втором, *узком смысле*, **неутвердительно**сть (она же **снятая утвердительно**сть) — это то же, что ‘безотносительность к истине’.

Неутвердительно

сть в узком смысле, можно думать, совпадает с понятием **неверидиктальность** (non-veridicality), которое с конца 90-х годов используется в формальной семантике. Согласно (Zwarts 1995; см. также Giannakidou 1998), пропозициональный оператор (или контекст) *F* является для пропозиции *p* **веридиктальным**, если и только если *Fp* имеет следствием или пресуппозицией *p*; в противном случае оператор (или контекст) *F* является **неверидиктальным**. Например, контекст *Иван зна-*

ет, что Маша вернулась будет для пропозиции ‘Маша вернулась’ веридиктальным, а *Иван думает, что Маша вернулась* — неверидиктальным.

При описании контекстов употребления местоимений на *-нибудь* используется понятие снятой утвердительности в узком смысле. Эти местоимения практически недопустимы в утвердительном контексте так наз. «эпизодического» предиката, ср. **Он купил что-нибудь*. Так, в предложении *Кто-нибудь ей помог* скрытая субъективная модальность — имеется в виду ‘наверно, кто-нибудь ей помог’. Они недопустимы и в контексте фактивного или имплицативного подчиняющего предиката: **Хорошо, что он купил что-нибудь*. Но употребляются в контексте операторов, которые «снимают» утвердительность — в косвенных наклонениях, в гипотаксической позиции: *Купи что-нибудь, Куплю что-нибудь, Он купит что-нибудь? Купить что-нибудь, Если он купил что-нибудь..., Могу купить что-нибудь* и т.д. Они возможны в контексте вопроса, императива, будущего времени, сослагательного наклонения, условия, нереальной модальности, дизъюнкции, дистрибутивности, узуальности. Далее контексты *-нибудь* исследуются на материале Национального корпуса русского языка.

Как синоним для терминов неутвердительность и снятая утвердительность в узком смысле, а также неверидиктальность, можно использовать термин **нереферентность** — нереферентным является местоимение на *-нибудь*; нереферентной (т.е. ни истинной, ни ложной, а также неутвердительной, неверидиктальной) является пропозиция, составляющая его контекст.

Неверидиктальность используется в работах (Giannakidou 1998, 1999, 2006, 2011) и многих других преимущественно применительно к словам и выражениям с отрицательной полярностью (англ. negative polarity items, NPI). Действительно, все контексты русских местоимений отрицательной полярности (местоимений ОП) являются неверидиктальными. Однако местоимения ОП сосредоточены преимущественно вокруг разных видов отрицания и освоили лишь очень небольшую часть других неверидиктальных контекстов. Между тем для местоимений на *-нибудь* неверидиктальность не просто характеризует набор допустимых контекстов. Про них можно сказать гораздо больше: множество контекстов, лицензирующих местоимения на *-нибудь*, **почти полностью** очерчивает круг мыслимых неверидиктальных (неутвердительных, нереферентных) контекстов в языке. Допустимый контекст для местоимений на *-нибудь*

создают почти все мыслимые операторы снятой утвердительности. Имеется лишь пара исключений, которые легко перечислить (см. Падучева 1985: 217).

1. Контекст предиката неуверенного восприятия является неверидиктальным (из *Кажется, Ваня вернулся* не следует 'Ваня вернулся'); однако в этом контексте употребляется местоимение неизвестности, как и в контексте обычного предиката восприятия, т.е. референтное неопределенное местоимение на *-то*:
- (4) * *Кажется, кто-нибудь* стучит \Rightarrow *Кажется, кто-то* стучит.
2. В контексте глагола речи, неверидиктальном, тоже употребляются местоимения неизвестности, а не на *-нибудь*:
- (5) * *Говорят, что он кого-нибудь* отравил \Rightarrow *Говорят, что он кого-то* отравил.
3. Контекст долженствования неверидиктальный, но допускает и *-нибудь*, и *-то*, причем *-то* предпочтительно (см. об этом Падучева 1985: 220; поставленный в Dahl 1970 вопрос, является ли замена *-нибудь* на *-то* в контексте долженствования формальным согласованием или семантическим противопоставлением, остается открытым); так, в примере ниже хочется исправить *-нибудь* на *-то*:
- (6) — Послушайте, я же знаю, что у вас *должно* быть *что-нибудь* ещё.
[В.Голяховский. Русский доктор в Америке (1984-2001)]

Особую проблему для местоимений на *-нибудь* представляет контекст **прямого** (т.е. сопредикатного) отрицания (англ. clausemate negation). Широко распространено представление о том, что местоимения на *-нибудь* НЕ употребляются в контексте прямого отрицания — в контексте прямого отрицания для выражения экзистенциальной квантификации используется не местоимение на *-нибудь*, а отрицательное на *-ни* (о соотношении *никакой* и *неверно* + *какой-нибудь* см. Paperno 2010):

(7) неверно, что (он *что-нибудь* изменил) = Он *ничего не* изменил.

Поскольку отрицание — это, в каком-то смысле, главный из нереперентных контекстов, такое распределение описывалось как «эффект бублика» (bagel distribution, см. Pereltsvaig 2006).

Положение о том, что местоимения *-нибудь* не употребляются в контексте прямого отрицания, подкрепляется аргументами разного рода.

Аргумент 1. Когда местоимение на *-нибудь* встречается в контексте прямого отрицания, оно обычно интерпретируется как не входящее в сферу действия этого отрицания:

(8) Если *кто-нибудь не* являлся на работу по болезни, он воспринимал это как личное оскорбление. [В. Ф. Панова. Кружилиха. Роман (1947)]

В самом деле, поскольку в сфере действия отрицания вместо местоимения на *-нибудь* должно быть употреблено отрицательное, невозможность синонимической замены *кто-нибудь* на *никто* в (8) доказывает, что *кто-нибудь* не входит в (8) в сферу действия отрицания. Так, в (9) условие совсем иное, чем в (8):

(8') Если *никто не* являлся на работу, он воспринимал это как личное оскорбление.

Аргумент 2. Местоимение на *-нибудь* отличается от местоимений ОП — в частности, от ОП на *-либо*, — тем, что ОП на *-либо* вполне совместимы с сопредикатным отрицанием, которое включает их в свою сферу действия, см. (Падучева 1985: 218).

- (9) а. *Какого-либо* решения он *не* принял;
б. **Какого-нибудь* решения он *не* принял.

Однако эта красивая картина рушится, когда мы сталкиваемся с примерами типа (10), (11), где местоимение на *-нибудь* находится в сфере действия отрицания и не заменяется на отрицательное,

(10) Почти не найти семей, в которых *кто-нибудь не* пострадал бы [Б. Б. Вахтин. Этот спорный русский опыт (1978)]

(11) Откусила, подставив снизу ладошку лодочкой, чтобы *чего-нибудь не* уронить. [Федор Кнорре. Родная кровь (1962)]

Первая реакция состоит в том, чтобы рассматривать эти примеры как редкие и исключительные. Она неправильная — примеров этого типа в Корпусе огромное количество. Решение состоит в другом. Примеры типа (10), (11) возникают в контексте особого *нестандартного* употребления отрицания. Это нестандартное употребление мы рассмотрим в разделе 15.3. А если ограничиться предикатным отрицанием в *обычном употреблении*, то положение о невозможности *-нибудь* в сфере действия прямого отрицания остается в силе.

15.3. Перечень контекстов употребления местоимений на *-нибудь*

15.3.1. Отрицание

Местоимение на *-нибудь* допустимо в одной предикации с прямым отрицанием (в обычном употреблении) только в том случае, если оно не входит в сферу действия этого отрицания, см. пример (8) из раздела 15.2. Для выражения экзистенциальной квантификации в сфере действия отрицания вместо местоимения на *-нибудь* употребляется отрицательное. Если замена *-нибудь* на отрицательное местоимение дает предложение с совершенно другим смыслом — это и означает, что *-нибудь* было вне сферы действия отрицания:

Может быть, я *чего-нибудь* не понял [\neq *ничего*];

Я каждый раз боюсь, что *кого-нибудь* не учту [\neq *никого*].

Местоимение на *-нибудь* возможно разве что в контексте отрицания в вышестоящей предикации — если глагол в ней не фактивный:

Не думаю, чтобы он *что-нибудь* изменил.

Если глагол в вышестоящей предикации фактивный, он не лицензирует *-нибудь*:

*Я *не* доволен тем, что он *что-нибудь* изменил.

15.3.2. Сопредикатная ИГ с квантором общности или с числовым квантором существования

Местоимения на *-нибудь* допустимы в контексте сопредикатной ИГ, связанной квантором общности. Обычно у *-нибудь* в этом контексте есть дополнительное значение *дистрибутивности* — ‘для каждого свой’:

<...> хорошо, что *каждый что-нибудь* принес [Дмитрий Быков. Орфография (2002)].

Местоимение на *-нибудь* возможно также в контексте сопредикатной ИГ с числовым квантором существования, но только при наличии минимизатора *хоть*:

Ровно три человека видели <хоть> что-нибудь.

15.3.3. Узуальность и многократность; всегда

С такими, как он, *часто что-нибудь* случается;

Дарья обычно звонит кому-нибудь, когда ей скучно;

<...> *поминутно* принужден он был удерживаться от *какой-нибудь* грубости (Пушкин)

Я никогда не могу это определить и *всегда кого-нибудь* спрашиваю. [«Экран и сцена», 2004.05.06]

15.3.4. Условие

а) Контекст придаточного условного:

Если он что-нибудь утаил, он за это заплатится;

Если бы он что-нибудь знал, он бы сказал.

б) Контекст деепричастного оборота:

Испугавшись *чего-нибудь*, он в поисках защиты мчался ко мне и прыгал на руки. [Вальтер Запашный. Риск. Борьба. Любовь (1998-2004)]

в) Целевой оборот допускает местоимения на *-нибудь* так же, как условный:

Я спустилась в буфет, *чтобы что-нибудь* перекусить [И.А.Архипова. Музыка жизни (1996)]

15.3.4.1. Ограничитель в составе ИГ с универсальной квантификацией

Ограничитель в составе ИГ с универсальной квантификацией — это скрытое условие, Падучева 1974: 136). Поэтому местоимения на *-нибудь* допустимы в этом контексте так же, как в контексте условия:

Всякий, кто что-нибудь для нее сделает, будет вознагражден.

Это такое слово, чтобы *всех*, кто тебя *чем-нибудь* не устраивает, быстренько опустить. [(форум) (2005)]

15.3.4.2. Ограничитель в составе ИГ с общеродовым значением

То же самое верно для ограничительного условия к ИГ в общеродовом (generic) значении:

Человека, который что-нибудь для нее сделает, она отблагодарит.

15.3.5. Вопрос

15.3.5.1. общий

Кто-нибудь приходил?

15.3.5.2. частный

У кого есть *что-нибудь* почитать?

15.3.6. Дизъюнкция, т.е. разделительные союзы или и либо... либо

Он взял с собой Машу *или кого-нибудь* из ее подруг.

15.3.7. Модальности возможность и необходимость

15.3.7.1. Возможность, в том числе — эпистемическая

Он *может кого-нибудь* убить, и ему ничего не будет. [В.Козлов. Перед экзаменами (2002)]

Кто-нибудь мог ее обидеть.

15.3.7.2. Необходимость, долженствование

Он *должен что-нибудь* сделать; *Придется кого-нибудь* попросить помочь; *Необходимо* было с *кем-нибудь* посоветоваться.

В контексте *должен* в прош. времени, т.е. *должен был*, у подчиненной пропозиции возникает, в качестве одной из интерпретаций, презумпция факта. Для *вынужден был* или *пришлось* эта интерпретация единственная; контекст становится веридиктальным, отсюда запрет на *-нибудь* (эта проблематика обсуждается, в связи с англ. *must* и *have to*, в Goddard 2014):

Русские местоимения и снятая утвердительность

**Пришлось кого-нибудь попросить помочь.*

15.3.8. Грамматическое будущее время

Мы еще *встретимся где-нибудь*.

15.3.9. Установки, касающиеся будущего

15.3.9.1. желание, в том числе — выраженное оптативом и другими конструкциями с частицей *бы*

Он хочет *куда-нибудь* поехать;

Он стремится *что-нибудь* узнать о своих родственниках.

Он ищет *что-нибудь* интересное для тебя;

Хорошо бы он *что-нибудь* купил поесть; Поехать бы ему *куда-нибудь* отдохнуть!

Если бы *кто-нибудь* это знал!

15.3.9.2. просьба, предложение, в том числе — выраженные формой императива

Он просит *что-нибудь* почитать;

Дайте *чего-нибудь* поесть; Позвольте мне *что-нибудь* взять на память;

Скажи *что-нибудь*! Спойте нам *какой-нибудь* романс!

15.3.9.3. разрешение, согласие, уступка, готовность

Можешь пойти *куда-нибудь* погулять;

Я согласен *что-нибудь* добавить.

15.3.10. Сомнение, предположительность, нереальность и просто мнение

Сомневаюсь, что он *что-нибудь* сделал;

Боюсь, что он *что-нибудь* напутал;

Наверно, его *кто-нибудь* известил;

Странно, чтобы он *что-нибудь* нашел;

Едва ли он *что-нибудь* исправил;

Я думаю, ей *кто-нибудь* помог; ср. *Я знаю, что ей *кто-нибудь* помог;

Надеюсь, *что-нибудь* осталось.

15.3.11. Обусловленность

В примере (а) *-нибудь* лицензируется контекстом обусловленности:

(а) Если Катя дома, в холодильнике уже *что-нибудь* есть (пример из Fitzgibbons 2014).

В примере (б) обусловленность выражена сослагательным наклонением — *это решило бы* = ‘это решило бы, если бы произошло’. Модальность обусловленности — одно из значений сослагательного наклонения (см. Падучева 2014):

(б) Это решило бы *какие-нибудь* ваши проблемы.

15.3.12. Сравнение

Я знаю о вас больше, чем *кто-нибудь*. [А.С.Грин. Дорога никуда (1929)]

Контекст сравнения не характерен для *нибудь*. В (Giannakidou 2011) утверждается, что *any* в контексте сравнения выступает в значении местоимения свободного выбора (free choice). В русском языке самым естественным в этом контексте является местоимение ОП:

Я знаю о вас больше, чем *кто бы то ни было*.

Предъявленный перечень не может не вызвать удивления: трудно представить языковую единицу, у которой контексты употребления составляют такой естественно характеризуемый класс, как у местоимений на *-нибудь*! Этот перечень представляет интерес в типологическом плане: набор контекстов можно использовать как эталон при сравнении нереперентных неопределенных местоимений в разных языках. Разумеется, также и при сравнении разных типов местоимений в русском языке.

15.4. Местоимения на *-нибудь* и нестандартное отрицание

Вернемся теперь к местоимениям на *-нибудь* в контексте нестандартного отрицания. Ключом к решению проблемы будет тут понятие снятой утвердительности, которое было определено в разделе 15.1.

Сначала рассмотрим примеры, где местоимение на *-нибудь* находится вне сферы действия сопредикатного отрицания, формула $\exists x \neg P(x)$.

- (12) Ты будешь рад, если у меня *что-нибудь* не получится.
[Б. Окуджава. Новенький как с иголки (1962)]
- (13) — Тебе *что-нибудь* не нравится? — забеспокоилась жена. Да, кое-что, — сухо ответил Семён Семёнович. [И. А. Ильф, Е. П. Петров. Широкий размах (1935)]
- (14) А если *почему-нибудь* не сможешь приехать в Ялту, то пусть она их вышлет на Госфилармонию. [Лидия Вергинская. Синяя птица любви (2004)]
- (15) Вот я *как-нибудь* не выдержу и каркну во всё воронье горло, и тогда уж отрывай подковки. [Ю. О. Домбровский. Факультет ненужных вещей, часть 2 (1978)]
- (16) Мало ли, вдруг опять *что-нибудь* не получится? ... [Марина Москвина. Небесные тихоходы: путешествие в Индию (2003)]
- (17) Как это в таком дворе вы можете *чего-нибудь* не знать? [М. Гиголашвили. Чертово колесо (2007)]

В этих примерах *-нибудь* выражает экзистенциальную квантификацию и лицензируется тем или иным оператором снятой утвердительности (условие, вопрос, будущее время, модальность). Это контексты, где *-нибудь* вводит в рассмотрение объект (индивидуализированный только в альтернативном мире — в мире условия, гипотетичности, альтернативы или будущего: альтернативный мир составляет условие употребления *-нибудь*), который наделен каким-то «отрицательным» свойством или участвует в какой-то «отрицательной» ситуации. В примерах (18), (19) локальную индивидуализацию объекта в альтернативном мире подтверждает анафора:

- (18) Во время физкультуры, если его *кто-нибудь* не слушался, он мог дать <ему> щелчок-шалабан [Фазиль Искандер. Время счастливых находок (1973)]
- (19) если *что-нибудь* не охраняется, оно может быть разрушено и утрачено. [«Неприкосновенный запас», 2003.03.04]

Иная ситуация в примерах (20–23). Тут местоимение на *-нибудь* входит в сферу действия сопредикатного сентенциального отрицания, формула $\neg\exists xP(x)$, — в нарушение общего представления о том, что местоимение на *-нибудь* в таком контексте должно заменяться на отрицательное (сюда можно присоединить примеры (10), (11) из раздела 15.2):

- (20) В протоколе много пунктов, чтобы, упаси бог, *кто-нибудь* не ушёл бы от расстрела. [Анатолий Рыбаков. Тяжелый песок (1975-1977)]
- (21) Луч карманного фонарика, который держал Валико, не мог сразу светить всем, и мы спускались осторожно, чтобы *где-нибудь* не сорваться. [Фазиль Искандер. Святое озеро (1969)]
- (22) Но по дороге смотрите в оба, чтобы он *куда-нибудь* не свернул! [Н. Леонов, А. Макеев. Ментовская крыша (2004)]
- (23) ему пришлось галопом к принтеру от компа нестись, чтобы весьма колоритные цветные картинки *кто-нибудь* не перехватил [Наши дети: Подростки (2004)]

Хотя квантор существования входит в сферу действия отрицания, нельзя сказать, что тут отрицается существование объекта — скорее речь идет о не индивидуализированном объекте, который существует в альтернативном мире, а отрицается, точнее, — объявляется нежелательным — наступление ситуации, в которой этот объект (человек, место, направление) является участником.

Существенно, что само отрицание находится в (20–23) в модальном или каком-то ином неутвердительном контексте. В контексте, где отрицание находится в утвердительном контексте, местоимение *-нибудь* в его сфере действия обязательно заменяется на *никакой* (см. пример (7) из раздела 15.2) — в соответствии с эквивалентностью

$\neg\exists xP(x) \equiv \forall x\neg P(x)$; *неверно, что какой-нибудь $xP(x)$ \equiv никакой x не $P(x)$.*

Правда, эта замена даже в утвердительном контексте дает скорее логическую эквивалентность, чем синонимию: *неверно + какой-нибудь* отрицает событие с *одним* не индивидуализированным участником, а *никакой* отрицает существование *множества* объектов с заданным свойством. Иногда замена возможна и в неутвердительном контексте.

Так, в примерах (20–23), в принципе, можно заменить местоимение *-нибудь* на отрицательное: на *никто* в (20), (23), на *нигде* в (21), на *никуда* в (22). Результат замены не синонимичен, но достаточно близок по смыслу к исходному предложению. (Сомнительно *никто* в (20) из-за *упаси Бог*.)

Между тем в примерах (24), (25), предположительно тоже с формулой $\neg\exists xP(x)$, замена *-нибудь* на отрицательное местоимение невозможна в принципе:

(24) *кто* даст гарантию, что в шахту *вновь кто-нибудь* не влетит или не влезет? [«Встреча» (Дубна), 2003.04.30]

(25) Можешь ты мне с уверенностью сказать, что *на первой же станции* их агенты *чьи-нибудь* не завербуют? [Дмитрий Глуховский. Метро 2033 (2005)]

В примере (24) причина очевидна. Отрицание не примыкает к квантору существования непосредственно: между отрицанием и квантором существования стоит оператор (*вновь*), который отделяет отрицание от квантора. Квантор существования находится непосредственно в сфере действия этого оператора, и только опосредованно — в сфере действия отрицания. Поэтому $\langle \dots \rangle$ *в шахту вновь кто-нибудь не влетит* $\neq \langle \dots \rangle$ *в шахту вновь никто не влетит*.

Аналогично в (25) — тут это оператор *на первой же станции*. Ср. более простой пример (26), на котором можно показать структуру примера (25):

(25') Можешь ты с уверенностью сказать, что его завтра же *кто-нибудь* не завербует?

Квантор существования, выражаемый местоимением *кто-нибудь*, находится в сфере действия оператора *завтра*, и лишь опосредованно — в сфере действия отрицания: *неверно, что его завтра же кто-нибудь завербует* \neq *его завтра же никто не завербует*.

В примерах (26), (27) тоже невозможна замена местоимения на *-нибудь* на отрицательное — речь идет о не индивидуализированном объекте альтернативного мира и о временном интервале до наступления события, в котором этот объект (человек, вещь) является участником.

(26) Так и простоят, *пока кто-нибудь* не догадается снести их в мусорную яму. [Ю.О.Домбровский. Хранитель древностей, часть 1 (1964)]

(27) Одежда ходит по кругу, *пока кто-нибудь что-нибудь* не возьмет. [«Русский репортер», №3 (181), 27 января 2011, 2011]

В (28–30) речь идет о не индивидуализированном объекте (предмете, месте, событии); объявляется нежелательным наступление ситуации, в которой этот объект является участником.

(28) Передо мной человек, который всегда *боится, как бы* у него *что-нибудь* не вывалилось. [Василий Аксенов. Новый сладостный стиль (2005)]

(29) невольно закрадывалась *опаска, как бы* он и у нас *где-нибудь* не нагадил. [«Солдат удачи», 2004.07.07]

(30) *Боюсь, как бы* ему *что-нибудь* не помешало: уж больно торопится. [Юрий Азаров. Подозреваемый (2002)]

Ясно, что в примерах (28–30) местоимение на *-нибудь* тоже не может быть заменено на отрицательное.

Семантика предложений (20–30) не может быть описана в рамках классической математической логики. Проблема решается обращением к понятию нестандартного отрицания, которое было представлено в (Богуславский 1985) как отрицание с широкой сферой действия и исследовалось в дальнейшем в (Падучева 2005, 2013) под названием глобальное отрицание.

15.5. Отрицание с широкой сферой действия, или глобальное

В (Богуславский 1985) было введено понятие «отрицание с широкой сферой действия» — на примере модификаторов субъектно-предикатного комплекса, которые могут входить в общеотрицательном предложении в сферу действия предикатного общего отрицания, несмотря на то, что семантически они подчиняют глагольную предикацию и должны были бы притягивать отрицание к себе. Было установлено, что в структуре вида $Q(P)$, где P — предикация, т.е. субъектно-предикатный комплекс, а Q — ее модификатор, сентенциальное отрицание в составе P , может иметь **широкую сферу действия** (включающую Q), если P без Q коммуникативно не значимо; или если ожидалось, что P произойдет именно

с Q. Так, у предложения *Трамвай остановился, чтобы высадить пассажиров*, где *Трамвай остановился* — субъектно-предикатный комплекс, а *чтобы высадить пассажиров* — модификатор, есть два разных отрицания, которые оба можно назвать общими: присловное общее отрицание при модификаторе, см. (31а), и сентенциальное отрицание с широкой сферой действия, которая включает модификатор, см. (31б):

- (31) а. Трамвай остановился не для того, чтобы высадить пассажиров;
б. Трамвай не остановился, чтобы высадить пассажиров.

В (Падучева 2005) было замечено, что, в дополнение к указанным, благоприятным условием для расширенной, иначе — **глобальной**, интерпретации предикатного отрицания является снятая утвердительность. Так, для предложения (32а) предикатное отрицание не получает глобальной интерпретации ((32б) вообще непонятно, что значит), а в контексте снятой утвердительности глобальная интерпретация предикатного отрицания в той же предикации нормальна (этот и многие другие примеры ниже — из Падучева 2005, 2013).

- (32) а. Он *резко затормозил*;
б. ?Он *резко не затормозил*;
в. Если бы он *резко не затормозил*, произошла бы авария;
г. Смотри, чтобы он *резко не затормозил*.

Ниже в примере (33) подчеркнут сентенциальный оператор, который создает для предикации с сентенциальным отрицанием контекст снятой утвердительности и обеспечивает глобальную интерпретацию этого отрицания.

- (33) а. если бы я *сдуру* не поздравил <...>;
б. чтобы *напрасно* не обидеть <...>;
в. <...> чтобы она *вновь* не стала добычей какого-нибудь охотника;
г. Разве ты не бываешь там *каждый день*?
д. <...> пока *тщательно* не оденешься, из дому не выйдешь;
е. Как бы он *нечаянно* не проболтался.

В (34) оператором, снимающим утвердительность, является вопрос, в (35) – сослагательное наклонение.

(34) Ты *случайно* не знаешь его телефон?

(35) <...> не было такого, который бы *вскоре* не сделался негодяем;

В утвердительном контексте сентенциальное отрицание в предложении с модификатором не допускает глобальной интерпретации. Вне контекста или особой просодии сочетание адвербиала с отрицанием при глаголе может быть вообще бессмысленным:

(36) <он> *вскоре* не сделался негодяем;
 <он> *резко* не затормозил;
 <он> *тщательно* не оделся.

Итак, на базе предложения с модификатором предикации, т.е. со структурой вида Q(P), можно построить три отрицательных:

- семантически общеотрицательное с отрицанием при адвербиале,
- семантически частноотрицательное с сентенциальным отрицанием,
- семантически общеотрицательное с сентенциальным отрицанием, имеющим широкую сферу действия, т.е. глобальную интерпретацию.

Например:

(37) Напрасно ты пришел:

- а. Ты пришел *не* напрасно (общее отрицание)
- б. Напрасно ты *не* пришел (частное отрицание)
- в. <...> чтобы ты *не* пришел напрасно (глобальное отрицание).

Следующий шаг состоял в обнаружении того, что контекст снятой утвердительности обеспечивает сентенциальному отрицанию глобальную интерпретацию не только в контексте модификатора, но и в контексте кванторного слова (Падучева 2005, Падучева 2013: 56–60). (Сходство

между адвербиалом-модификатором и квантором в том, что в обоих случаях оператор, который является семантически главным в предложении, занимает синтаксически подчиненную позицию.)

Возьмем, например, предложение с квантором общности. Ему соответствуют три отрицательных — с общим отрицанием, с частным и с глобальным.

А (общее отрицание, $\neg\forall xP(x)$);

В (частное отрицание, $\forall x\neg P(x)$).

С (глобальное отрицание; т.е. предикатное отрицание с расширенной сферой действия).

В утвердительном контексте общее отрицание для предложения с кванторным словом (как и в предложении с модификатором) должно быть присловным. Оказывается, что в контексте снятой утвердительности семантически общеотрицательным для предложения с квантором общности может быть предложение с сентенциальным отрицанием. Два «общих» отрицания могут быть эквивалентны, а могут и не быть.

Ниже это тройственное противопоставление рассматривается на примере нескольких кванторных слов — *все*, *-нибудь* и *многое*.

15.5.1. Все

(38) *Все* успокоились:

А. *Не все* успокоились (общее отрицание);

В. *Никто не* успокоился < **Все не* успокоились (частное отрицание)

С. *Пока все не* успокоились < , я не начал говорить > (глобальное отрицание).

(39) *Все* оплатили проезд:

А. *Не все* оплатили проезд

В. *Никто не* оплатил проезд

С. *Пока все не* оплатили / *не* оплатят проезд, не поедем.

Конструкции А и С не равнозначны — например, нельзя заменить глобальное отрицание на общее, т.е. *не* при глаголе на *не* при *все*, в примере (32), если глагол в будущем времени: **Пока не все оплатят проезд, не поедем*.

Другие примеры предложений, в которых сентенциальное отрицание в контексте *все* допускает глобальную интерпретацию.

- (40) Трудно себе представить, *чтобы все* не согласились с таким решением;
- (41) *Не* уверен, что *все* <уже> не разбежались;
- (42) Не было предложения, которое *бы все* не отвергли;
- (43) Это же очень жизненное кино, а в жизни точку не поставишь, *если* только *все* не умерли в один день = 'если только неверно, что *все* умерли в один день'.

То же глобальное отрицание в контексте модального инфинитива: *Всех не перестреляешь*.

15.5.2. -нибудь

Такое же тройное противопоставление возможно в предложениях с *-нибудь*. Поскольку местоимения на *-нибудь* допустимы только в контексте снятой утвердительности, мы ограничиваемся этим контекстом.

- (44) Если *кто-нибудь* испугался,
- A. Если *никто* не испугался, ... = 'если *неверно*, что хоть *кто-нибудь* испугался...' (общее отрицание);
- B. Если *кто-нибудь не* испугался, он может начинать (частное отрицание);
- C. Можем двигаться дальше, если только *кто-нибудь не* испугался (глобальное отрицание); ср. *... если только *никто* не испугался.

Конструкция С с сентенциальным отрицанием и конструкция А с при словным общим могут быть близки по смыслу:

- (45) Я записала все дела, чтобы *чего-нибудь* не забыть \approx ... чтобы *ничего* не забыть.

Однако если *-нибудь* не непосредственно подчинено отрицанию, а попадает в сферу действия другого оператора, то смыслы у конструкций С и А совершенно разные, см. примеры (24), (25) из раздела 15.3, а также пример (46), где (46а) \neq (46б).

- (46) а. ... чтобы снова *чего-нибудь* не забыть = 'чтобы снова не получилось так, что я что-нибудь забыла';
б. ... чтобы снова *ничего* не забыть = 'чтобы снова было так, что я ничего не забыла'.

15.5.3. *многое*

- (47) Они добились *многого*:
- А. Они добились *немногого* (общее отрицание);
В. Они *многого* не добились (частное отрицание);
С. Таковы современные шахматы – тактическими вывертами *многого не добьешься*. [«64 – Шахматное обозрение», 2004.07.15] (глобальное отрицание).

Примеры с глобальным отрицанием из Корпуса:

- (48) а. Григорий Алексеевич <...> решил на *многое* не замахиваться. [«Лебедь» (Бостон), 2003.12.28]
б. Путин сразу призвал *многого* не требовать [«Известия», 2002.07.02]
в. От вас мы *многого* не хотим, просто надеемся, что вы, с вашим фронтовым и партийным авторитетом, повлияете на писателей из «МетрОполя». [Василий Аксенов. Таинственная страсть (2007)]
г. – *Многого не жду* от разговора, но по злобе своей она может что-нибудь ляпнуть любопытное, сама того не понимая. [Н. Леонов, А. Макеев. Эхо дефолта (2000-2004)]
д. Я, честно говоря, на *многое* не рассчитывала. [«Homes & Gardens», 2004.12.01].

15.6. Местоимение *многое*

Обратимся теперь к слову *многое* и примерам (1), (2) из раздела 15.1. Пример (2) из раздела 15.1 вполне аналогичен примерам (48а–48д) раздела 15.5. Это значит, что предложение (2) не является ни общеотрицательным, как (3а) из раздела 15.1, ни частноотрицательным, как (3б): и в (2), и в (1) глобальное отрицание.

Относительно примера (1) можно предположить, что он нарушает довольно специфическое ограничение сочетаемости. Во всех примерах из Корпуса множество сущностей, квантифицируемое с помощью *многое*, относится к сфере будущего. Сочетания *чтобы о многом не заботиться, чтобы многого не объяснять*, где это не так, звучат странно. Кроме того, примеры (49А) и (49В) ниже, которые хорошо иллюстрируют противопоставление семантически общеотрицательных и частноотрицательных предложений, не дают возможности построить на их базе предложение с глобальным отрицанием в контексте снятой утвердительности — поскольку свидетельствами могут быть только факты настоящего или прошлого.

- (49) *Многое* свидетельствовало о наличии у него добрых намерений
- А. *Немногое* свидетельствовало о наличии у него добрых намерений (общее отрицание);
 - В. *Многое* не свидетельствовало о наличии у него добрых намерений (частное отрицание);
 - С. — (глобальное отрицание).

В таком случае неадекватность примера (1) из раздела 15.1 создает именно глагол *забыть* — если заменить его на *требовать, хотеть, ждать, рассчитывать* и подобные, с ориентацией в будущее, предложение станет безупречным примером употребления местоимения *многое* в конструкции с глобальным отрицанием.

Насколько можно судить по имеющимся примерам, *многое* в контексте предложения с общим и с глобальным отрицанием понимается в значении ‘в большом количестве’. Т.е. *многое* — это числовой квантор существования. Значение ‘в большой пропорции’ может возникнуть только в частноотрицательном предложении.

Итак, в примерах (1) и (2) из раздела 15.1 мы имеем *многое* в контексте сентенциального отрицания с глобальной интерпретацией — которая возникает в контексте снятой утвердительности.

15.7. Заключение

Задача данной работы состояла, прежде всего, в том, чтобы показать, какие возможности открывает понятие снятая утвердительность — которое

с равным успехом используется как в формальной семантике, так и в экспликативной семантике в духе Ю.Д. Апресяна и Анны Вежбицкой.

Понятие снятой утвердительности рассматривалось в разделе 15.2 в связи с местоимениями на *-нибудь*, а в разделах 15.3, 15.4 — в связи с расширенной сферой действия отрицания в предложениях с модификаторами предикации. Принципиальное значение для проблематики снятой утвердительности имеет статья (Богуславский 2002), где рассматривается особое взаимодействие отрицания с частицами *еще* и *уже*. В этой работе было показано, что в разного рода модальных и близких к ним контекстах происходит сдвиг в сфере действия отрицательной частицы: она как бы «приклеивается» к модальному оператору и может иметь ту же широкую сферу действия, что модальность. Так, в предложении (50) отрицание понимается как клаузальное, т.е. имеющее широкую сферу действия (грубо говоря, *уже не* понимается как *не уже*; а именно, как 'неверно, что уже'):

(50) Разве мосты *уже* не сняли? = 'разве неверно, что мосты уже сняли?'

Впрочем, *не* в том же контексте может пониматься и как обычное предикатное отрицание; поэтому *уже* оказывается синонимично с *еще*:

(51) Разве мосты *еще* не сняли?

Контексты, предъявленные в (Богуславский 2002) (такие как *Разве <...> уже не <...>*, *едва ли <...> уже не <...>*, *Трудно себе представить, чтобы <...> уже не <...>*, *не уверен, что <...> уже не <...>*, *не существует метода, который бы уже не <...>*, и др.), — это в точности контексты снятой утвердительности: именно они лицензируют глобальную интерпретацию сентенциального отрицания, при которой *уже не* означает 'неверно, что уже'.

Частицы *еще* и *уже* являются, как справедливо утверждается в (Богуславский 2002), антонимами. При этом они не ассертивны, т.е. их значение задается пресуппозициями. Тем самым снятая утвердительность захватывает и проблематику пресуппозиций.

Что касается слова *многое*, то остается надеяться, что описание, выполненное в рамках экспликативной семантики, окажется интересным и для того подхода, который изложен в (Partee 2012).

Cluster analysis in DLP technologies

Ekaterina Pshehotskaya and Nikita Nikitinsky

Clustering of relatively small sets of documents has become a frequent task in small business. Current topic modeling and clustering algorithms can handle this task, but there are some ways to improve the quality of cluster analysis, for example, by introducing some combined algorithms.

In this paper, we will conduct some experiments to define the best clustering algorithm among Latent Semantic Indexing (LSI), Latent Dirichlet Allocation (LDA), Latent Dirichlet Allocation and Gibbs Sampling (LDA+GS) combined with Gaussian Mixture Model (GMM) and find heuristics to improve the performance of the best algorithm.

16.1 Introduction

Nowadays more and more companies face problems of data leakage. Important data (such as confidential or proprietary information) may leak either by improper handling or intentional loss to competitors.

For example, according to Cisco, primary causes of data loss are the following:

1. Unauthorized application use – almost 70 percent of IT professionals believe the use of unauthorized programs resulted in as many as half of their companies' data loss incidents.
2. Misuse of corporate computers – 44 percent of employees share work devices with others without supervision.

3. Unauthorized physical and network access — 39 percent of IT professionals said they have dealt with an employee accessing unauthorized parts of a company's network or facility.
4. Remote worker security — 46 percent of employees admitted to transferring files between work and personal computers when working from home.
5. Misuse of passwords — 18 percent of employees share passwords with co-workers. That rate jumps to 25 percent in China, India, and Italy.

Cisco Systems, Inc. (2008)

In order to prevent such cases of data loss different DLP (data loss prevention) systems have been created.

In the modern world, a company may obtain new confidential or proprietary data frequently. Current DLP systems experience problems in detecting such data — technologies like regular expressions or keywords cannot be customized to protect a large flow of diverse information.

To handle this task DLP-systems have to apply modern statistical algorithms to data protection. That is why new types of algorithms have emerged that enables organizations to use software that learns to detect types of confidential data. Through training, this approach will continuously improve the accuracy and reliability of search of protected information. For DLP purposes, it is vital to classify information into at least two classes (for example, confidential and non-confidential data) and most companies have sample data that may be used to train machine learning algorithms.

In this article we will consider a cluster analysis or clustering. Cluster analysis of relatively small sets of documents (up to 50 000) is a task, which may be essential in small business. It might be necessary to cluster, for example, weekly document stream for DLP purposes (e.g. easier categorization of documents).

To cluster small sets of documents we primarily need high clustering quality and may pay little attention to speed or computational complexity of a clustering algorithm — obviously, because modern computer hardware allows the user to perform complex computations in a short time, so small data sets are clustered fast even if an algorithm with high computational complexity is used. That is why we decided to conduct some experiments on algorithms with

high computational complexity in order to combine them in a way, allowing us to maximize quality of clustering.

16.2 Methods

Cluster analysis or clustering is a convenient method for identifying homogenous groups of objects called clusters. Objects in a specific cluster share many characteristics, but are very dissimilar to objects not belonging to that cluster. Cluster analysis may be used to resolve an Access Control challenge and, partially, Social network challenge by grouping textual data into clusters and thus – “flagging”, for example, any deviations in usual data usage or labeling some data for further DLP purposes. Further in this paper we will discuss clustering algorithms where every object can belong only to one cluster – including cases where an object may belong to no cluster at all. In such cases we will create so called “garbage” cluster and put there all objects not classified by an algorithm.

Clustering will help DLP specialists to discover categories of textual data in order to protect them better by applying different protection techniques. Text clustering is usually based on topic modeling techniques. Among modern topic modeling algorithms, we can name:

LSI (Latent Semantic Indexing) – is an unsupervised machine learning method, which is mostly used for dimensionality reduction. It is an indexing and retrieval method that uses a mathematical technique called singular value decomposition (SVD) to identify patterns in the relationships between the terms and concepts contained in an unstructured collection of text. LSI is based on the principle that words that are used in the same contexts tend to have similar meanings. A key feature of LSI is its ability to extract the conceptual content of a body of text by establishing associations between those terms that occur in similar contexts (Deerweser et al. 1988).

LDA (Latent Dirichlet Allocation) – is also an unsupervised machine learning method, which is mostly used for object clustering. It is a generative model that allows sets of observations to be explained by unobserved groups that explain why some parts of the data are similar. For example, if observations are words collected into documents, it posits that each document is a mixture of a small number of topics and that each word’s creation is attributable to one of the document’s topics (Blei, Ng & Jordan 2003).

Although mentioned above methods can be used alone, we will conduct experiments, in which we combine them with the following algorithms:

GMM Classifier (Gaussian Mixture Model), which is an unsupervised machine learning method, is a probabilistic model that assumes all the data points are generated from a mixture of a finite number of Gaussian distributions with unknown parameters. One can think of mixture models as generalizing k-means clustering to incorporate information about the covariance structure of the data as well as the centers of the latent Gaussians (Bishop 2006).

We decided to select GMM as the most appropriate for our experiments because it is considered a versatile modeling tool for cluster analysis and its performance is much higher compared to, for example, K-means.

When applying GMM we arrange every object only to one cluster (thus, we make it easier to estimate overall performance).

GS (Gibbs Sampling) is a Markov chain Monte Carlo (MCMC) algorithm for obtaining a sequence of observations which are approximated from a specified multivariate probability distribution, when direct sampling is difficult. GS is widely used to enhance quality of topic modeling algorithms; it is a good algorithm for processing when the dimension of data is not very high. With high dimensional data it may be better to use Variational EM algorithm (Casella & George 1992).

In our experiments we applied faster version of GS algorithm named Collapsed Gibbs Sampling algorithm.

There are some work conducted on enhancing text clustering quality by introducing hybrid algorithms like LDA+GS+GMM or distributed algorithms to process larger datasets, like Approximate Distributed Hierarchical Dirichlet Processes (AD-HDP), so a DLP system may embed a more complex algorithm than we discussed here therefore improving performance of clustering. In addition, there are some currently popular Deep Learning approaches to semantic analysis of texts, for example, Word2Vec, which may be applicable to text clustering (Pshhotskaya, Sokolova & Ryabov 2014, Mikolov et al. 2013).

Text clustering refers to Natural Language Processing, which is a part of Computational linguistics with slight flavor of Data Science when it comes to large amount of textual data.

16.3 Metrics

To evaluate algorithm performance we used two types of metrics often utilized for cluster analysis purposes:

16.3.1 External Evaluation Metrics

In external evaluation, clustering results are evaluated based on data that was not used for clustering, such as known class labels and external benchmarks. Such benchmarks consist of a set of pre-classified items, and these sets are often created by human (experts). Thus, the benchmark sets can be thought of as a gold standard for evaluation (Kaufman & Rousseeuw 2005).

We used the following external measurements:

Jaccard index — also known as the Jaccard similarity coefficient, is a statistic used for comparing the similarity and diversity of sample sets. The Jaccard coefficient measures similarity between finite sample sets, and is defined as the size of the intersection divided by the size of the union of the sample sets (Tan, Michael Steinbach & Kumar 2005).

V-measure score — is an entropy-based measure which explicitly measures how successfully the criteria of homogeneity and completeness have been satisfied. V-measure is computed as the harmonic mean of distinct homogeneity and completeness scores, just as precision and recall are commonly combined into F-measure (Rosenberg & Hirschberg 2007).

Adjusted Rand score — is a measure of the similarity between two data clusterings (Rand 1971).

Adjusted mutual information score — a variation of mutual information (which is a measure of the variables' mutual dependence) may be used for comparing clusterings (Meilā 2007, Vinh, Epps & Bailey 2009).

16.3.2 Internal Evaluation Metrics

In internal evaluation clustering result is evaluated based on the data that was clustered itself. These methods usually assign the best score to the algorithm that produces clusters with high similarity within a cluster and low similarity between clusters (Manning, Raghavan & H. Schütze 2008).

We used the following internal measurement:

Silhouette Coefficient — is a measure of how appropriately the data has been clustered and how well each object lies within its cluster.

The Silhouette Coefficient is defined for each sample and is composed of two scores:

1. The mean distance between a sample and all other points in the same class.
2. The mean distance between a sample and all other points in the next nearest cluster.

We used cosine metric as the most common for measuring the distances for Silhouette Coefficient. When we have higher value of Silhouette Coefficient, it means that we have better distribution of documents to topics (Rousseeuw 1987).

Based on Silhouette Coefficient measurements we apply Elbow method to define the number of clusters. This method assumes a choice of a number of clusters so that adding another cluster doesn't give much better modeling of the data (so called "Knee of a curve"). This method was originally designed to make predictions based on the percentage of variance explained and in some cases may appear unsuitable; in such cases we will choose the number of clusters where Silhouette Coefficient reaches maximum value (Ketchen & Shook 1996).

Since, in real conditions, we are unable to use external metrics for evaluation of algorithms (because we usually don't know the true number of clusters), we will evaluate quality of our models basing mostly on Silhouette Coefficient, applying external metrics as supplementary.

16.4 Test Collection

We have created a corpus for training and evaluating DLP classification algorithms. Thus we used some different data sets to check and validate the results:

1. Data set containing 600 documents, distributed to 5 topics — a "good" collection (distribution of documents: 83 to 163 documents per topic). Topics are easily distinguishable by human expert.
2. Data set containing 157 documents, distributed to 14 topics — "bad" collection (distribution of documents: 3 to 21 documents per topic). Topics are not distinguishable by human expert.

3. Data set containing 1000 documents, randomly assigned from the real document stream of the company; topic distribution is not predetermined; human experts considered the number of topics between 3 and 5 (including 3 and 5).
4. Data set containing 35000 documents, randomly assigned from the real document stream of the company; topic distribution is not predetermined. Human experts then estimated quality of the best algorithm performance on this data set.

16.5 Experiments

We tested all these algorithms on the “good” collection to find out the best one and then evaluated the best algorithm performance on other collections.

16.5.1 *Choosing the Best Algorithm*

16.5.1.1 Latent Semantic Indexing and Gaussian Mixture Model

In this algorithm we may vary two main parameters: number of LSI topics and number of GMM clusters.

The LSI algorithm takes as input the collection of documents, processes it and then documents-topic matrix is returned. This matrix is then given to an input of GMM classifier, which processes the input matrix assembling documents to final categories (this is likely to increase the quality of clustering).

We tested two heuristics:

1. Number of LSI topics is equal to number of output GMM clusters
2. Number of LSI topics is equal to number of output GMM clusters plus one, such as number of LSI topics is $n + 1$, while number of GMM clusters is n (one of the topics becomes so called “garbage” topic – it accumulates objects, which could not be unambiguously arranged to other “real” topics)

Table 16.1 contains evaluation metrics estimated on the “good” collection for LSI+GMM algorithm with 5 output categories:

We can see that both heuristics showed comparable results when tested on a real number of categories; Heuristic 2 showed a decrease in Silhouette Coefficient value.

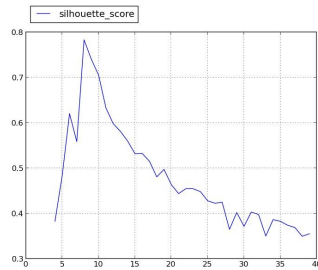
	Heuristic 1	Heuristic 2
Jaccard index	0.575	0.57
Adjusted mutual information score	0.75	0.735
Adjusted Rand score	0.66	0.66
V measure score	0.74	0.74
Silhouette Coefficient	0.61	0.5

Table 16.1: LSI+GMM algorithm

But, more generally, if we vary the number of output categories and estimate Silhouette Coefficient for them we will get the following results (figures 16.1a, 16.1b):



(a) LSI+GMM, Heuristic 1



(b) LSI+GMM, Heuristic 2

Figure 16.1: LSI+GMM

According to the results, the Silhouette Coefficient reached higher levels when we implemented Heuristic 2 (figure 16.1b). Nevertheless, both pikes indicated incorrect number of output clusters.

16.5.1.2 Latent Dirichlet Allocation and Gaussian Mixture Model

The LDA algorithm takes as input the collection of documents, processes it and then documents-topic matrix is returned. This matrix is then given to an input of GMM classifier which processes the input matrix assembling documents to

final clusters (this must increase the quality of clustering). We tested the same two heuristics.

Table 16.2 contains metrics estimated on the “good” collection for the LDA+GMM algorithm with 5 output categories:

	Heuristic 1	Heuristic 2
Jaccard index	0.51	0.85
Adjusted mutual information score	0.57	0.83
Adjusted Rand score	0.53	0.76
V measure score	0.6	0.84
Silhouette Coefficient	0.45	0.52

Table 16.2: LDA+GMM algorithm

We can see that Heuristic 2 showed far better results for external metrics, but insignificantly better result for Silhouette Coefficient.

If we vary the number of output categories and estimate Silhouette Coefficient for them we will get the following results (figures 16.2a, 16.2b):

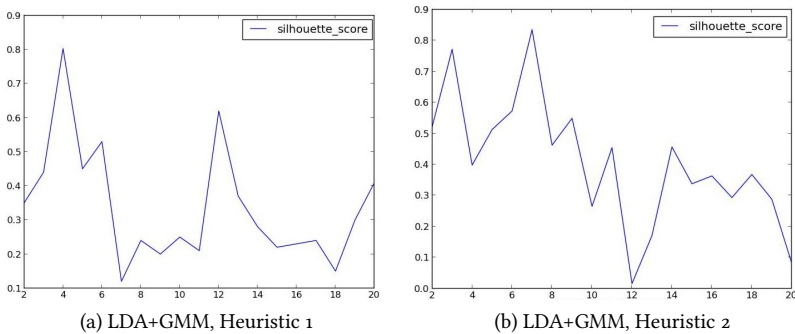


Figure 16.2: LDA+GMM

According to the results, Silhouette Coefficient reached a bit higher levels when we implemented Heuristic 2 (figure 16.2b). Nevertheless, both pikes indicated incorrect number of output clusters.

16.5.1.3 Latent Dirichlet Allocation and Gibbs Sampling and Gaussian Mixture Model

In this algorithm we may vary three main parameters: number of LDA topics, number of Gibbs Samples and number of GMM clusters.

For given quantity of LDA topics there are n iterations of Gibbs Sampling (where n is number of Gibbs Samples) and then documents-topic matrix is returned. This matrix is then given to an input of GMM classifier which processes the input matrix assembling documents to final clusters.

Knowing the real quantity of output categories we iteratively start the algorithm changing the number of samples and keeping other parameters the same.

The best number of Gibbs Samples is considered the number of samples when metric (e.g, Silhouette Coefficient) reaches highest values and then doesn't fluctuate much.

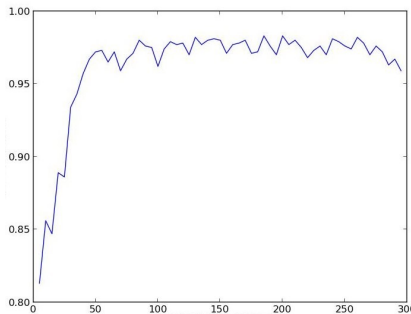


Figure 16.3: LDA+GS+GMM

We selected the best number of GS samples on the “good” collection. The unchanged parameters were the number of LDA topics and the number of GMM clusters (as in Heuristic 2). As we can see from the picture (figure 16.3), the plotted line reaches highest values at 50 samples and then don't fluctuate much, so we can choose any quantity of samples above 50, so we will then use 100 samples as optimal and versatile number of samples.

We tested the same two heuristics. Table 16.3 contains metrics estimated on the “good” collection for the LDA+GS+GMM algorithm with 5 output categories.

We can see that Heuristic 2 showed far better results for all metrics. It means that documents are better distributed to the number of output categories with Heuristic 2 implemented for this algorithm.

	Heuristic 1	Heuristic 2
Jaccard index	0.66	0.99
Adjusted mutual information score	0.77	0.99
Adjusted Rand score	0.72	0.99
V measure score	0.79	0.99
Silhouette Coefficient	0.82	0.98

Table 16.3: LDA+GS+GMM algorithm

If we vary the number of output categories and estimate Silhouette Coefficient for them we will get the following results (figures 16.4a, 16.4b):

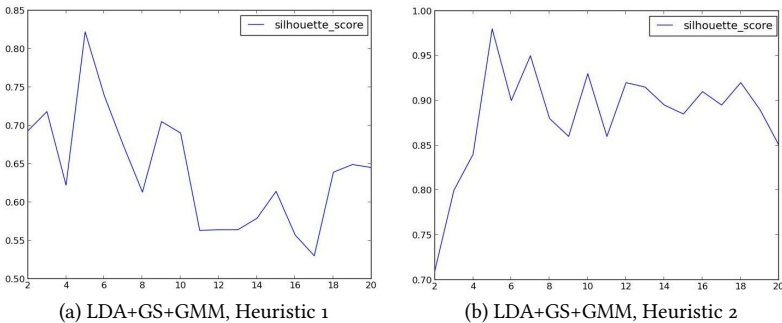


Figure 16.4: LDA+GS+GMM

According to the results, while both pikes indicated the same true number of clusters, Silhouette Coefficient reached higher levels when we implemented Heuristic 2 (figure 16.4b). We can suggest that Heuristic 2 improves the performance of LDA+GS+GMM and intensifies the results making it easier to determine the number of output categories.

16.5.2 Estimating the Best Algorithm on Other Data Sets

We tested LDA+GS+GMM algorithm on other collections using the parameters that we considered the best testing the algorithm on the “good” collection:

Number of GS samples is equal to 100.

Number of LDA topics is equal to number of GMM clusters plus one (e.g. while number of GMM clusters is 5, number of LDA topics is 6).

16.5.2.1 Dataset 2

We tested LDA+GS+GMM algorithm on the “bad” collection and had the following results (figure 16.5):

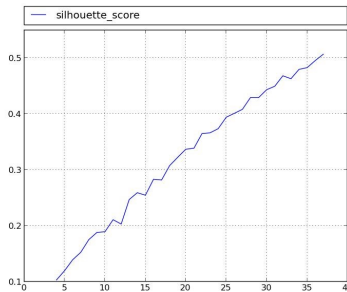


Figure 16.5: LDA+GS+GMM on dataset 2

Assuming that we selected the optimal parameters and using Elbow method based on Silhouette Coefficient plot we found it impossible to define (even approximately) the best number of output categories, because:

1. The distribution of documents to topics is conventional (in such cases there are either no much difference in vocabulary between documents of different categories or difference between all documents is too high to group at least some of them into one definite cluster).
2. Number of documents is small.

16.5.2.2 Dataset 3

We tested LDA+GS+GMM algorithm on the dataset 3 containing 1000 documents and had the following results (figure 16.6):

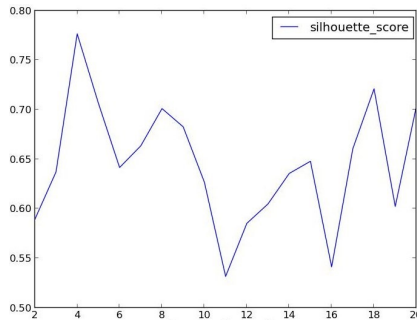


Figure 16.6: LDA+GS+GMM on dataset 3

Basing on Silhouette Coefficient plot we decided that 4 categories is the best number of clusters for this data set. Human experts considered the result of the algorithm good. Documents in four categories could easily be defined as contracts, financial documents, application forms and information letters + instructions.

16.5.2.3 Dataset 4

Basing on Silhouette Coefficient plot (figure 16.7) we decided that 8 categories were the best quantity for this data set.

Human experts defined documents in 8 categories as contracts, financial documents, documents in other languages, information letters, instructions, application forms and other internal documents.

16.6 Conclusion

According to the experiments we conducted, the best algorithm for processing relatively small set of documents (up to 50 000) with relatively small quantity of topics (up to 20) is LDA+GS+GMM. The Heuristic 2 may help to improve

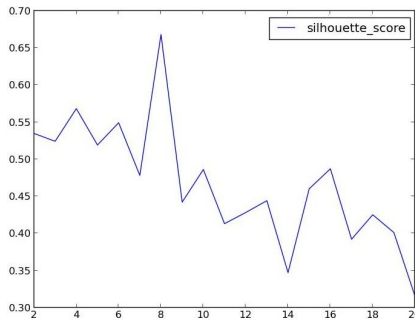


Figure 16.7: LDA+GS+GMM on dataset 4

quality of LDA+GS+GMM and make it easier to determine number of output categories. Usage of Silhouette Coefficient is considered appropriate for determining best number of output clusters.

The data set should not be too small in order to provide the clustering algorithm with processable data: data sets containing less than 500 documents are likely to be incorrectly classified.

There are some papers on automated number of clusters detection algorithms, such as Salvador & Chan 2003, proposing state-of-the-art algorithms that may be useful for cluster analysis.

Although Latent Dirichlet Allocation works well for topic modeling there are now conducted multiple researches on more advanced topic modeling algorithms such as Higher-order Latent Dirichlet Allocation and other Higher-order topic modeling algorithms (Nelson et al. 2012).

An alternative to the two solutions for the saturative *na-+ -sja* construction

Eugenia Romanova

17.1 Introduction

The saturative construction is a circumfix consisting of the accumulative prefix *na-* and the reflexive postfix *-sja*. The interpretation of this circumfix is to some extent similar to the interpretation of the standalone accumulative prefix *na-* with one difference: there is no amount of stuff produced as a result of joint operation of the event, expressed by the verbal root, and the affix, presumably measuring the event with the help of some property-denoting nominal. In case of the saturative construction, the large quantity of the event is directed at the agent argument and saturates it ('to one's heart content', 'having got one's fill of doing something'). However, some saturative expressions are two ways ambiguous (translated from Žaucer 2009: 39, but in Russian, unlike in Slovenian, the ingredients of each structure do not have different orders):

- (1) Ja naplaval^{sja} v more.
 I na-swam.sja.SG.M in sea.LOC
 A. 'I have had my fill of swimming in the sea'. (Now I can go to the swimming-pool).
 B. 'In the sea, I have had my fill of swimming'. (I won't go to the swimming-pool).

In this article, I will outline the solutions to this ambiguity in Žaucer (2009) and Kagan & Pereltsvaig 2011, and show that they are slightly contradictory,

even though both capture the phenomenon fairly well. At the end, I will show how they can be reconciled.

17.2 The outline of the existing solutions

Žaucer (2009) offers to deal with (1) by postulating a two-VP structure for the saturative construction. On p. 59 of his thesis, one can see a detailed tree diagram containing two VPs: “the main projection line gives us the meaning of getting one’s fill”, and the second (or actually, the higher) VP, headed by an overt verbal root, “gives us the meaning of manner”. The ambiguity in 1 is then easily accounted for from this position: in B the locative adverbial “situates the event” of getting one’s “fill of swimming” (p. 38), and thus, modifies the whole complex event; in A “the locative adverbial ‘in the sea’ situates only the swimming event and not the getting-one’s-fill event; what the addressee must have gotten his fill of is swimming in the sea” (pp. 37–38).

Each of the interpretations in (1) can also be found with nominal arguments of saturative verbs, but the arguments are going to be assigned different cases. If the reading we get is A, the case is going to be Genitive (2a), if the reading is B, the case is Instrumental (2b). Kagan & Pereltsvaig (2011: 221–222) give the following illustrations:

- (2) a. Lena najelas’ kotlet.
Lena *na-ate-sja* burgers.GEN
‘Lena ate her fill of burgers.’
- b. Lena najelas’ kotletami.
Lena *na-ate-sja* burgers.INS
‘Lena stuffed herself with burgers.’

Thus, in (2a) the sentence can be continued like ‘now she will go and eat some ice-cream’, and in (2b) ‘she cannot eat anything else.’ From Žaucer’s point of view, in (2b) the instrumental should mark an adverbial modifying the whole event, but Žaucer (2009) does not offer a conclusive explanation of the genitive case in sentences like (2a). The account given in Kagan & Pereltsvaig 2011 fares with both cases fairly well, the analysis of instrumental being reminiscent of the analysis of adverbial modification in Žaucer (2009).

The diagram offered for (2a) on p. 231 takes into consideration a property-denoting complement of the verb: basically, the complement undergoes semantic incorporation (see van Geenhoven 1998) and what the agent gets

their fill of is burger-eating. The instrumental nominal in (2b) is presented as a means-denoting optional adjunct high in the structure (p. 234), and basically, up to the point of this adjunct merge, the structure is analysed as that of an intransitive verb.

However, the solution offered in Kagan & Pereltsvaig 2011 runs into a problem. As I said above, the structure with the Genitive case corresponds to Žaucer's reading A, but as we also saw in the Introduction, the sentence itself contains a locative PP and no Genitive nominal which could be analysed with the help of semantic incorporation.

So, as we can see, both analyses are lacking in something. The proposal in Žaucer (2009), for all its strengths, does not contain an account for the genitive case of the arguments of *na*-verbs, let alone for the difference between genitive and instrumental cases (there is no alternation like that in Slovenian). The explanations in Kagan & Pereltsvaig 2011 cannot be fully extended to the data in (1), because only the first case can be dealt with here .

17.3 Excess *pere-*

As Kagan (2013) notices, there is another prefix that behaves similarly to the saturative complex *na*++*-sja*: she calls it '*pere-* of excess' and says that it "licenses genitive objects with such verbs as, e.g., *pereest*' (pere- eat) 'overeat' and *perepit*' (pere-drink) 'drink too much'. The semantic contribution of *pere-* in these verbs is that of excess, similarly to the contribution of *over-* in the English verb *overeat*. Such verbs may appear either without a complement (3a) or with a genitive object (3b). An accusative object is not acceptable (3c)."

- (3) a. Lena pereela.
Lena pere-ate
'Lena overate.'
- b. Lena pereela gribov / sladkogo / mjaso.
Lena pere-ate mushrooms.GEN sweet.GEN meat.GEN
'Lena ate too many mushrooms / too many sweets / too much meat.'
- c. *Lena pereela griby / sladkoe / mjaso.
Lena pere-ate mushrooms.ACC sweet.ACC meat.ACC
'Lena ate too many mushrooms / too many sweets / too much meat.'
- (Kagan 2013: 180)

In addition to the inability of the verbs prefixed with *pere-* of excess to take accusative objects, Kagan (2013) lists a number of other properties found in them:

- they are incompatible with DP-level complements (4a)
- demonstratives with them are possible only under a kind interpretation (4b)
- ‘genitive complements of *pere-*verbs cannot contain quantity-denoting expressions’ (p. 181) (4c)
- ‘the genitive complements receive narrow scope, non-specific readings’ (p. 181) (4d)

- (4) a. **Vasja pereel ostal’nyx ogurcov.*
Vasja pere-ate [remaining cucumbers].GEN.PL
‘*Vasja ate too many remaining cucumbers.*’ (p. 180)
- b. *Vasja pereel etix konfet.*
Vasja pere-ate [these candies].GEN.PL
OK: ‘*Vasja ate too many candies of this kind.*’
Impossible: ‘*Vasja overate as a result of eating these particular candies.*’
i.e. the genitive phrase cannot refer to the specific set of candies that were consumed by *Vasja* (p. 181)
- c. **Vasja perejel pjati pomidorov / tarelki supa.*
Vasja pere-ate five.GEN tomatoes.GEN.PL plate.GEN soup.GEN
intended: ‘*Vasja overate as a result of eating five tomatoes / a plate of soup.*’
(p. 181)
- d. *Maša mozet perepit’ vina.*
Masha may pere-drink wine.GEN
‘*Masha may drink too much wine.*’ (p. 181)

In relation with the data above, Kagan (2013: 180) writes:¹ “Thus, genitive complements of *pere-*verbs seem to share both syntactic restrictions and semantic properties with GCIRs, which suggests that they should receive the same analysis. This suggests that these nominals, too, are bare NPs that denote properties and are plausibly semantically incorporated.”

1 *GCIR* stands for ‘genitive complements of intensive reflexives’ (Kagan 2013: 174).

A very similar idea is developed in Romanova (2007). The difference will be made clearer in the next section. Here, I will just show that excess *pere-* does not only occur with the verbs *jest* ‘eat’ and *pit* ‘drink’. The examples in Romanova (2007: 225) were found on the internet:

- (5) a. Vsě prosto, **pereprygal**, **perelazil**, a
 all simple **over-jumped**^P.ACT.SG.M **over-climbed**^P.NDIR.SG.M and
 na utro nogi otказыvajúť.
 on morning.ACC legs.NOM refuse^I.PRS.PL
 ‘Everything is simple; jumped too much, climbed too much, and the next morning your legs don’t work.’ (<http://tinyurl.com/pmna2za>)
- b. Džejms **perebrosal** Arenasa i priněs pobeđu
 D. **pere-threw**^P.SG.M A.ACC and brought^P.SG.M victory.ACC
 “Klivlendu”.
 K.DAT
 ‘James outdid Arenas (in a basketball match) and led “Cleveland” to victory.’ (<http://tinyurl.com/pjfah3l>)
- c. Po-mojemu, ty **peresmotrel** filmov s boljšim
 along-mine you **pere-watched**^P.SG.M **movies**.GEN with big
 količestvom nasilija.
 quantity.INS violence.GEN
 ‘In my opinion, you have seen too many films with high degree of violence.’ (<http://tinyurl.com/o7hwa9b>)

17.4 Non-arguments as properties for measuring the event

In Romanova (2007), I claim that some superlexical prefixes are measure functions applicable to events of different shapes. The difference in the event shape is a decisive factor for the interpretation of the prefix-verb complex, since the prefixes in question are comparable to non-selective quantifiers and trigger ‘Quantification Variability Effect’ (Nakanishi & Romero 2004, Obenauer 1984-85). Most of the analysis is based on Schwarzschild 2006, where four different measurable scales are proposed for verbal contexts. They are:

- degree
- range

- amount of events
- amount of stuff

‘A *degree* is a point on a scale; a *range* is a set that contains two degrees on a particular scale as well as all the degrees that lie in between them; an *amount* is a kind of range, including a zero-point and involving mapping from portions of stuff to ranges on a scale. *Like* is a degree verb in Schwarzschild’s system, *expand* is a range verb, *run* or *smoke cigarettes* are amount-of-event verbs, whereas *eat* can encode an amount of stuff’ (Romanova 2007: 198–199).

According to Schwarzschild 2006, all the ‘magnitude’ adverbials are subdivided into degree operators of the type $\langle\langle d, t \rangle, t \rangle$ (*too, so, very* etc.) and range predicates of the type $\langle d, t \rangle$ (*much, a lot, a little*). In Romanova (2007), it is claimed that the superlexical prefix *na-* (without the postfix *-sja*) is a range predicate, whereas ‘excess’ *pere-* is a degree operator. If, as was shown above and in Kagan (2013), the saturative construction *na- + -sja* behaves in a way reminiscent of ‘excess’ *pere-*, it should also be analysed in a way that is distinct from the account of accumulative *na-*.

Another point to make is that the saturative construction best displays case alternation with consumption verbs, whereas the verbs with accumulative *na-* can never be consumption verbs: they become creation verbs as a result of prefixation. So, it is impossible to find examples like (6) below:

- (6) *Lena najela kaši.
Lena *na-*ate porridge.GEN
Intended: ‘Lena ate a lot of porridge.’

However, when the verb is treated as a creation verb, the situation changes favourably:

- (7) Lena najela 15 kilogrammov za prazdniki.
Lena *na-*ate 15 kilos.GEN for holidays
‘Lena put on 15 kilos on holiday.’

So, we cannot deal with the saturative construction in the same way as with accumulative *na-* at least for the following reasons:

- accumulative *na-* is a measure function operating on ranges of degrees, whereas saturative *na- + -sja* construction is possibly a degree operator

- accumulative *na-* transforms any verb into a verb of creation, whereas saturative *na- + -sja* occurs on verbs of consumption (especially when it is accompanied by a genitive complement)

17.5 Problematic data

The situation with the circumfix is much more complex and requires a thorough investigation. Case alternation might really be possible only with the two special verbs of consumption discussed in Kagan & Pereltsvaig 2011. Other data suggest that some verbs can have only a genitive complement, and some only an instrumental modifier, even though in (8) the verbs are synonymous:

- (8) a. Igor' nasmotrelsja fil'mov/ ??fil'mami o robotax.
Igor' *na*-watched-*sja* films.GEN films.INS about robots.LOC
'Igor' has had his fill of films about robots.'
- b. Igor' naljubovalsja oblakami/ *oblakov.
Igor' *na*-feasted.eyes-*sja* clouds.INS clouds.GEN
'Igor feasted his eyes on the clouds to his heart content.'

What we actually see is two different constructions. In (8a), *na-* and *-sja* attach to the verb simultaneously, whereas in (8b) the word *ljubovat'sja* 'feast one's eyes on' exists independently from *na-* and can always take an instrumental object. *Na-* seems to be powerless to impose the presence of a measure scale. *Dyšat* 'breathe' is a verb similar to *ljubovat'sja* in that it takes an instrumental complement without any prefixes, but it is different in that it does so without a postfix too: *dyšat' vozduxom*. Thus, the instrumental case with *na-+sja* is much more preferable than the genitive case, although the latter is not completely ruled out:

- (9) ... nadyšalas' vozduxa, i nakupalas', i napilas'
na-breathed-*sja* air.GEN and *na*-swam-*sja* and *nā*-drank-*sja*
parnogo moloka.
fresh.SG.NEUT.GEN milk.GEN
'[she] breathed air, swam and drank milk to her heart content.'
(<http://tinyurl.com/odjqj36>)

There are even more problematic cases like *naigrat'sja* 'have one's fill of playing' (10) or polysemous *nagladit'sja* 'have one's fill of stroking (sb/sth)/

have one's fill of ironing' (11):

- (10) a. Lena ne naigralas' ?kuklami/ *kukol.
Lena not *na*-played-*sja* dolls.INS dolls.GEN
'Lena hasn't had her fill of playing with dolls.'
- b. Lena ne naigralas' v kukly.
Lena not *na*-played-*sja* in dolls.ACC
'Lena hasn't had her fill of playing with dolls.'
- (11) a. Lena nagladilas' bel'ja/ *bel'jom.
Lena *na*-ironed-*sja* bedsheets.GEN bedsheets.INS
'Lena has had her fill of ironing bedsheets.'
- b. *Lena nagladilas' kota.
Lena *na*-stroke-*sja* cat
Intended: 'Lena has had her fill of stroking a cat.'

The differences in the two senses of *nagladit'sja* in (11) reveal a problem connected with the semantic type of a verb.

Thus, the availability of case alternation or just one of the cases with a *na- + -sja* verb seems to depend on the type of the verb: with pure verbs of consumption, like *eat* and *drink* alternation is possible, with verbs of (intentional) perception like *see* and *listen* only genitive is available, with verbs whose complement is instrumental before the attachment of the circumfix instrumental is either the only option, or a preferable choice, with verbs of creation the attachment of *na- + -sja* is not possible.

17.6 Possible directions of analysis

By now I have shown that *na- + -sja* differs from accumulative *na-* in selective properties: the circumfix does not attach to verbs of creation and as a degree modifier does not have to operate on properties.² From this, it follows that the property that provides the verb with the measurable scale is not necessary for *na- + -sja* unlike *na-*. So, following Kagan & Pereltsvaig (2011), I can say that what is measured by *na- + -sja* is the degree of satiation. On page 229, they write:

² Moreover, the agent/experiencer of saturative constructions can only be animate.

The subject may experience a low degree of satiation (which means that she has not had enough of the process in question), a relatively high, or satisfactory, degree of satiation, when she feels that she has had exactly the right amount of this process, or a very high degree of satiation (an “overdose”), which means that she has had too much of the process. To illustrate, for the VP *jel* (‘ate’), and the corresponding process of eating performed by the subject, a low degree of satiation means feeling hungry, a satisfactory degree corresponds to not being hungry, while a very high degree of satiation means that the person has overeaten. Crucially, the process with which the subject experiences satiation is determined at the level of the VP projection, which contains the verb and its complement, if the latter is present in the structure.

The satisfactory degree of satiation is rendered by the verb *najelas* ‘has eaten to her heart content’ and the high degree will be expressed by the ‘excess’ prefix *pere-*. The question arises: why is *pere-* not accompanied by *-sja*? The answer is, there is no need. But when we deal with *na-*, its attachment leads to reanalysing any verb as a verb of creation and the presence of some property along a particular measure path, representing a range of degrees to be measured, not just a degree on a scale. Thus, *-sja* here plays a role of precluding the verb from becoming a creation verb, on the one hand, and providing the scale for measuring the event, on the other. As for the genitive complement in some of the verbs, it is optional, unlike with most *na-* verbs, and a different solution should be found to account for it. Compare:

- (12) a. Ona najelas’
 she *na-ate-sja*
 ‘She has eaten enough (= satiated her hunger)’
- b. *Ona najela.
 she *na-ate*

In the second sentence, there is no property, a large amount of which is created by the event represented by the *na-*verb. Since in the first sentence just the presence of *-sja* is allowed, it is possible to suggest that *-sja* is the real scale along which a degree of satiation can be determined.

The examples with prepositional phrases from Žaucer (2009) do not contradict the proposal above. The proposal I made is however to be developed

in more detail, with finer elaboration of semantic and syntactic mechanisms underlying the phenomenon under discussion.

17.7 Conclusions

In this short article I have discussed a problem of ambiguity of saturative construction yielded by the attachment of the circumfix *na- + -sja* to verbs. This ambiguity is found with some PPs (1) and suggests at least a different level of attachment of the PP in syntax. The ambiguity is not there when a saturative verb (of consumption) takes a nominal complement. The case on the complement varies, which leads to two distinct interpretations, comparable to the ones in the ambiguous structures with PPs (2). The solutions offered in Žaucer (2009) and Kagan & Pereltsvaig 2011 are limited to the phenomena discussed: in the former, by the ambiguous PP interpretation, in the latter by case alternation. So, Žaucer (2009) does not even raise the problem of case alternation due to the data he deals with, and the account in Kagan & Pereltsvaig 2011 does not seem to be extendable to the ambiguity situation in (1). Moreover, the data discussed in both works are not sufficient.

Comparing *na- + -sja* to the accumulative prefix *na-* on the one hand and the ‘excess’ prefix *pere-* on the other, and following Schwarzschild (2006), I conclude that the saturative construction is closer to the latter in that it is a degree operator rather than a range predicate. However, ‘excess’ *pere-* does not require the presence of the reflexive postfix. This is explained by the nature of saturativity: first, it is always directed at the subject itself, and second, the creation reading should be precluded that inevitably arises when the prefix *na-* attaches to a verb alone.

Judging by the optionality of any additional information provided by either a prepositional or a nominal complement of a saturative verb I propose that the true scale of satiation is yielded by the postfix *-sja*.

However, this is just a beginning of a serious study which should not only consider a larger set of data, but also find a semantic and syntactic explanation behind the saturative circumfix.

Pavel Rudnev

The present contribution follows up on Rudnev (2011), which, in turn, was based on a presentation I gave in Barbara's semantics class in the spring of 2008.¹ It is for this reason that I omit most of the arguments for the pronominal nature of *kendisi* and present a formalisation of its semantic properties based on Partee (1983) and Elbourne (2008).

18.1 Introduction

I first started thinking about the syntactic and semantic properties of the Turkish reflexive-based pronominal element *kendisi* during Barbara's course on formal semantics and anaphora, which she taught at the Russian State University for the Humanities in the spring of 2008. The initial observations were written up as a course paper (Rudnev 2008), which was later transformed into an article and eventually published as Rudnev (2011). In Rudnev (2011) I attempted to situate *kendisi* in the typology of anaphoric expressions and ended up arguing that it belongs in the same class as English-style pronominals despite being formed on the basis of a reflexive.

¹ It is an honour to be invited to contribute to this volume. I am grateful to the editors for the invitation, and to Güliz Güneş for her native speaker intuitions. Finally I would like to thank Ekaterina Lyutikova for discussing with me various approaches to the structure of possessive constructions in Turkic languages.

The conclusion that *kendisi* is a pronominal was based on the following observations, each of which is typical of pronominals such as the English *he*, and different from a prototypical reflexive:

- *kendisi* can be anaphoric to a non-local antecedent
- *kendisi* may not be semantically bound by a local antecedent
- *kendisi* may be used without an antecedent
- *kendisi* can be used as a *donkey*-pronoun
- *kendisi* can be used as a resumptive pronoun
- *kendisi* allows both *de se* and *de re* readings in intensional contexts
- *kendisi* may occupy the sentential subject position

In Rudnev 2011 I capitalised on *kendisi*'s external syntax whilst leaving the issues relating to its internal composition for another occasion. The present note is such an occasion.

18.2 Pronouns as definite descriptions

The general framework adopted in this note is Elbourne's (2008) interpretation of Heim & Kratzer (1998), and I will assume the reader's familiarity with it. I will also assume that the reader is familiar with the analysis of pronominal expressions as *definite descriptions* (Elbourne 2005).

- (1) a. If a farmer owns a donkey, he always beats it.
b. If a farmer owns a donkey, he always beats the donkey he owns.

Elbourne (2005, 2008) treats personal pronouns like *it* in (1a) to be complex definite descriptions like *the donkey he owns* in (1b).

18.2.1 *The structure of pronominal expressions*

Analyses which treat pronouns to be covert definite descriptions vary in their account of what makes English pronouns look so different from the English definite determiner: if *it* in (1a) above is indeed a short version of *the donkey he owns* in (1b), why are (2) unacceptable?

- (2) a. *If a farmer owns a donkey, he always beats the.
 b. *If a farmer owns a donkey, he always beats it donkey.

Elbourne (2005) proposes that personal pronouns correspond to definite descriptions in which the complement of the definite determiner undergoes NP-ellipsis. Because this is demonstratively wrong for *kendisi*, another implementation is in order, and I suggest that Elbourne's (2008) formalisation of Nunberg 1993 is an appropriate first step in developing a full account of *kendisi*.

In a classic paper Nunberg (1993) proposes that personal pronouns consist of the following four parts:

- A *deictic component* picking up a contextually salient object called an *index*, on the basis of which the actual interpretation of the indexical will be computed.
- A *relational component*, which constrains the relation that must hold between the index and the interpretation.
- A *classificatory component* including ϕ -features
- An *interpretation*, which is an individual or definite description contributed to the proposition expressed.

Elbourne (2008) formalises Nunberg's (1993) approach in line with his own description-theoretic approach by assigning pronouns the structure in (3):

$$(3) \quad [\text{it} [R_1 i_2]]$$

Starting from the bottom, i_2 is an index, or a variable over individuals, corresponding to the deictic component. It then combines with R_1 , a free variable of type $\langle e, \langle se, st \rangle \rangle$, which expresses the relation holding between i_2 and Nunberg's interpretation. Glossing over the classificatory component, Elbourne (2008) proposes (4) as the semantic value of the interpretation itself.

$$(4) \quad \llbracket \text{it} \rrbracket = \lambda f_{\langle se, st \rangle} \cdot \lambda s. \text{I}x f(\lambda s'. x)(s) = 1$$

As (4) shows, both definite determiners and personal pronouns denote, on Elbourne's (2008) approach, functions from properties to individual concepts (i.e., functions from situations to individuals).

Before I provide a similar-looking structure for *kendisi* later in §18.2.2.2, I address the question to what extent *kendisi* is indeed a definite description.

18.2.2 Analysis

18.2.2.1 Reasons to analyse *kendisi* as a definite description

In developing my analysis of the internal structure of *kendisi* I rely on two sources of evidence.

Possessive-like morphosyntax

The first piece of evidence comes from the overall resemblance between the morphological shape of *kendisi* and the way in which the possessum is marked in Turkish possessive constructions.

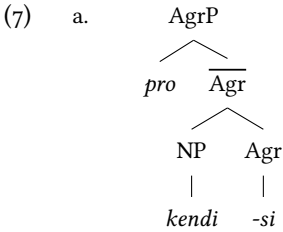
In all three noun phrases in (5) the possessed object, *araba* ‘car’, is carrying *-si*, the possessive agreement marker which reflects the third-person features of the possessor.

- | | | | |
|-----|--------------------------|-------------------------|-----------------------------|
| (5) | Ali'nin araba- sı | on- un araba- sı | <i>pro</i> araba- sı |
| | Ali.GEN car- 3SG | 3SG-GEN car- 3SG | car- 3SG |
| | ‘Ali’s car’ | ‘his/her car’ | |

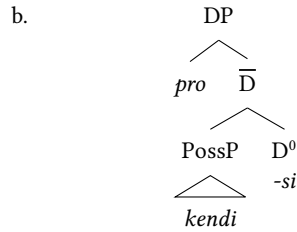
The *-si* morphology on *kendisi* is the same marker of possessor agreement. In addition, as argued by Kornfilt (2001), and illustrated in (6), *kendisi* can be accompanied by a possessor.

- | | | | |
|-----|------------------------------------|-------------------|-------------------|
| (6) | <i>pro</i> kendi-si | on- un kendi-si | Ali'nin kendi-si |
| | self- 3SG | 3SG-GEN self- 3SG | Ali.GEN self- 3SG |
| | <i>lit.</i> : ‘his/her/Ali’s self’ | | |

Analyses of Turkish possessive constructions are too numerous to do justice to here, but I schematically represent two of them in (7). Kornfilt (2001) analyses *kendisi*, as well as other possessive phrases, as *agreement phrases*, or AgrPs (7a), whereas more recent approaches treat possessive phrases as DPs. The tree in (7b) is an adaptation of Pereltsvaig & Lyutikova’s (2014) proposal – originally designed to account for a number of possessive constructions in Tatar – for *kendisi*.



(Kornfilt 2001)



(Pereltsvaig & Lyutikova 2014)

It is immaterial for the purposes of the present paper which of the two analyses is the correct one, which is why I tentatively adopt (7b) as the syntactic structure of *kendisi*.

Definite-like behaviour

Though very attractive, Elbourne's analysis of pronouns as definite descriptions faces empirical difficulties when confronted with languages lacking definite determiners. Matthewson (2008) analyses pronouns in one such language – St'át'imcets – and identifies the following traits shared by definite expressions: (i) backwards pronominalisation, (ii) existential statements and (iii) sluicing.

As regards **backward pronominalisation**, Turkish *kendisi* behaves like a definite pronoun in a language like English, as shown by the unacceptability of (8b).

- (8) a. Güliz gel- di. Sonra (kendisi) otur-du.
 Güliz.NOM come-PST then (self.3SG) sit- PST
 'Güliz₁ came. Then she₁ sat down.'
- b. *Kendisi gel- di. Sonra Güliz otur-du.
 self.3SG come-PST then Güliz.NOM sit- PST
 ('She₁ came. Then Güliz₁ sat down.')

Even though the only superficial difference between (8a) and (8b) involves the directionality of coreference (i.e., anaphora vs. cataphora), the unacceptability of (8b) cannot be reduced to a general dispreference for cataphoric dependencies. As shown in (9) below, *kendisi* can be used cataphorically.

- (9) Adam kendisin-i görünce Ayşe pencere-den atla- dı.
 Adam.NOM self.3SG- ACC see.CVB Ayşe.NOM window-ABL jump-PST
 ‘When the man saw her₂, Ayşe₂ jumped out of the window.’

It is therefore not unimaginable that the surface position of *kendisi* relative to its antecedent in (8) is a reflex of the semantic notion of familiarity. If *kendisi* is a definite description, it is predicted to display familiarity effects.

Turning to **existential constructions**, it is an established fact in the formal-semantic literature that pronouns like *he* pattern with strong quantifiers like *all* in being unacceptable in existential constructions (Milsark 1974). Turkish obeys this generalisation, as can be seen from the contrast in (10).

- (10) a. Bahçe- de bir sürü insanlar var.
 garden-LOC one many person.PL COP:PRS:3
 ‘There are many people in the garden.’
 b. *Bahçe- de bütün insanlar var.
 garden-LOC all person.PL COP:PRS:3
 (‘There are all people in the garden.’)

The strong quantifier *bütün* ‘all’ behaves like its English counterpart in triggering unacceptability when used in an existential context. As far as the pronouns are concerned, both *o* and *kendisi* trigger the same effect. The context description below is from Matthewson (2008: 535).

- (11) **Context:** *You are sitting eating breakfast looking out at your garden and you see two people walking in the garden. You tell your grandson:*
 a. *Bahçe- de onlar var.
 garden-LOC they COP:PRS:3
 b. *Bahçe- de kendisin-ler var.
 garden-LOC self- PL COP:PRS:3
 (‘There’s them in the garden.’)

Both *o* and *kendisi*, then, behave like prototypical definite pronouns when appearing as pivots of existential constructions.

Matthewson’s (2008) final test for definiteness is based on the observation that in sentences with sluicing only an indefinite can serve as the antecedent for the *wh*-phrase in the elliptical clause. Sluicing in Turkish is illustrated in (12).²

2 Whether sluicing exists in Turkish is still a matter of an ongoing debate in the ellipsis literature

- (12) Biri ara-dı, ama kim bil- mi- yor-um.
 Someone call-PST but who know-NEG-PRS-1SG
 ‘Someone has called but I don’t know who.’

The *wh*-phrase *kim* ‘who’ in (12) depends, in a way, on *biri* ‘someone’ in the antecedent clause. A potentially possible dependency between *kim* ‘who’ in the ellipsis clause and *kendisi* in the antecedent clause cannot be established.

- (13) *Kendisi ara-dı, ama kim bil- mi- yor-um.
 self.3SG call-PST but who know-NEG-PRS-1SG
 (‘He has called but I don’t know who.’)

I follow Matthewson (2008) and interpret the unavailability of a sluiced continuation in (13) as a consequence of *kendisi* being semantically definite.

This concludes the presentation of *kendisi*’s definite-like behaviour, and we proceed to the implementation.

18.2.2.2 Implementation

We have seen from the foregoing discussion that there is ample evidence for *kendisi* to be treated as a definite description. Below I provide a preliminary implementation building on the work of Nunberg (1993), Elbourne (2008), Pereltsvaig & Lyutikova (2014).

In Elbourne’s (2008) formalisation of Nunberg’s proposal the most deeply embedded element is an *index*. Because *kendisi* is formed on the basis of *kendi*, which is a proper reflexive pronoun (Kornfilt 2001, Rudnev 2011), I take the semantic value of *kendi* to be a variable over individuals:³

- (14) *The deictic component*
 $\llbracket \textit{kendi} \rrbracket = x_e$

Given the presence of overt possession morphology in the case at hand, as well as an influential treatment of possession in terms of a free relational variable

(cf. Ince 2012 and the references cited there). As far as the issue of indefiniteness as one of the licensing conditions of sluicing (or its functional analogue) is concerned, the competing analyses do not differ. I am indebted to James Griffiths and Güliz Güneş (p.c.) for helpful discussion.

³ Treating *kendi* in its rôle as a constitutive part of *kendisi* as an individual variable might prove fruitful since *kendi* in its reflexive uses is interpreted as a bound variable. The question of whether *kendi*’s bound-variable behaviour is the result of an individual variable being bound – as opposed to situation variables in Elbourne (2008) *et seq.* – should be addressed separately.

(Partee 1983), I propose that Nunberg’s relational component in both the structure and meaning of *kendisi* should be equated with a possession relation encoded by means of the variable *R* whose value is provided contextually.

- (15) *The relational component*
 $\llbracket R \rrbracket = \lambda x_e. \lambda u. \lambda s. u(s) = x$

The classificatory component, which for Nunberg and Elbourne encodes ϕ -features, is inherited by *kendisi* from the possessor, and is most probably not interpreted on *kendisi* itself (cf. Pereltsvaig & Lyutikova 2014), which is why I do not include it in the exposition.

Finally, we can treat the null pronoun corresponding to the interpretation as an Elbournian definite description:

- (16) *The interpretation*
 $\llbracket o/pro \rrbracket = \lambda f_{(se,st)}. \lambda s. \iota x f(\lambda s'. x)(s) = 1$

Let us consider one example illustrating how the current system works.

- (17) *Kendisi gel- di.*
 self.3SG come-PST
 ‘She has arrived.’

The pronoun in question is used in (17) referentially, and its semantic value is given in (18), omitting the intermediate steps of the computation.⁴

- (18) $\llbracket kendisi \rrbracket = \lambda s. \iota x x$ is a female individual in *s*

Intransitive verbs like *arrive* have the semantic value in (19), where I am glossing over the semantics of the past tense for the sake of simplicity:

- (19) $\llbracket geldi \rrbracket = \lambda u_{(s,e)}. \lambda s. u(s)$ arrived in *s*

Finally, (17) has the semantics in (20), where the semantic values of *kendisi* and *geldi* combine by function application.

- (20) $\llbracket \text{Kendisi geldi} \rrbracket = \lambda s. \iota x$ such that *x* is a female individual in *s* arrived in *s*

The semantic value of *geldi* ‘arrived’ is a function whose domain contains the semantic value of *kendisi*. Once combined, the result is a set of situations

⁴ The fact that the contextually salient individual is singular and female is a consequence of the internal composition of *pro*, which includes a classificatory component of its own.

(i.e., a proposition) in which a particular contextually salient female individual arrived.

18.3 Concluding remarks

In this note I have revisited the Turkish complex reflexive *kendisi* with a view to establishing whether its morphosyntactic appearance warrants a semantic analysis in terms of definite descriptions. Having adduced evidence from familiarity effects, existential constructions and sluicing, I have reached the conclusion that *kendisi* behaved like a definite description. I have then provided an adaptation of Elbourne's (2008) semantics for personal and demonstrative pronouns, whereby pronouns more generally, and *kendisi* in particular, are decomposable into four distinct components: an individual variable, a relational variable, classificatory information such as ϕ -features, and the individual contributed to the discourse.

Degree modifiers: A new perspective on their semantics and the role of stress in it

Galit Sassoon and Natalia Zevakhina

This paper focuses on the meaning of degree modifiers such as *slightly* and *completely*, when they are either more prosodically prominent than the scalar adjective they modify or less so.¹ Thus, one challenge is to explain the meaning, function and distribution of these modifiers. A second challenge is to explain the way accentuation (prosodic prominence vs. non-prominence) affects their meanings. The paper argues that the sensitivity of weak modifiers such as *slightly* to the type of membership norm of the modified adjective poses a challenge to semantic analyses of these modifiers in terms of quantification, scale-structure or norm-shifting (section 19.1.1), and suggests, instead, that these modifiers trigger granularity shifting (section 19.1.2). Two analyses of the role of accentuation in modifiers are then discussed (section 19.1.3). Lastly, the paper presents an experiment that appears to support the granularity shifting account and a compatible treatment of prosodic prominence as generating local intensification of the meaning of the accented word (sections 19.2–19.3).

¹ We gratefully acknowledge Clara Cohen for recording the experimental texts. Also, our special thanks to the audience of the *Focus Sensitive Expressions from a Cross-Linguistic Perspective* workshop (Bar-Ilan University, February 2014). All the mistakes are solely ours.

19.1 Theoretical prerequisites

19.1.1 Three views of degree modifiers

Degree modifiers constitute a set of scalar alternatives ranging from weak modifiers (e.g., *slightly*, *a bit*, *somewhat*) to strong ones (e.g., *completely*, *totally*, *perfectly*). This section presents three a-priori plausible views of these modifiers and argues that they are not satisfying.

On the *quantificational view*, weak modifiers are existential quantifiers over degrees. For instance, *x is slightly A* is true iff *x is A* to at least some non-zero degree on *A*'s scale. Strong modifiers are universal over degrees. For instance, *x is completely A* is true iff *x is A* to every degree on *A*'s scale.

By contrast, on the *scale-structure view* (Kennedy & McNally 2005, Kennedy 2007, Syrett, Kennedy & Lidz 2009), degree modifiers have no truth-conditional effect, but weak modifiers (minimizers) presuppose the existence of a scale minimum and strong ones (maximizers) presuppose a scale maximum (cf. (1a) vs. (1b)).

- (1) a. *x is slightly A* is **true** iff $f_A(x) > \min(f_A)$; **false** iff $f_A(x) \leq \min(f_A)$, and **undefined** otherwise.
- b. *x is completely A* is **true** iff $f_A(x) = \max(f_A)$; **false** iff $f_A(x) < \max(f_A)$, and **undefined** otherwise.

Thus, weak modifiers (minimizers) combine with lower-closed adjectives (e.g., *dirty*, *wet*), whereas strong ones (maximizers) combine with upper-closed adjectives (e.g., *clean*, *dry*). Both types of modifier are predicted to combine with doubly-closed adjectives (e.g., *open*, *full*), and neither is predicted to be good with relative adjectives like *tall* or *short*. The scale of the latter is argued to be open (although this point is debatable). In accordance, in relative adjectives, '*x is A*' is true iff *x* exceeds a contextual norm: $f_A(x) > \text{norm}(c, f_A)$. By contrast the membership norms of lower-closed and upper-closed adjectives are scale minima and maxima, respectively (thus, they are called partial and total, respectively), whereas the norm of doubly-closed adjectives can be either a minimum (as in, e.g., the partial adjective *open*) or maximum (as in, e.g., the total adjective *full*; cf. Rotstein & Winter 2004).

Nonetheless, both the scale-structure and quantificational views conflict with some empirical observations. In particular, they fail to explain the sensitivity of minimizers like *slightly* to membership norm type. Corpus and judgment

studies (Solt 2012, Bylinina 2012, Sassoon 2012) show that *slightly* is neither free to occur with every gradable adjective (pace the quantificational view), nor restricted to only adjectives with lower-closed scales (pace the scale-structure view). Rather, it appears to select adjectives whose categorization criterion requires that entities exceed an external threshold (cf., the relation ‘>’ in (1a) as opposed to ‘=’ in (1b)), the threshold being either the minimum (as in *slightly dirty*, *slightly open*), or a midpoint (as in *slightly too tall*, *slightly tall for his age*). Accordingly, *slightly* is relatively infrequent and unacceptable with adjectives whose scale has a minimum, if their default categorization criterion requires having a degree identical to the maximum (^{??}*slightly full/ closed*), as for instance, *slightly*’s reduced acceptability in (2) illustrates.

(2) ?? The city square is slightly full.

In fact, 2-3 people do not suffice to turn a square *slightly full*, pace (1a). The square has to be full, but only a point below the maximum may function as an external threshold for entities to exceed, thus a ‘rather full’ interpretation results (and acceptability reduces).

Furthermore, the scale-structure view predicts bare and *slightly*-modified partial adjectives to have the same meanings e.g., *dirty* \Leftrightarrow *slightly dirty*, and bare and *completely*-modified adjectives to have the same meaning, e.g., *full* \Leftrightarrow *completely full*. However, *slightly dirty* is weaker than *dirty* since it can hold of things that are less dirty than dirty things² and *completely full* is stronger than *full*, cf. (3).

(3) The tank is full, but it is not completely full, you can still top it off.

According to the scale-structure view, maximizers are assumed to function as slack regulators (Lasersohn 1999), triggering interpretations at a high precision level (Kennedy 2007, Syrett, Kennedy & Lidz 2009). To illustrate, in ordinary usage, a floor might be considered *clean* despite some stains of dirt on it, but *The floor is completely clean* means ‘The floor is strictly speaking clean’. This pragmatic role, however, does not straightforwardly extend to minimizers like *slightly*, which, rather than strengthening interpretations, weaken them (see Sassoon 2012).

Finally, on the *norm-shifting view*, minimizers would merely lower mem-

² In addition, *very slightly dirty* is even weaker than *dirty*: it applies to things that are less dirty than slightly dirty ones. The same goes for accented *slightly*: *SLIGHTLY dirty* things are even less dirty than *slightly*_{unaccented} *dirty* ones.

bership norms, while maximizers would merely increase membership norms, as in (4a) and (4b). However, this view, again, fails to explain the reduced acceptability and frequency of *slightly* with maximum-norm adjectives (*full*, *clean*), and it wrongly predicts that speakers would intuitively infer from x is (only) *slightly* A that x is not A , which they do not.

- (4) a. x is *slightly* A is true iff $f_A(x) > (\text{norm}(f_A) - d)$.
 b. x is *completely* A is true iff $f_A(x) = (\text{norm}(f_A) + d)$.

19.1.2 Granularity shifting analysis

On the *granularity shifting analysis*, minimizers and maximizers alike trigger shifting to finer granularity levels (Lewis 1979, van Rooij 2009, Sassoon & Zevakhina 2012a,b), namely to scales that represent more degree distinctions. This may happen because the usage of a modifier renders salient a richer set of alternatives, including besides the prejacent x is A , also alternatives of the form x is M A . The salience of such alternatives necessitates an association of A with a finer scale comprising of more degrees than in default uses of A , in order to give the richer set of different alternatives distinct interpretations.

Moreover, as a consequence of this shifting, maximizers strengthen meanings. When finer degree differences are considered, fewer entities are seen as identical to the maximum or to any other point (as in *perfectly in time*, *completely sick*; see also Rotstein & Winter 2004). By contrast, minimizers weaken meanings: when finer degree differences are considered, more possible entities can be seen as exceeding a given threshold, be it the minimum or any other point (as in *slightly ahead of time*, *slightly taller*). Thus, this analysis seems to capture the distributional constraints and semantic contribution of modifiers.

A series of studies aimed to support the role of granularity shifting, exploiting Lewis's (1979) hypothesis that shifting from coarse to fine granularity (as in (5a)) is preferable over shifting from fine to coarse granularity (as in (5b)).

- (5) a. The Netherlands is {flat, not bumpy}, but actually it is {not completely flat, a bit bumpy}.
 b. #The Netherlands is {not completely flat, a bit bumpy}, but actually it is {flat, not bumpy}.

Distinctions just acknowledged (slight vs. no bumps at all) cannot be ignored in immediately subsequent discourse. The main prediction of the granularity shifting analysis of modifiers is that utterances with a modified adjective (such as *completely full* or *slightly dirty*) involve an irreversible shift to fine granularity. Therefore, a subsequent utterance of a bare adjective (such as *full* or *dirty*) will be interpreted on a fine scale, resulting in interpretations equivalent to ‘completely full’ and ‘slightly dirty’. By contrast, initiating discourse with utterances of bare forms of adjectives generate coarse interpretations (slight dirt is ignorable). Subsequent utterances of the modified forms produce shifts to finer granularity, i.e., interpretations that are different from those of the bare adjective: *completely full* is stronger than coarsely interpreted *full* and *slightly dirty* is weaker and can differ from coarse *dirty* if exhaustified to mean ‘only slightly dirty’. Thus, higher agreement ratings for fine-to-coarse inferences (*If M A, A*) than for coarse-to-fine inferences (*If A, M A*) were predicted. This prediction was confirmed in Sassoon & Zevakhina 2012a,b ($p < .01$).

These studies, however, were based on written texts. A potential confounding factor was that subjects may have stressed the modifier in the coarse-to-fine texts (e.g., *If x is dirty, x is SLIGHTLY dirty*) more often than they did in the fine-to-coarse texts (*If x is slightly dirty, x is dirty*; we thank Yael Greenberg for this observation). A remaining question is, then, what is the role of accentuation and whether granularity shifting effects will be observed at all in judgments based on recorded texts with either accented or unaccented modifiers. The experiment reported in section 19.2 addresses these two theoretical questions.

19.1.3 *Two views on the role of accentuation in the degree modification*

According to Rooth (1985), accentuation (i.e., focus) affects the choice of scalar alternatives. Consequently, it may trigger implicature derivation (cf. Fox & Katzir 2011). The experimental literature on differences between accented vs. unaccented *some* and *or* suggests that, indeed, in accented use, the tendency to derive implicatures increases. For instance, *Some books are on the shelf* (unaccented use of *some*) significantly differs from *SOME books are on the shelf* (accented use of *some*) in this respect (cf. Milsark 1977, Papafragou & Tantalou 2004, Thorward 2009, Huang & Snedeker 2009, Grodner et al. 2010, Zondervan 2010, Chevallier et al. 2008).

Considering the modifier *slightly* in this light gives rise to the view that

the inference *If x is SLIGHTLY A, x is A* (accented use of *slightly*) renders scalar alternatives salient (*slightly A < pretty A < rather A < very A < completely A*) and gives rise to implicature derivation. Therefore, accented *slightly* has an upper-closed interpretation ‘only slightly’ due to which certainty in the inference is predicted to be low. By contrast, the inference *If x is slightly A, x is A* (unaccented use of *slightly*) is less likely to render the alternatives salient, thus reducing the chance for implicature derivation. Given the higher likelihood of an upper-open interpretation ‘slightly and possibly A’, certainty in the inference is predicted to be high. For example, in (6a) and (6b), a negative answer is expected, as accented *slightly* is interpreted as ‘only slightly’. By contrast, in (7a,7b), a positive answer is expected, as unaccented *slightly* is interpreted as ‘slightly and possibly more’ (Yael Greenberg, personal communication).

- (6) a. A: The table is dirty. — B: No (?Yes), it’s SLIGHTLY dirty.
 b. A: The table is SLIGHTLY dirty. — B: No (?Yes), it’s dirty.
- (7) a. A: The table is dirty. — B: Yes (?No), it’s slightly dirty.
 b. A: The table is slightly dirty. — B: Yes (?No), it’s dirty.

However, beside this type of implicature facilitation, accent may have various other functions, including the creation of *local intensification* similarly to modification by *very* (Kadmon & Sevi 2010, Greenberg 2014). For instance, in (8a), accentuation gives rise to a standard which is a more extreme degree on the scale of dirtiness, thus, accentuation reinforces the meaning of *dirty*. In (8b), accentuation strengthens the meaning of *slightly*, which is now shifting the interpretation of *dirty* to a more extremely fine-grained one (effectively shrinking the distance from the threshold that entities are required to have to count as members, as stated in (9b)). Thus, *SLIGHTLY dirty* is weaker than *slightly dirty* which is weaker than *dirty*, i.e. accent increases dissimilarity between a bare and *slightly*-modified adjective, as stated formally in (9a–9d).³

3 Semi-orders are relations such as those denoted by *significantly older*, *visibly shorter*, or *perceptibly sweeter* (Gaifman 2010, van Rooij 2009)). The corresponding indifference relations (e.g., those denoted by *not significantly older*, or *not perceptibly sweeter*) are not transitive (for instance, when Ann is not much taller than Bill and Bill is not much taller than Chris, Ann *can still be* much taller than Chris). The measurement theoretic equivalence of $x_1 >_f x_2$ for a semi-order $>_f$ is a function f such that $f(x_1) > f(x_2) + r$, for some constant r , representing the perception or significance threshold. Applying this notion to modified adjectives, if x is slightly dirty, its degree of dirt is required to exceed the norm on a fine-grained semi-order (corresponding with a small

- (8) a. The room is dirty, and I (really) mean DIRTY! (Kadmon & Sevi 2010)
 b. The room is slightly dirty, and I (really) mean SLIGHTLY dirty!
- (9) a. x is A_f is true iff $x >_f \min(>_f)$.
 b. x is slightly A_f is true iff $x >_{f_p} \text{norm}(>_{f_p})$, where $>_f \subseteq >_{f_p}$ (x exceeds A 's norm relative to a semi-order $>_{f_p}$ finer than the default $>_f$. The degree to which $>_{f_p}$ is fine matches *slightly*'s prosodic prominence, as follows:
 c. x is *slightly* A_f is true iff $x >_{f_p} \text{norm}(>_{f_p})$, where $>_f \subseteq >_{f_p}$.
 d. x is *SLIGHTLY* A_f is true iff $x >_{f_{\text{very-p}}} \text{norm}(>_{f_{\text{very-p}}})$, where $>_f \subseteq >_{f_p} \subseteq >_{f_{\text{very-p}}}$.

The effect of *slightly* in (9c) is weak: the denotation of a bare adjective is close to the one of its *slightly*-modified version ($A \approx \text{slightly}A$), so certainty in inferences between them is predicted to be relatively high. On the contrary, the effect in (9d) is big. An abnormally small distance from the external threshold is required, so very low degrees now count as exceeding the norm. However, assuming the accent effects to be local, the denotation of a bare adjective occurring in the context is predictably not affected ($A \neq \text{very slightly}A$). Thus, certainty in the inference is predicted to be relatively low.

Dissimilarity of alternatives is yet another factor that raises likelihood of implicature derivation. According to recent studies Zevakhina 2012, Beltrama & Xiang 2013, van Tiel et al. in press, the likelihood of implicature derivation is inverse to alternative similarity. Given scalar alternatives $A < B < C$, $\neg C$ is more likely to be inferred from an utterance of A than of B (e.g., the inference *If the water is cool, it is not freezing* is more likely derived than the inference *If the water is cold, it is not freezing*), and $\neg C$ is more likely than $\neg B$ to be inferred from A (e.g., the inference *If the water is cool, it is not freezing* is more likely derived than *If the water is cool, it is not cold*). Returning to (9), if alternative dissimilarity plays a role here, then, again, we expect higher likelihood of upper-closed readings in the accented use than in the unaccented one. Given the set of alternatives $\text{SLIGHTLY}A < \text{slightly}A < A$, the alternatives A and $\text{SLIGHTLY}A$ are more dissimilar than A and *slightly* A , rendering implicatures more likely in the context of the former than the latter.

Nonetheless, there is a difference in predictions between the implicature facilitation and intensification views of the role of accent, which results from

significance threshold τ); however, it may not exceed the norm assuming a default coarse-grained semi-order (corresponding with a bigger significance threshold).

the interaction between granularity shifting and prosodic effects. Assuming that in (10a) and (11a) granularity shifting arises due to the presence of *slightly* in the antecedent, small dirt specks suffice to render an entity *slightly dirty*. Now, following Lewis (1979), we predict that this shifting affects the subsequent occurrence of the adjective in the consequent as well, i.e., small specks suffice to render an entity strictly *dirty*, thus facilitating inference derivation (certainty in (10a) and (11a)). By contrast, the adjectives in the antecedents of (10b) and (11b) are quite obviously not affected by the granularity shifting triggered by the subsequent occurrence of *slightly* in the consequent. Hence, in this context, small dirt specks which make an entity *slightly dirty* should not suffice to make it *dirty*. Thus, inference derivation is predicted to be hindered by the possibility of upper-closed weak interpretations of the consequent ('covered by only small dirt specks') as compared to the antecedent ('covered by more than small dirt specks'). Therefore, **prediction 1** is that (10a) > (10b) and (11a) > (11b).

- (10) a. *If the table is slightly dirty (A), it is dirty (B).* A = slight amount of dirt (weak), B = slight amount of dirt (weak)
 b. *If the table is dirty (A), it is slightly dirty (B).* A = dirt (strong), B = slight amount of dirt (weak)
- (11) a. *If the table is SLIGHTLY dirty (A), it is dirty (B).* A = very slight amount of dirt (very weak), B = (very) slight amount of dirt (weak/very weak)
 b. *A: The table is dirty (A), it is SLIGHTLY dirty (B).* A = dirt (strong), B = very slight amount of dirty (very weak)

As for prosody effects, on the local intensification view, unaccented (10a) is predicted to give rise to greater certainty than accented (11a). In (10a), *dirty* and *slightly dirty* are expected to have the same classification threshold, resulting in high certainty (whether upper-closed readings are derived or not). In (11a), though, prosodic intensification results in local shifting to abnormally fine granularity $f_{\text{very-p}}$ for *SLIGHTLY dirty*, finer than f_p used to interpret the unaccented subsequent occurrence of *dirty*. In other words, accent induces a contrast which the Lewis's effect can't undo. Thus, (11a) is predictably less certain than (10a). Therefore, **prediction 2a** is that (10a) > (11a).

Importantly, the implicature-facilitation view makes a different prediction. On this view, accent marks focus that triggers the use of certain alternatives, which in turn, render implicatures more likely to be derived in (11a) than in

(10a). However, assuming granularity-shifting, *A* should convey *slightly A* in the first place, so inference certainty is not expected to be affected, resulting in **prediction 2b** that is (10a) = (11a).

Finally, certainty is predicted to be lower in (11b) than (10b) if indeed dissimilarity of alternatives facilitates implicature derivation, for the dissimilarity between *SLIGHTLY A* and *A* is greater than the dissimilarity between *slightly A* and *A*.

19.2 Experimental study

The predictions stated in the previous sections are tested in the following experiment.

19.2.1 Method

The participants, who were recruited via Amazon Mechanical Turk, reported being native speakers of English. They were rewarded with 1 dollar for filling out a survey. 25 participants judged each item. The 1407 answers by 44 subjects whose reaction time was unreasonably fast overall and/or who skipped many questions were removed.

The target materials used 8 partial adjectives (*open, transparent, visible, wrong, incorrect, unclear, dirty, sick*), 8 total adjectives (*full, closed, empty, invisible, correct, opaque, clean, healthy*), and 2 modifiers (*slightly* or *completely*), resulting in 32 item combinations. Each one of these items occurred in four inference patterns, of which this paper focuses on the first two: If M A, A; If A, M A; If M A, not A; If not M A, not A, with the modifier M either accented (more prominent than the adjective A) or not, as in the following examples (12a–12d). Unmodified adjectives and negation always had neutral accent.

- (12) a. If a pet is {SLIGHTLY, slightly} sick, does it follow that it's sick?
b. If a pet is sick, does it follow that it's {SLIGHTLY, slightly} sick?
c. If a pet is {SLIGHTLY, slightly} sick, does it follow that it's not sick?
d. If a pet is not {SLIGHTLY, slightly} sick, does it follow that it's not sick?

The 256 target sentences were mixed with 256 fillers.⁴ All the sentences were

⁴ The fillers consisted of 128 inference patterns with *and* and *or* (*If x is A1 conj A2, does it follow that x is A2?*; *If x is A2, does it follow that x is A1 conj A2?*) and 128 patterns with *and* and *or* within

recorded by a native English speaker, a PhD student working in the fields of phonetics, phonology and psycholinguistics (Clara Cohen, University of California, Berkeley), who was instructed to overemphasize the accented modifiers, to raise the likelihood of getting accent effects in the laboratory situation, if there are any in natural speech (for discussion of this point see Hampton et al. 2013). Following Huang & Snedeker (2009), prosodic prominence in antecedent clauses was signaled by a combination of high and low pitch accents L+H*, whereas prosodic prominence in consequent clauses was signaled by another combination of low and high pitch accents, L*+H. Neutral stress in antecedent clauses was signaled by H* or L*+H, depending on how long the sentence was. Neutral stress in the consequent was signaled by L*, and the consequents always ended with an H-H% intonation characteristic of English polar questions.

The 512 sentences were counterbalanced into 16 lists of 32 items each. 512 audio files of general length 51.35 minutes made an average work time of 6.04 seconds per file and 3.09 minutes per list. With additional minimum of 16 seconds to rank and 5 seconds to fill out personal details, the fastest work time per list was estimated to be 214 seconds, or even 207 for lists that happen to be shorter than the average. Thus, only work time above 207 seconds counted for the statistics (90% of the data); with an average number of 22.5 answers per item (SD = 2.75; MIN = 19).

After listening to the recorded texts, participants had to choose an answer on a five-point Likert scale ranging from 1 (certainly not) to 5 (certainly yes). The instructions were as follows: *** Notice that this HIT is for English native speakers only! ** For each one of the following 32 yes/no questions, click on the play button to listen to a question and then choose an answer on a 1 (certainly not) to 5 (certainly yes) scale. For example, if the question is "If Bill has 100 books and Sara has 200 books, does it follow that Sara has more books?", I would answer certainly yes (5). However, if the question is whether Sara has fewer books, I would answer certainly not (1).*

comparative forms (*If x is more A1 conj A2, does it follow that x is more A2?; If x is more A2, does it follow that x is more A1 conj A2?*). In all the fillers, either the first conjunct or the conjunction word was accented and a single adjective had neutral stress. These fillers can serve to study scope ambiguity, but we must leave this for a different paper.

19.2.2 Results and discussion

Regarding inference type, a Wilcoxon signed-ranks test yields that ranking of agreement is generally significantly higher for *If slightly A, A* than for *If A, slightly A* ($W = 276, p < .01$) and for *If completely A, A* than for *If A, completely A* ($W = 486, p < .001$). This is also the case for the corresponding inferences divided by accentuation type into accented *slightly* ($W = 81, p < .05$), accented *completely* ($W = -136, p < .001$), and unaccented *completely* ($W = -110, p < .01$), except for unaccented *slightly* ($W = 58, p > .05$), see also fig. 19.1. This result generally supports the granularity-shifting analysis of degree modifiers, whereby shifting from fine-to-coarse granularity is preferred to shifting from coarse-to-fine one (therefore, **prediction 1** is supported).

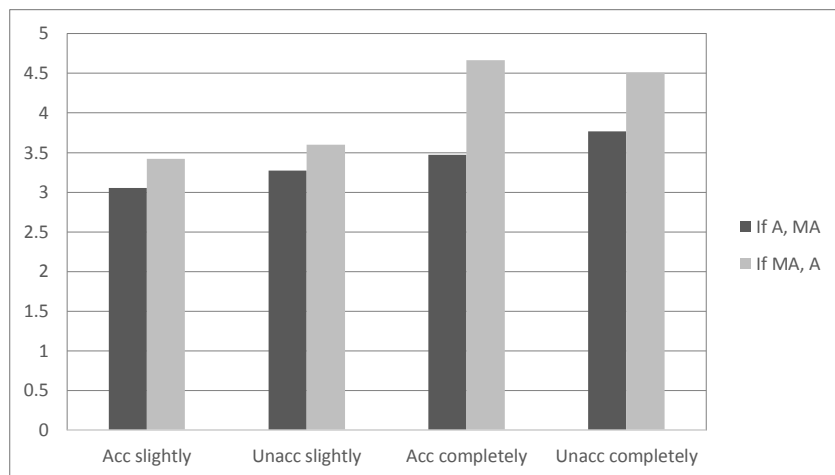


Figure 19.1: Certainty ratings in 2 inference types and accented vs. unaccented modifiers *slightly* vs. *completely*

As for prosody effects, a Wilcoxon signed-ranks test yields that ranking of agreement is generally significantly lower for accented modifiers than for unaccented ones in the two inference types (*If A, MA* vs. *If MA, A*) and two modifier types (*slightly* vs. *completely*: $W = -860, p < .01$). This also holds for the following combinations of each of the inference by modifier types: *If A, completely A* ($W = -94, p < .01$), *If A, slightly A* ($W = -98, p < .01$),

and *If slightly A, A* ($W = -89, p < .05$), except for *If completely A, A* ($W = 60, p > .05$; see fig. 19.2). Most importantly, evidence for a conjunction of granularity shifting and prosody effects is clearly seen in the partials. A Wilcoxon signed-ranks test yields that ranking of agreement is significantly higher for unaccented than accented *slightly* in the inference pattern *If slightly A, A* ($W = -31, p < .05$). This confirms **prediction 2a**, namely that prosodic intensification is local: it results in granularity $f_{\text{very-p}}$ abnormally fine for contexts with *SLIGHTLY*, such that a subsequent bare adjective is still interpreted only relative to a ‘normally’ fine granularity f_p . **Prediction 2b**, however, was not borne out.

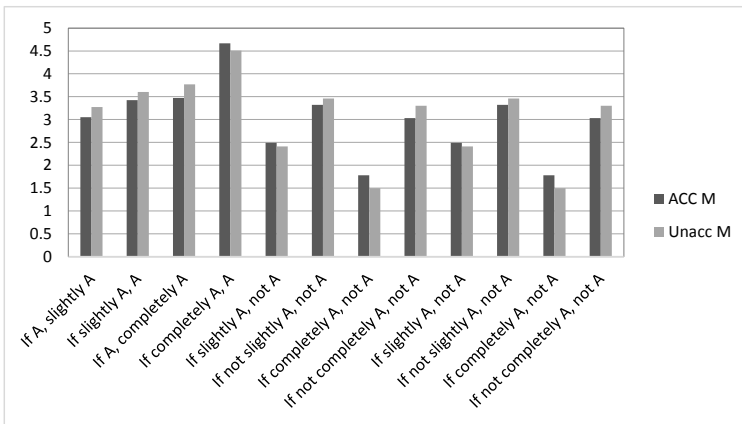


Figure 19.2: Certainty ratings in 12 inference types and accented vs. unaccented modifiers

This finding generally confirms the local intensification analysis of accentuation, i.e., that prosodic prominence functions similarly to the use of *very*. Thus, *SLIGHTLY dirty* is weaker than *slightly dirty*, whereas *COMPLETELY clean* is stronger than *completely clean*. This suggests that modifier accentuation leads to granularity level shifts that are abnormally fine even for contexts of use of modified adjectives. This kind of shifting does not affect subsequent prosodically neutral usage of a bare adjective. Thus, accentuation extends the difference between modified and unmodified forms of adjectives, thereby lowering certainty in inferences from one form to the other (except in the

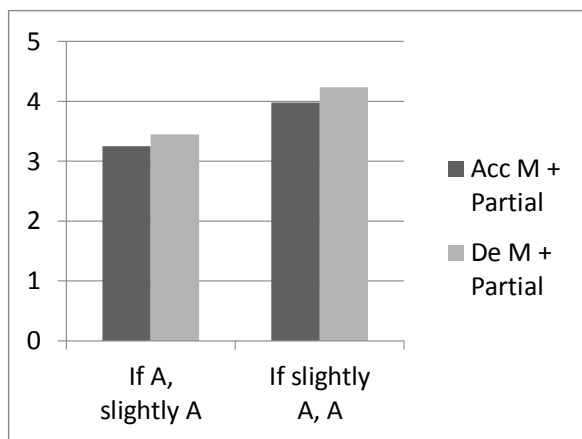


Figure 19.3: Certainty ratings reflecting granularity shifting and prosody effects in partial adjectives

pattern *If completely A, A*, where extra strengthening with accented *completely* predictably facilitates certainty in the inference).

To the best of our understanding, an alternative account whereby accent on modifiers functions as contrastive focus, fails to predict the accent effects. For instance, abstracting away from details pertaining to one or other particular analysis of the phenomenon, assume accented *slightly* denotes its focus semantic value, rendering the set of scalar alternatives of *slightly* salient. This eventually leads to an upper-closed interpretation ‘only slightly A’ via the inference that stronger scalar alternatives are false (*not pretty/ very/ completely A*). However, given a granularity shifting account of *slightly*, such an analysis predicts no accent effects in inferences from, e.g., *slightly dirty* to *dirty*. Even if *x* is *SLIGHTLY dirty* conveys that *x* has a degree *d* that exceeds the norm relative to a fine-grained exceeding relation and *x* has no higher degree than *d*, it still follows that *x* is dirty relative to a fine-grained exceeding relation. Thus, accentuation is expected not to reduce certainty in the inference.

Finally, a Wilcoxon signed-ranks test revealed no significant difference between accented vs. unaccented *slightly* in the inference pattern *If A, slightly A* ($W = -22, p > .05$). Thus, the data does not give evidence for higher likelihood of upper-closed interpretations (‘only slightly’) when alternatives

are more dissimilar due to accentual intensification. However, we cannot infer from this that there are no accent effects in real life. The laboratory conditions may have weakened the prosodic contrast.

19.3 Conclusion

The results of the study confirmed the existence of shifting effects in coarse-to-fine and fine-to-coarse conditions with modifiers, even when accentuation is taken into account. In addition, the study brings evidence for prosodic intensification effects, namely effects which are not expected to occur if the only role of prosodic prominence is to render salient the set of alternatives comprising the focus semantic value of a modified adjective. At any rate, this study is preliminary. More experimentation, as well as theoretical investigation, is needed to enable progress toward the establishment of more conclusive morals.

Interpreting sentences without prosody and context

Natalia Slioussar

Barbara Partee made major contributions to several linguistic disciplines. However, one thing she did is of special importance to me for sentimental reasons: she introduced and integrated into Western linguistics many generalizations and ideas formulated behind the iron curtain (e.g. Hajičová, Partee & Sgall 1998). This was very important for several domains of research, especially keeping in mind how much work from the former Eastern Bloc and, in fact, from many other places in the world was completely forgotten just because it did not become part of the scientific mainstream at some point. My small contribution to this festschrift focuses on one such domain: on the analysis of the so-called free word order.

The idea that word order variation depends on information structure (IS) and hence on the discourse context and is closely interconnected with prosody has been central for the Prague school from the very start, and Soviet linguists borrowed it from there (e.g., Hajičová & Sgall 1988, Dezső 1974, Kovtunova 1976, Lapteva 1976, Mathesius 1932, Sirotinina 1965, Zemskaya 1973, Zemskaya, Kitaygorodskaya & Shiryaev 1981). In the generative tradition, the first analysis of ‘free’ word order variation belongs to Ross (1967/1986), another important early contribution was made by Saito (1985). The term *scrambling* coined by Ross reflects his conclusion that this variation is essentially senseless: he believed that it does not introduce truth-conditional differences in meaning (which is not quite true) and did not consider other differences. Saito defined

scrambling as ‘semantically vacuous movement’. Following their lead, many linguists analyzed scrambling without any recourse to prosody or discourse context, focusing on the question how different word orders can be derived, i.e. whether they are base-generated or arise from movement, and, in the latter case, what type of movement is involved. This shortcoming did not prevent these linguists from posing and solving a lot of interesting questions, and many recent studies got rid of it to a large extent. In section 20.1, I will go over several cases in which we can still see its consequences, drawing my examples primarily from Russian.

Let me stress from the very start why these consequences are so difficult to overcome. What kind of data do we usually see in a linguistic paper? The answer is evident: an isolated sentence. Judging whether a particular sentence in a particular meaning is grammatical in a certain language is the primary tool for many formal approaches, but other researchers also often rely on sentences, for example, when they collect data in the field or make generalizations about predominant word orders in various languages. Sentences are great to analyze a very wide range of phenomena, but there are two obvious drawbacks: they are not well suited to study anything that crucially depends on prosody or on wider context. Studies in the Prague school tradition that did not rely on the grammaticality judgment paradigm and focused on the connections between word order variation, prosody and context from the very start were more immune to this problem, but, as I will show below, also did not avoid it in some cases. Based on some problems identified in section 20.1, section 20.2 addresses a more general question: how do we interpret sentences in isolation?

20.1 Some problems in the studies of word order variation

Formal syntacticians use two major tools to analyze free word order. Firstly, the canonical or neutral word order must be determined. This is also done in the Prague tradition, and, once the role of IS was widely recognized, all frameworks converged on defining this word order as the one that is acceptable in the ‘all new’ context where all IS-related distinctions are supposed to be wiped out. In practice, we test which word order sounds best in isolation or as an answer to the question ‘What happened?’. Secondly, it must be determined how other word orders are derived, and the primary tool for this is binding:

comparing binding possibilities in the canonical order and other orders, one can conclude whether movement is involved and of what type. I will first consider some problems associated with the second tool and then will turn to the first.

20.1.1 *Binding tests*

It has been known for a long time that available interpretations of pronouns may depend on the position of the main stress and on discourse context. Let us consider a classical example discussed since Chomsky 1976. Chomsky noted that coreference is ruled out in (1a), but not in (1b) (capital letters are used to indicate the position of the main stress).

- (1) a. *The man that she_i met liked MARY_i.
b. The man that she_i met LIKED Mary_i.

The following explanation was proposed. The position of the main stress signals that the sentences have different IS: *Mary* is focused in (1a), but not in (1b). Chomsky assumed that the focused constituent moves at LF, which results in a Weak Crossover effect in (1a), analogous to the one in (2).

- (2) *Who_i does the man that she_i met like *t_i*?

Rochemont (1986) challenged this explanation showing that in certain contexts, coreference becomes possible in sentences like (1a). His examples forming a small dialogue are given in (3a–c). A detailed discussion can also be found in Szendrői 2006.

- (3) a. A: Sally and the woman John loves are leaving the country today.
b. B: I thought that the woman he loves has BETRAYED Sally.
c. A: No, the woman he_i loves betrayed JOHN_i.

The fact that (3c) is acceptable, but (1a) is not received an alternative discourse-based explanation. The referent of a pronoun must be highly accessible, which is normally incompatible with focus. This is why (1a) sounds bad. In (3c), a context was created where the focused DP *John* is highly accessible, and coreference becomes possible.

However, although at least the contrast in (1a–b) is well-known and dealing with word order variation calls for additional attention to prosody and context,

binding tests were often applied without taking them into account. Sorting out possible consequences even for one language is a big project that is beyond the modest scope of this paper, so I will provide only one example to illustrate my point. The SVO sentence in (4a) was presented as acceptable in Bailyn 2003 and as ungrammatical in Bailyn & Yudina 2007 (to be precise, Bailyn and Yudina used ‘his mother’ instead of ‘his wife’, but this could not affect grammaticality). This led these authors to different conclusions about the OVS structure in (4b), which is undoubtedly grammatical.

- (4) a. Ego_i žena ljubit Ivana_j.
 his_i wife.NOM loves Ivan_j.ACC
- b. Ivana_j ljubit ego_i žena.
 Ivan_j.ACC loves his_i wife.NOM

In fact, the acceptability of (4a) depends primarily on the position of the main stress, as in (1a–b) above, and this fact is crucial for the analysis.

20.1.2 *Canonical and noncanonical word orders*

As I mentioned above, now all linguistic frameworks define the canonical word order as the one that can be used in zero context or as an answer to the question ‘What happened?’. At least in case of Russian language studies, this idea was present in the generative literature from very early on. However, many studies did not take into account the direct logical consequence of this idea: that all other word orders are not appropriate in zero context and thus cannot be legitimately studied in isolation.

Let me give one example. In the experimental literature, the central question about different word orders is whether any additional cost is associated with processing noncanonical ones. Most studies dedicated to this question compare canonical and noncanonical orders from different languages in zero context, and the latter are found difficult to process (e.g., Bader & Meng 1999, Erdocia et al. 2009, Frazier & Flores d’Arcais 1989, Hyönä & Hujanen 1997, Miyamoto & Takahashi 2002, 2004, Stojanović 1999, Vasisht 2002). This is explained by the increased syntactic complexity of noncanonical orders and often taken as a proof of the psycholinguistic reality of syntactic operations deriving them from the canonical one. However, if contextual requirements of different orders are taken into account, there is an obvious confounding factor: noncanonical orders are inappropriate in zero context.

As a speaker of Russian educated in the Prague school tradition, I was so amazed by the fact that this factor is not taken into account that I decided to start a PhD project integrating different approaches to free word order variation twelve years ago. By the time I was running experiments on Russian the first study illustrating the role of context already came out. Kaiser & Trueswell (2004) compared Finnish SVO and OVS structures in appropriate and inappropriate contexts. In Finnish (as in most other free word order languages), the vast majority of narrative sentences have a ‘given-new’ constituent order. So appropriate contexts presupposed such an order in target constructions, while inappropriate ones presupposed a ‘new-given’ order. Kaiser and Trueswell’s study showed that noncanonical constructions in appropriate contexts were processed faster than those in inappropriate contexts, but were still slower than the canonical order.

My experiments relied on a similar design with appropriate and inappropriate contexts (Slioussar 2007, 2011). I found that the difference between canonical and noncanonical orders in comparable contexts was absent altogether – probably because I used more complex target sentences (S V IO DO, DO S V IO, IO S V DO, DO IO V S, S V IO DO) and more extensive contexts than Kaiser & Trueswell (2004) did. Making a short digression, let me note that these results have no bearing on the problem of psycholinguistic reality of scrambling. Many Russian sentences are assumed to contain multiple instances of scrambling. If processing this operation indeed induced a significant processing load, such sentences would be especially difficult to comprehend, like multiple center embeddings, and would not be very frequent. This is definitely not the case. Thus, if scrambling exists, it should be very easy to process, which is compatible with the data presented above. Some other results from Slioussar 2011 are relevant for the problem of psycholinguistic reality and can be taken as an indication that scrambling is real.

While I was working on these experiments and other materials for my dissertation, I started wondering what happens when speakers are confronted with noncanonical orders in isolation. I am still interested in this question, and the next section presents several observations and explains why they may be relevant for a wider set of data. Interpreting any sentence in isolation – not necessarily with a noncanonical order – is not a natural task for us, and, as it seems to me, we sometimes employ nontrivial strategies to cope with it.

20.2 Interpreting sentences in isolation

20.2.1 Two general principles

I will start with my observations concerning noncanonical word orders. I made them while running various experiments and soliciting grammaticality judgments for my dissertation (Slioussar 2007) and subsequent work on Russian word order. Since noncanonical orders are inappropriate in isolation, one has to come up with some context to interpret them. Firstly, there is a great variation between the speakers in this respect: some speakers tend to reject the majority of sentences with noncanonical orders (being confronted with these examples in isolation, consciously or not they answer the question whether these sentences can be used *as is*), while others try to go over various situations where this or that sentence could be used. As a result, we see a variation in grammaticality judgments that in fact has nothing to do with variation in these speakers' grammars.

Secondly, if a sentence has several possible interpretations, the one that is easier to accommodate out of context will often be chosen even if it is not the most frequent. For example, an OSV sentence like (5) can be interpreted as topicalization or focus fronting in Russian.

- (5) Kašu mal'čik s"el.
porridge.ACC boy.NOM ate

Topicalization is commonplace, while focus fronting is relatively rare. Still, when Russian speakers read examples like (5) in isolation, they often use the intonational contour associated with focus fronting. In my view, this is due to the fact that focus fronting is easier to accommodate out of context. A topicalized object should be previously mentioned or contrasted with something, while focus fronting requires a special emphasis on the object that is essentially the speaker's choice that does not directly depend on the preceding context.

One may think that linguists working in the Prague school tradition are protected against these problems because they do not rely on grammaticality judgments, draw the majority of their data from corpora and realized from the very start that word order variation depends on the discourse context. As it seems to me, they are less prone to make mistakes in this domain, but are definitely not immune. Let me give one example. Russian allows for OV orders with the main stress on the object, as in (6).

- (6) On KAŠU s"el.
he porridge.ACC ate

King analyzed them as ‘emotive’ focus constructions where “the focused item is most commonly found directly before the verb” (King 1995: 90), and several authors adopted her analysis. Interestingly, two decades earlier in the Russian linguistic tradition Kovtunova (1976) made a similar suggestion, dividing various constructions into ‘stylistically neutral’ and ‘expressive’. VO structures with the stress on the object and OV structures, as in (6), can exemplify these two categories.

However, while some features of Kovtunova’s theory were incorporated in subsequent papers, this idea was not (e.g. Kodzasov 1989, 1996, Yanko 2001). Several major corpus studies of colloquial Russian done before and after Kovtunova’s work revealed that OV orders are characteristic for it, being almost as frequent as VO structures (e.g. Sirotinina 1965, Lapteva 1976, Zemskaya, Kitaygorodskaya & Shiryayev 1981). So eventually Russian linguists working in the Prague school tradition concluded that OV sentences do not appear emphatic or otherwise special in colloquial Russian, but acquire this flavor when they are cited and evaluated in the context of written Russian (this is characteristic for colloquial constructions in general). The idea that Russian has a special ‘emotive’ or ‘expressive’ focus construction was discarded, but the initial misconception was clearly due to the fact that the relevant sentences were evaluated out of their wide context. Unfortunately, this observation remains unknown to many Western Slavicists – one more illustration of the thesis that it is difficult for scientific knowledge to percolate across the borders of different frameworks unless great people like Barbara Partee help it.

20.2.2 *Ordering arguments*

In all cases discussed above, the common denominator is that we do not take prosody or contextual requirements of a sentence into account and run into problems as a result. This section considers several examples that are much more subtle. Firstly, let us look at sentences with a direct and indirect object. Both Russian linguists working in the Prague school tradition and generative syntacticians assume that ‘S V IO DO’ is the neutral word order in such sentences (e.g. Dyakonova 2009, Junghanns & Zybatow 1997, Sirotinina 1965). However, Bailyn (2011) provides several compelling arguments in favor of the opposite conclusion. Finally, some linguists working on ditransitive

constructions in German believe that the canonical order may be different for different predicates (e.g. Haider 2006).

Comparing these approaches is beyond the scope of this paper, so I will only point to some confounding factors that have not been discussed before. Nobody disputes the fact that when there are IS-related differences between the objects, the one that is D-linked, given, more accessible or presupposed (depending on one's favorite IS model) comes first. So the discussion revolves around the question which orders sound better in zero context, where no IS-related distinctions should be present. *Prima facie*, there is literally no context to be ignored here. However, I am going to show that when we interpret sentences not as a part of rich natural discourse, but in the experimental conditions, we try to invent context for them. Usually, this does not affect the results of the experiment in any interesting way, but in this particular case, it does.

Consider the sentences in (7a–b). Preparing this paper, I tested all examples with five speakers of Russian to check my judgments and recorded all sentences to make sure that my informants do not come up with different prosodic structures for them. All my informants preferred the 'DO IO' order in (7b) as an answer to the question 'What happened?'

- (7) a. Maša pokazala vraču REBENKA.
Masha.NOM showed doctor.DAT child.ACC
- b. Maša pokazala rebenka VRAČU.
Masha.NOM showed child.ACC doctor.DAT

However, in (8a–b) informants chose the 'IO DO' order in (8a) as canonical. What is the difference between (7a–b) and (8a–b)? The sentences have the same structure, contain the same predicate and two animate objects, so no existing theory can tell them apart.

- (8) a. Maša pokazala staruške VRAČA.
Masha.NOM showed old-lady.DAT doctor.ACC
- b. Maša pokazala vrača STARUŠKE.
Masha.NOM showed doctor.ACC old-lady.DAT

When we interpret such sentences in isolation, we receive very little information and get acquainted with all participants at once, which is rarely the case in a natural discourse. Presumably, to create a maximally coherent discourse representation, we try to connect these participants to each other whenever it

is possible. In particular, if nothing excludes that, we assume that the child mentioned in (7a–b) is Masha’s child. This is not applicable to the old lady in (8a–b).

The status of the doctor in (7a–b) and (8a–b) is also different. The most salient interpretation of (8a–b) is the situation when Masha, the old lady and the doctor are together in one room and Masha points to the doctor or otherwise explains to the old lady where the doctor is. The most salient interpretation of (7b) is that Masha took her child to a doctor. (7b) can be legitimately uttered when we know Masha and her child, but know nothing about the doctor, and, in fact, will never learn who this doctor was – it is only important that some doctor was consulted. Thus, interpreting this sentence in isolation, we can introduce only two individuals in our discourse model, Masha and her child, and create a generic representation for the doctor. (7a) presupposes a more elaborate context: either there is some particular doctor the sentence is about (which means introducing three individuals), or the child is not Masha’s child, or Masha was initially going to take somebody else to the doctor (which means introducing possible alternatives). Obviously, we always prefer a sentence presupposing less specific context.

Teasing apart various factors mentioned above requires more work, so I will only mention a couple of contrasts. The preferences in (7a–b) are reversed if we use *čuzogo rebenka* ‘somebody else’s child’. In (8a–b), if the old lady and the doctor are swapped, the interpretation where Masha takes the lady to see a doctor becomes most salient. This changed the preferences for three out of my five informants and left the remaining two in doubts.

I believe that in total, this suggests that ‘IO DO’ is the canonical order because this is the order we get when all three arguments in the sentence have equal status. However, my main point here is not to argue for a particular analysis of ditransitive constructions, but to show that when we interpret sentences in isolation, we may invoke some nontrivial strategies that influence the choice of the canonical order.

Let us consider two more pairs of examples in (9a–b)–(10a–b). My informants chose the ‘DO IO’ order in (9b) and ‘IO DO’ order in (10a) as answers to the question ‘What happened?’.

- (9) a. Direktor posvjatil uspexam rabočix vstupil'nuju
 director.NOM dedicated achievements.DAT workers.GEN opening.ACC
 REČ'.
 speech.ACC
- b. Direktor posvjatil vstupil'nuju reč' uspexam
 director.NOM dedicated opening.ACC speech.ACC achievements.DAT
 RABOČIX.
 workers.GEN
- (10) a. Direktor posvjatil uspexam rabočix veselyj
 director.NOM dedicated achievements.DAT workers.GEN merry.ACC
 TANEC.
 dance.ACC
- b. Direktor posvjatil veselyj tanec uspexam
 director.NOM dedicated merry.ACC dance.ACC achievements.DAT
 RABOČIX.
 workers.GEN

The most salient interpretation of all these sentences presupposes some corporate celebration or a similar event. An opening speech is an ordinary part of such events, so it comes into the discourse picture almost for granted, while a merry dance performed by the director is not. Apparently, this is enough to reverse the judgments.

Finally, let us compare several sentences with SVO and OVS order. It is universally recognized that the choice between these orders depends on IS in Russian. However, several linguists suggested that it might also depend on other factors, in particular, on animacy of different arguments (e.g. Brun 2001, Titov 2012). Indeed, I tested the examples in (11a–b)–(13a–b) with my informants and they unanimously preferred (11b), (12b) and (13b) as an answer to the question ‘What happened?’. In (14a–b)–(15a–b), (14a) and (15a) are preferred.

- (11) a. Sobaka ukusila devočku.
 dog.NOM bit girl.ACC
- b. Devočku ukusila sobaka.
 girl.ACC bit dog.NOM

- (12) a. Šum ispugal devočku.
noise.NOM frightened girl.ACC
- b. Devočku ispugal šum.
girl.ACC frightened noise.NOM
- (13) a. Šum ispugal sobaku.
noise.NOM frightened dog.ACC
- b. Sobaku ispugal šum.
dog.ACC frightened noise.NOM
- (14) a. Mal'čik ukusil devočku.
boy.NOM bit girl.ACC
- b. Devočku ukusil MAL'ČIK.
girl.ACC bit boy.NOM
- (15) a. Sobaka ukusila KOŠKU.
dog.NOM bit cat.ACC
- b. Košku ukusila sobaka.
cat.ACC bit dog.NOM

We may suppose that apart from information structure, the word order reflects the animacy scale in Russian: human beings > other animates > inanimates. This factor is inferior to IS and reveals itself only in the all-new context. However, let us consider possible confounding factors before we complicate our model. Firstly, the sentences are truth-conditionally equivalent in all pairs, but present information differently: the SVO order suggests that the subject is the topic, while the OVS order points to the object. For the examples in (11a–b), this means that the first one is about a dog biting somebody, while the second one is about a girl being bitten. All things being equal, we are more likely to talk about people, which might influence the choice of the word order. Unfortunately, this claim is difficult to prove (we cannot change anything in the sentence to test it except for animacy itself).

Secondly, I demonstrated above that it plays a role whether we have to establish an individual in the discourse model or a generic representation suffices. Both sentences in (11a–b) allow for a generic representation of the second argument. Say, a girl was bitten by some dog (no matter by which

in particular) and fell ill. Or a dog bit a girl (no matter which in particular) and was chained as a result. By giving more information about one of the arguments we can change word order preferences.

For example, let us change a dog in (11a–b) to *sosedskaja sobaka*. *Sosedskaja* is an adjective that can be translated as ‘neighbor’s’ or ‘local’ (the first translation is more precise, but importantly the adjective does not introduce a particular neighbor into the picture, unlike the English possessive construction).

- (16) a. Sosedskaja sobaka ukusila devočku.
 local.NOM dog.NOM bit girl.ACC
- b. Devočku ukusila sosedskaja sobaka.
 girl.ACC bit local.NOM dog.NOM

Although animacy of the arguments does not change, the SVO order in (16a) is now preferred in zero context. Firstly, it is evident now that there is a particular dog in question. Secondly, when the dog is local, it is easier to imagine that its behavior is highly relevant for a hypothetical speaker, so it becomes a more probable topic. I will not try to tease these factors apart, the goal of this section was to demonstrate that they exist and should be taken into account.

20.3 Conclusion

Almost any linguist, a formalist or a functionalist, has to ask native speakers if a particular sentence sounds good or which sentences are more appropriate in a particular context. This paper discusses several problems that may be associated with this basic task. We often use written sentences and provide very little contextual information, if any at all. In section 20.1, I demonstrated how this can create problems for the analysis of word order variation, because informants can come up with different prosodic structures for one and the same example or may negatively react to it if its contextual requirements are violated. In section 20.2, I focused on the cases where we may think that we control the context asking informants to choose which word order sounds better as an answer to the question ‘What happened?’. I showed that when there is a choice how to integrate the information from the sentence in the discourse model, informants prefer the simplest and the most coherent and interconnected representation, which essentially amounts to evaluating

possible extended contexts for the sentence and choosing a less elaborate one. Thus, context plays a role even when we specifically try to establish zero context and sometimes affects the results in a nontrivial way.

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On argument structure, lexical relations, prefixation and coercion

Sergei Tatevosov

The goal of this paper is two-fold. Empirically, I will offer an account of the phenomenon widely attested in Russian: prefixed verbs can, and in some cases must take an argument which a bare verb stem is not subcategorized for. Theoretically, I will suggest that this phenomenon provides an argument for what I call a two-level theory of argument projection.

21.1 Non-subcategorized arguments

A well-known illustration of the phenomenon I am interested in comes from English resultatives. In (1a), *the teapot* cannot be a subcategorized argument of *drank*:

- (1) a. We drank the teapot dry.
 b. #We drank the teapot.
 c. *We drank the juice dry.
 d. We drank the juice.

Drink is a transitive verb. Its internal argument must denote a drinkable entity, so (1b) only makes sense on the odd interpretation where *the teapot* is a name for some kind of liquid. However, (1a) is a clause where *the teapot* is licensed, but the subcategorized argument of *drink*, *the juice*, is not, (1c).

These data pose a number of obvious questions. What theta-role does the teapot receive and where from? What is the relationship between *drank* and *dry*? What happens to the object of *drink*, *the juice* found in (1d), when (1a) is built? How to derive the meaning of (1a) compositionally?

These questions have been addressed in a variety of studies including Hovav & Levin 2001, Rothstein 2004, Kratzer 2005, to mention just a few. Even though details of specific proposals vary, there seems to be a general agreement that arguments not subcategorized for by the verb stem are licensed as arguments of a result state expression, like *dry*, *sick* and *asleep* in (2).

- (2) a. They drank the pub dry (Hovav & Levin 2001)
b. Er hat seine Familie magenkrank gekocht. (German)
'He cooked his family stomach sick.' (Kratzer 2005)
c. John sang the baby asleep. (Rothstein 2004)

Less uniformity across existing theories is attested as to how a result state description like [the teapot dry] is integrated into a larger configuration. The three proposals listed above all use different means of achieving this goal: Rappaport Hovav and Levin rely on Template Augmentation, Rothstein makes use of the TPCONNECT relation, while Kratzer poses a special derivational morpheme interpreted as introducing the relation of immediate causation. No less variability emerges when it comes to the question of what happens to subcategorized arguments like *the juice* in (1d). Rothstein assumes detransitivization of verbs like *drink* where the internal argument gets existentially bound. For Kratzer, *drink* is an unergative verb with no internal argument to begin with. Rappaport Hovav and Levin assume that event structure is augmented with a result state description presyntactically, so at the point where phrase structure is built, the subcategorized argument of *drink* is no longer part of argument structure. For space considerations, I am not in the position of evaluating far-reaching predictions of these assumptions. Rather, in the next section I will suggest that the whole set of questions English resultative pose extends to languages like Russian, and will come up with one further empirical generalization that motivates the proposal developed in what follows.

21.2 Argument structure of prefixed verbs in Russian

Russian and other Slavic languages are famous for their rich and complicated systems of verbal prefixation. Prefixes do not form a homogeneous class, their

distribution being subject to variation along various dimensions. However, there is a class of prefixes, sometimes called resultative prefixes, that exhibit the pattern strikingly similar to what we observe with English resultatives. Consider (3–5). The verb stem *ed-* ‘eat’ in (3) subcategorizes for a DP denoting edible substances, just like in English. And just like what happens with Resultative XPs, some prefixes come with an argument not subcategorized for by the verb, (4). With others, the argument structure remains intact, (5).

- (3) Volodja el jabloko /#puzo
 V. eat.PST apple belly
 ‘Volodja was eating/ate a an apple/ #a belly.’
- (4) Volodja na-el puzo
 V. PFX-eat.PST belly
 ‘Volodja acquired a belly by eating.’
- (5) Volodja s”-el jabloko
 V. PFX-eat.PST apple
 ‘Volodja ate an apple.’

It is natural to attribute this similarity to the fact that the role of prefixes like *na-* and *s-* in (3–5) is essentially similar to that of resultative XPs in English and other languages. As is extensively argued in the literature (Arsenijević 2007, 2012, Babko-Malaya 1999, Ramchand 2004, Romanova 2004, 2007, Svenonius 2004, 2008, Žaucer 2009, 2010), prefixes introduce a result state description to the semantic representation. Tatevosov (2010, 2011, to appear) demonstrates this by applying common diagnostics for event-structural complexity (e.g., the scope of adverbials like ‘almost’ and ‘again’; see Dowty 1979, von Stechow 1996 and much further literature). Given these considerations, a generalization emerges: abstracting away from the fact that Russian makes use of resultative prefixes rather than of resultative APs or locative/directional PPs, Russian is like English. Sentences like (1a) and (4), then, should be analyzed in parallel:

- (6) a. [_{VP} drink [_{XP} the teapot dry]]
 b. [_{VP} *ed-* ‘eat’ [_{XP} *puzo* ‘a belly’ *na-*]]

A wider implication of this parallelism is that whatever accounts for the argument projection pattern attested with English resultatives is predicted to extend to the Russian case. If the teapot in (1a) is licensed as an argument of

empty, a belly in (4) comes out as an argument of *na-*. If the resultative XP in (6a) is combined with the verb via causativization à la Kratzer, the same happens with the resultative XP in (6b). And if the subcategorized internal argument of *drink* (e.g., *the juice*) ends up being existentially bound, according to Rothstein, the same should be the case with the subcategorized argument of *eat* (e.g., *an apple*).

This having been said, I would like to establish an observation that seems to have not been made so far either for Russian prefixal configurations or for English resultatives.

The teapot in (1a) is not just a holder of the result state of being dry, as *the belly* in (4) is not just a holder of the result state of being existent. The same two arguments are understood as undergoing change in the course of drinking and eating events, the change that culminates when the result state is attained. (1a), for example, describes a process of the teapot becoming empty (cf. the meaning of the same sentence in the progressive: *We are drinking the teapot empty*). Likewise, (4) makes reference to the process of the belly being effected. In other words, (7) holds:

- (7) An entity that acquires a result state (*the teapot* in (1) and *a belly* in (4)) is identical to an entity that undergoes change along a certain dimension in the course of the event.

It turns out, however, that if we are dealing with non-subcategorized arguments, (7) is not derivable under (6a-b) in any obvious way. We do not expect the teapot and the belly to be involved in the change of state subevent at all. A result state description only denotes a result state (e.g., ‘the teapot is dry’) and expresses no change of state on its own. On the other hand, verb stems only lexicalize changes that subcategorized arguments (e.g., *the juice* or *an apple*) undergo. If this were not the case (as e.g., under Kratzer’s 2005 assumption that verbs like *drink* lack an internal argument altogether), sentences like (1b) would have been as appropriate as (1d), and we would not have any empirical reasons so identify some arguments as subcategorized in the first place. Therefore, if arguments like *the teapot* and *a belly* in (1a) and (4) are only arguments of result state expressions, and nothing else is said, the resultative construction ends up having a meaning component that does not come from the meaning of its elements in any obvious way.

It is not difficult to show that (7) as a property of resultative constructions is problematic for all the proposals mentioned above, albeit for slightly different

reasons. I will leave detailed argumentation for another occasion, however. In what follows I develop a proposal that accounts for the puzzle I have just outlined.

21.3 Event structure

In this section, I introduce core assumptions underlying the proposal. The key ingredient is the two-level architecture of event structure (ES): a complete ES is built up by putting together two components, **lexical** and **structural**.¹ The former comes from the meaning of individual lexical items. The latter is created in the syntax. This puts the proposal in line with constructionalist theories of ES, whereby the construction itself provides a **structural template** for an event description (Borer 2005, Goldberg 1995, 2006, Zubizarreta & Oh 2007, Ramchand 2008 and others). I suggest, in the spirit of Ramchand (2008), that the subevental content of an event description comes as part of the interpretation of the syntactic heads a ν P is composed of. Specifically, ν is associated with an activity subevent, V contributes a **process/become subevent**, and R introduces a **result state**. Denotations of ν , V and R heads produce a structural, **templatic** meaning in the sense that subevents lack descriptive content. The latter appears when structural elements of ES are combined with the lexical ones at spell-out. Spell-out thus has both phonological and semantic consequences.

I propose that spell-out occurs in a cyclic fashion after every merge operation. Merge is interpreted by functional application, predicate modification and other common rules of construal independently required in the theory. Spell-out is interpreted by the Match operation, which yields the intersection of the denotations of the two components:²

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- 1 The idea of two-level architecture is not new, of course, see Rappaport Hovav & Levin 1998 and sources cited there. While the current proposal inherits the conceptual distinction between “lexical”, or idiosyncratic, and “structural”, or templatic, aspects of meaning from the existing literature, its theoretical implementation, as will become evident shortly, differs in many significant respects.
 - 2 Given that there is one-to-one correspondence between sets and their characteristic functions, throughout this paper I switch back and forth between describing denotations in terms of sets and in terms of (Schonfinkeled) functions. For example, I will sloppily talk about “relations between individuals and events” (which, technically, are sets of ordered pairs), about “intersections of the two relations”, etc., but will represent them as functions of type $\langle e, \langle \nu, t \rangle \rangle$. I believe that this sloppiness does not affect the overall line of reasoning. The reader should have in mind that if, for

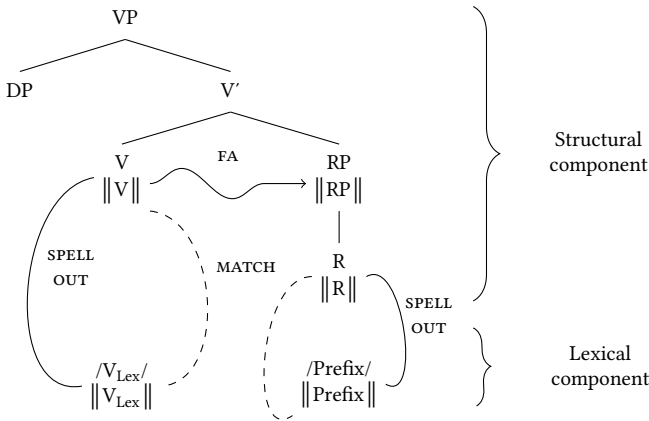


Figure 21.1: A fragment of a two-level accomplishment event structure

$$(8) \quad \text{Match}(\text{Struct}, \text{Lex}) = \|\text{Struct}\| \cap \|\text{Lex}\|$$

This system is schematized in Figure 21.1, which represents a fragment of the structure I assign to prefixed configurations in Russian.³ At the first step of derivation, R is spelled out by the prefix, and the denotation of RP is formed by intersecting $\|\text{R}\|$ and $\|\text{Prefix}\|$ via Match. Then, V merges with RP to create V'. Semantically, $\|\text{V}\|$ combines with the denotation of RP by functional application (FA). Then V is spelled out, and the lexical verb, $\|\text{V}_{\text{Lex}}\|$, matches with FA ($\|\text{V}\|, \|\text{RP}\|$), yielding the denotation of V'. Later on, the internal argument DP merges and gets spelled-out. At subsequent stages of derivation, not shown in Figure 21.1, v would merge with VP and project, and the denotation of the whole $v\text{P}$ would be computed in essentially the same way as before, through a series of FA and Match operations.

The system just outlined allows for a situation where a lexical item and a structural template do not have matching interpretations. Under the current

example, both Struct and Lex are of type $\langle e, \langle v, t \rangle \rangle$, then " $\|\text{Struct}\| \cap \|\text{Lex}\|$ " is to be understood as the function $\lambda x. \lambda e. \|\text{Struct}\|(x)(e) = \|\text{Lex}\|(x)(e) = 1$.

³ This ES only characterizes lexical prefixation. Superlexical prefixes (Babko-Malaya 1999 and further literature) are typically analyzed as attached outside VP/vP.

set of assumptions, such a situation can be given specific and precise content: $\| \text{Struct} \| \cap \| \text{Lex} \| = \emptyset$. If (and only if) this happens, the lexical element gets reinterpreted. It is this mechanism, also known as coercion, that plays a crucial role in accounting for the conditions where non-subcategorized arguments are licensed. I will return to this topic shortly, after laying out more specific assumptions about the meaning of ‘subevental’ heads like V and R and of individual lexical items ES consists of.

21.4 Ingredients of ES

I follow Ramchand (2008) in assuming that transitive activities and accomplishments differ as to whether they contain the projection of R:

- (9) Accomplishment event template
 [... v ... [... V ... [... R ...]]]
- (10) Activity event template
 [... v ... [... V ...]]

Unlike Ramchand, however, I propose that V is interpreted in different ways in these two types of event structure. Part of the denotation of the accomplishment verbs is the information that the internal argument undergoes change along a certain dimension by a certain degree in the course of the event. I implement this by making use of the INCREASE relation between individuals, events and degrees proposed in Kennedy & Levin 2002. The denotation of the accomplishment V is thus a relation between a predicate of degrees, individuals and events in (11)

- (11) $\| V_{\text{accomplishment}} \| = \lambda P_{\langle d,t \rangle} . \lambda x . \lambda e . \exists d [\text{process}(e) \wedge \text{INCREASE}(G(x))(d)(e) \wedge P(d)]$
 where $\text{INCREASE}(G(x))(d)(e) = 1$ iff $G(x)(\text{FIN}(e)) - G(x)(\text{INI}(e)) = d$ (i.e. the difference between the degree to which x possesses a gradable property G at the initial bound of e and the corresponding degree at its final bound is d .
 (Kennedy & Levin 2002)

(11) is a function that takes a property of degrees P and yields a relation between individuals x and events e such that the degree to which x possesses the gradable property G changes in e by some d , d falls under P . In (11), G is a free variable over gradable properties (of type $\langle e, \langle i, d \rangle \rangle$) that gets its value from an assignment function. This seems to be justified for cases like (4) and (5) in Russian, where the dimension of change is not specified by any overt

material. For a bigger picture of Russian, however, this may turn out to be an oversimplification, given de-adjectival verbs like *lengthen* or *empty*, where a gradable property is unequivocally supplied by the adjectival stem. This suggests that in a more extensive fragment, $\|V\|$ should be allowed to take *G* as an argument, at least in the de-adjectival case. For languages like English, likewise, this may be a necessary move at least for AP-resultatives like (1–2), which contain an overt adjective specifying the scale of change. I will leave exploration of this line of the study for a future occasion, however.

For the purposes of the current fragment, I am assuming that the value for the variable over degree predicates *P* is provided by RP, which makes it obligatory in accomplishment structures for type reasons. Intuitively, *V* denotes a change, and thus needs to ‘find out’ what the endpoint of the change is, and the role of RP is to provide exactly this information. In that way, the presence of RP in accomplishment event structure is derived rather than stipulated for every individual lexical item, as in Ramchand’s system. Again, a more elaborated version of the analysis is likely to require a further refinement. We may want to deal with a set of states defined by an entity having a certain degree of a certain gradable property, rather than with a set of degrees themselves. Minimally, this would be motivated by event structural considerations like, e.g., the restitutive reading of ‘again’, where it only takes scope over a result state. The property of degrees as the denotation of RP will not serve as a legitimate set of entities for ‘again’ to take scope over. For the current purposes (11) will suffice, however.

Turning to the denotation of R, I suggest (again, as a simplification that does not undermine the core of the proposal) that it contributes the set of maximal degrees, as represented in (12).

$$(12) \quad \|R\| = \lambda d. \exists S[\max(d)(S)]$$

The next step is to define lexical items (LIs) appropriately. I take them to be mappings between a phonological string and a set of grammatical and semantic features. The sample LIs are represented in (13).

- (13) a. ‘eat’: / *ed-* / $\Leftrightarrow \{V, \dots, \lambda x. \lambda e. \text{eat}(x)(e)\}$
 b. Prefix in (4): / *na-* / $\Leftrightarrow \{R, \dots, \lambda d. d \in S_{\text{EFFECTED}}\}$
 c. Prefix in (6): / *s-* / $\Leftrightarrow \{R, \dots, \lambda d. d \in S_{\text{CONSUMED}}\}$

One part of every lexical specification in (13) determines a category (*V* in

(13a) or R in (13b–c)) an LI can spell out. Another part is a lexical meaning of an LI. In (13a), ‘eat’ denotes a (Davidsonian) relation between events and (consumed) objects. (I follow Kratzer 2003 in taking verbs to be names of unique relations between events and their internal arguments and do not assume the (Neo-Davidsonian) theme relation.) A resultative prefix contributes a set of degrees from a particular scale, as in (13b) and (13c). In that way the analysis captures the fact that prefixes co-vary with properties of scalar change. Specifically, whereas *na-* is associated with a set of degrees from the effectedness scale, *s-* brings in degrees from the scale of consumption.

Now we have everything we need to provide example derivations of sentences like (4) and (5) and to account for the observed argument projection patterns.

21.5 Projection of a “subcategorized” argument

Consider (5), repeated as (14), again:

- (14) Volodja *s*”-el jabloko.
 V. PFX-eat.PST apple
 ‘Volodja ate an apple.’

As we saw, in the prefixal configuration like (14), the internal argument is intuitively understood as subcategorized, since the same argument is available in combination of the prefixless stem in (3).

Assuming the overall architecture represented in Figure 21.1 and the meaning of LIs in (13a–c), we can easily derive exactly this result.

First, the prefix in (13c) and $\|R\|$ in (12) match according to the rule of construal in (8). The intersection of the set of maximal degrees from (12) and the set of degrees from the destruction scale in (12) is the singleton set containing the maximal degree of destruction:

- (15) $\text{Match}(\|R\|, \|s-\|) = \|[_{RP} s-]\| = \lambda d. d \in S_{\text{CONSUMED}} \wedge \max(d)(S_{\text{CONSUMED}})$

Depending on an assignment, G will be interpreted as a gradable property of being effected, consumed, affected, etc, as shown in (16). Intuitively, these properties characterize “thematic classes of verbs”, “taxonomic categories”, e.g., creation verbs, consumption verbs, destruction verbs, verbs of combining and attaching and other classes of accomplishments (see, e.g., Levin 1993).

- (16) a. $\|G\|^{g^1} = \text{EFFECTED}$
 b. $\|G\|^{g^2} = \text{CONSUMED}$
 c. $\|G\|^{g^3} = \dots$
 d. ...

I leave it open for future research whether the class of available Gs is open or closed, whether it is subject to cross-linguistic variation, how Gs differ in terms of scale structure (Kennedy & McNally 2005) and many other questions. It should be pointed out, however, that making these gradable properties part of the semantics of ES gives a different theoretical weight to the notion of ‘verb class’, mostly used in an intuitive, pre-theoretical way in the literature. Within the current perspective, this notion is given more specific and, hopefully, more precise content: at least for accomplishments, the classes are defined by descriptive characteristics of the scale of change that comes out as part of the structural component of ES.

RP and V merge; their denotations from (15) and (11) are combined by FA.

- (17) $\| \text{Merge}(V, [_{\text{RP}} s-]) \|^{g^2} = \| [V [_{\text{RP}} s-]] \|^{g^2} = \| V \|^{g^2} (\| [_{\text{RP}} s-] \|^{g^2}) = \lambda x. \lambda e. \exists d$
 $[\text{process}(e) \wedge \text{INCREASE}(\text{CONSUMED}(x))(d)(e) \wedge d \in S_{\text{CONSUMED}} \wedge \max(d)(S_{\text{CONSUMED}})]$

The denotation of $[V [_{\text{RP}} s-]]$ is thus a relation between individuals and events where an individual is maximally consumed. According to (16), under g^2 (and any assignment that is like g^2 in this respect) the free variable over gradable properties is assigned CONSUMED, the property of being consumed, as a value. Under g^2 we thus get a template for what is traditionally called consumption verbs.

Note that under other assignments, $\| [V [_{\text{RP}} s-]] \|$ will denote an empty relation, since d will be construed as being a degree from two distinct scales at the same time. In this way, the distribution of a prefix is predicted to co-vary with the dimension of (scalar) change.

This seems to be a welcome result given that Slavic prefixes are known to be sensitive not to the idiosyncratic meaning of individual lexical items, but rather to more abstract semantic characteristics underlying thematic classes of verbs. Laura Janda and her colleagues have recently put much effort (Janda 2012, 2013, Janda, Endresen, et al. 2013) into establishing the set of generalizations supporting the conception of prefixes as verbal classifiers. Prefixes, on this view, divide simplex verbs into semantically coherent groups. I believe that my

proposal captures exactly the same intuition: prefixes are related to a specific aspect of templatic meaning, a gradable property G in (11), that defines natural classes of verbs⁴.

Finally, (17) and the denotation of ‘eat’ from (13a) match:

$$(18) \quad \text{Match}(\|ed\|^{g^2}, \| [V_{[RP \text{ } s-]}] \|^{g^2}) \\ = \lambda x. \lambda e. \exists d [\text{process}(e) \wedge \text{INCREASE}(\text{CONSUMED}(x))(d)(e) \wedge d \in S_{\text{CONSUMED}} \wedge \\ \max(d)(S_{\text{CONSUMED}}) \wedge \text{eat}(x)(e)]$$

The outcome is the relation where an individual argument is an object of eating and of maximal consumption at the same time. This is exactly the meaning of *s’est*’ in (14). Saturating the external argument position, merging v and projecting an external argument in its specifier will complete the derivation. For the sake of space, these straightforward steps are not shown here.

So far, we have seen how the proposed system deals with an easy case, the one where the internal argument has been subcategorized for. The same result, however, is easily derivable within other, much less complex systems. The two-level architecture gains certain empirical advantages in dealing with more complicated cases like (4), where the argument does not appear to be subcategorized for by the verb stem. To this case I now turn.

21.6 Projection of a “non-subcategorized” argument

The relevant sentence in (4) is repeated in (19):

$$(19) \quad \text{Volodja} \quad \text{na-el} \quad \text{puzo} \\ \text{V.} \quad \text{PFX-eat.PST} \quad \text{belly} \\ \text{‘Volodja acquired a belly by eating.’}$$

The first two steps of the derivation are the same as before. The denotation of the prefix *na-* in (13b) with the denotation of R in (12) match, creating the singleton set containing the maximal degree on the effectedness scale.

$$(20) \quad \| [V_{[RP \text{ } na-]}] \| = \lambda d. d \in S_{\text{EFFECTED}} \wedge \max(d)(S_{\text{EFFECTED}})$$

⁴ This is not to say that Janda 2012, 2013 and the analysis being developed in this paper make exactly the same predictions. For this to be the case, one has to make sure that classes into which Janda’s “classifiers” divide the whole set of verbs are straightforwardly identifiable in terms of a limited set of gradable properties. Whether this is indeed so remains to be seen.

(20) merges with the denotation of V in (1). Under the assignment g^1 from (16), the value of G is fixed as the gradable property of being effected. As before, the $[V [_{RP} na-]]$ constituent only denotes a non-empty relation if degrees in $\|RP\|$ and $\|V\|$ are construed as degrees on the same scale, which happens under all assignments g that are like g^1 as to mapping G to EFFECTED. If this condition is satisfied, the relation in (21), parallel to (17), obtains:

$$(21) \quad \|[V [_{RP} na-]]\|^{g^1} = \lambda x. \lambda e. \exists d [\text{process}(e) \wedge \text{INCREASE}(\text{EFFECTED}(x))(d)(e) \wedge d \in S_{\text{EFFECTED}} \wedge \max(d)(S_{\text{EFFECTED}})]$$

Crucial is the next step. Matching (17) with the lexical component in (13a) creates the empty set, (12), since no object can be eaten and maximally effected in the same event.

$$(22) \quad \|(12a)\| \cap \|(17)\| = \emptyset$$

What happens next is known from the literature on coercion (Moens & Steedman 1988, Jackendoff 1997, Michaelis & Lambrecht 1996, de Swart 1998, Zucchi 1998, Michaelis 2004, Koontz-Garboden 2007, Partee 2010, Lyutikova & Tatevosov 2014, to mention just a few). If combining two meanings leads to trouble, one of them gets re-analyzed in order to obtain a coherent interpretation.

For example, the intersection of the set of stone things and the set of lions is empty: stone lions are not lions (Partee 2010 and elsewhere). *Stone lion* does receive an interpretation, however: *lion* gets reinterpreted, and instead of the set of lions we get the set of representations of a lion. A similar situation, an empty intersection, obtains when we try to make a relation out of the ingredients in (13a) and (21). And exactly as in the case of *stone lion*, this situation triggers reanalysis of one of the conflicting elements.

I propose that re-analysis is subject to the following constraint:

- (23) Structural meaning preservation (Struct \gg Lex)
Whenever Struct and Lex cannot match to yield an expression with a non-empty extension, Struct is preserved as much as possible.

(23) captures the a wide array of facts discussed extensively in the recent ‘constructionalist’ literature (see especially Borer 2005), which suggests that structural aspects of meaning are more sustainable while idiosyncratic ones are more flexible. I am not in the position of reviewing the literature here, but I consider it uncontroversial to believe that something like (23) is independently required in the theory.

In principle, one can think of various ways as to how the relation $\lambda x.\lambda e.eat(x)(e)$ can be readjusted. For one, the extension of *eat* can be expanded to include not just pairs of events and eaten objects but other types of pairs as well. After this expansion happens, the extension of *eat* will be large enough to intersect with (21) in a non-trivial way. The reason why I doubt why this would be the right way to go is that it is not obvious how the mechanism of expansion can be constrained. For (19), specifically, we have to admit the verb *eat* having pairs of events and effected individuals in its extension. If expansion is allowed and nothing else is said, we may end up having, as a limit case, every lexical verb containing any possible relation between individuals and events in its extension.

For this reason I am inclined to take a different path at this juncture, which seems to be more restrictive. I propose that whenever the derivation is in danger of creating the empty set, as in (22), a lexical relation between individuals and events is coerced into an event predicate by existentially binding the individual variable, as shown in (24). (24b) is a predicate of events in which something has been eaten.

- (24) a. $Lex \rightarrow \exists_x[Lex]$
 b. $\exists_x(\lambda x.\lambda e.eat(x)(e)) = \lambda e.\exists x[eat(x)(e)]$

This predicate, then, can be integrated into the event structure as a condition on the event variable. We take the set of pairs of events and individuals from the extension of (21) and add the requirement that the events are identified as eating events (i.e., that they fall under the extension of the predicate in (24b)). This rule of construal is known as Event Identification (EI) from Kratzer 1996:

- (25) a. $Match(Struct, Lex) = Struct \cap_{EI} \exists x[Lex]$
 b. $R \cap_{EI} P = \{\langle x, e \rangle \mid \langle x, e \rangle \in R \wedge e \in P\}$

(25a) is the rule deriving a coerced interpretation of ES. By hypothesis, (25a) is invoked if and only if the regular rule in (8) fails to assign a non-empty extension to an expression under a particular choice of LIs. After (21) and (13a) combine via (25a), the outcome is the relation between maximally effected individuals and events in which something has been eaten in (26).

- (26) $Match(\|ed\|^{g^1}, \|[V_{RP} na-]\|^{g^1})$
 $= \lambda x.\lambda e.\exists d[\text{process}(e) \wedge \text{INCREASE}(\text{EFFECTED}(x))(d)(e) \wedge d \in S_{\text{EFFECTED}}$
 $\wedge \text{max}(d)(S_{\text{EFFECTED}}) \wedge \exists y[eat(y)(e)]]$

This is the meaning of (4)/(19), where *eat* is integrated into the ES characteristic of verbs of creation.

21.7 Activity event structure

To complete the exposition, the last substantial ingredient of the proposal is to be unfolded. We need to account for the argument projection pattern attested in non-prefixal configurations in Russian and in the absence of the resultative XP in English. We do not find arguments like *the teapot* in or *a belly* in (1a) and (4) repeated as (27)-(28):

(27) We drank the juice / #the teapot.

(28) Volodja el jabloko /#puzo
V. eat.PST apple belly
'Volodja was eating/ate an apple/ #a belly.'

Under the current set of assumptions, absence of arguments like *the teapot* or *a belly* amounts to unavailability of any version of the derivational scenario outlined in the previous section. In (27-28) coercion of $\lambda x.\lambda e. \text{eat}(x)(e)$ does not, and, in effect, cannot happen. The question is, then, why this should be impossible for (27-28). Here two assumptions from Section 21.3 reveal their significance.

First, the activity event template differs from the accomplishment event template in that it does not contain RP, as represented in Figure 21.2.

Secondly, and more significantly, the interpretations of V within accomplishment and activity ESs are not identical.

As we saw, the defining property of accomplishment ESs is that the variable over gradable properties *G* is part of the semantic representation. Because of *G*, accomplishments describe changes, represented above in terms of the INCREASE relation, and are endowed with a degree argument, which makes a prefix originating in the complement of V position obligatory.

At this point, it is natural to follow the logic of Dowty (1979) and much subsequent literature that suggests that accomplishments are nothing but a sum of an activity and a change of state ("become") components. An activity is thus an accomplishment minus a change of state. Subtracting the increase relation leaves us with (29) as the structural meaning of activities:

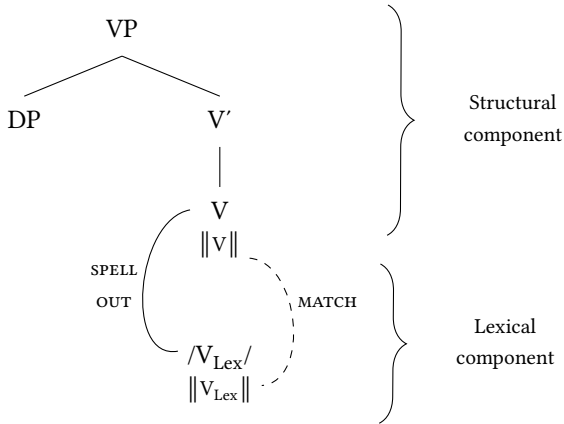


Figure 21.2: A fragment of a two-level activity event structure

$$(29) \quad \|V_{\text{ACTIVITY}}\| = \lambda x.\lambda e.\text{process}(e) \wedge \text{arg}(x)(e)$$

In this impoverished, underspecified templatic meaning, an individual argument is no longer an entity that undergoes change along a specific dimension. All that is specified about this individual is that it stands in the maximally general *arg* thematic relation to a process event, where $\text{arg}(x)(e)$ means ‘*x* is a participant of *e*’. In other words, activities, unlike accomplishments, do not impose non-trivial restrictions on the content of the relation between individuals and events. The crucial consequence of this underspecified character of activities is captured in (30):

$$(30) \quad \text{For any lexical verb } V_{\text{Lex}}, \|V_{\text{Lex}}\| \subseteq \|V_{\text{ACTIVITY}}\|$$

From (30), it follows that the intersection of the lexical relation introduced by a lexical verb and the structural relation denoted by V_{ACTIVITY} is never an empty set (assuming that lexical verbs never have an empty extension). This means that no lexical verb will be ever coerced into an event predicate, (24), and integrated into ES by Event identification, as in (25b). The analysis predicts, then, that that an argument of an activity ES will also be an argument of V_{Lex} , for any V_{Lex} .

For (28), in particular, combining the denotation of *eat* from (13a) with (30) via Match yields (31):

$$(31) \quad \text{Match}(\|\text{ed}\|, \|\text{V}\|) = \lambda x.\lambda e.\text{process}(e) \wedge \text{arg}(x)(e) \wedge \text{eat}(x)(e)$$

(31) is a relation between eating events and individuals eaten in those events, as required. This completes the outline of the two-level theory of argument projection developed in this paper. I am in the position of summarizing main results of the study.

21.8 Summary and conclusions

In this paper, I have tried to accomplish two related goals. The first goal was to determine the conditions under which arguments not subcategorized for by a verb stem are projected. The second one was to account for the observation from Section 21.2: sentences with non-subcategorized arguments entail that those arguments are not just holders of a result state, but also undergoers in a corresponding change of state subevent.

The theory I have outlined above seems to have achieved both goals. Relying on the two-level architecture of ES, I have argued that in accomplishment ESs, which underlie prefixal configurations in Russian, the structural argument is always projected. If inserting the lexical verb into ES leads to a coherent interpretation, whereby a non-empty relation between individuals and events obtains, the resulting argument is understood as a ‘subcategorized’ one. If insertion creates an empty set, the lexical relation denoted by a verb gets reinterpreted through existential closure and turns into a predicate of events. The projected argument appears to be non-subcategorized. In that way, the condition on non-subcategorized arguments has been reduced to the semantic mismatch between the semantic content of lexical and structural components of ES.

The fact that a non-subcategorized argument ends up being a participant of a process that culminates in bringing about a result state is no longer puzzling. In the system developed here, it is an argument of such a process by virtue of being an argument of a gradable property that represents change in the course of an event. As soon as this assumption has been made, the puzzle dissolves. A significant implication of the analysis is that a non-subcategorized argument is not licensed as an argument of a prefix. Prefixation and (non-)subcategorization are related less directly: the interpretation of a prefix co-varies with the dimension of change, the dimension of change determines if the argument comes out as a non-subcategorized one because the intersection of Lex and

Struct is empty.

To conclude, I hope to have developed a proposal that captures regularities underlying argument projection patterns in a less stipulative manner than other existing theories. Wider theoretical implications of the proposal remain to be tested against wider array of argument projection phenomena.

Acknowledgement

I am grateful to the audience at NELS 45 (MIT, November 2014) for comments and discussion. The study has been supported by Russian Foundation for Basic Research, grant #14-06-00435.

Две миссии Барбары

Владимир Борисович Борщев

4 марта 2015, Лос Анжелес

Я пишу это в Лос Анжелесе. У Барбары здесь разные дела. 6 и 7 марта она собирается тут сделать два доклада. А пока она смотрит документы в архиве Р. Монтегю в одной из библиотек UCLA, она пишет сейчас книгу по истории формальной семантики.

Лос Анжелес для нее особый город. Она приехала сюда в 1965 г. после окончания аспирантуры в MIT, получив место Assistance Professor of Linguistics в Department of English в UCLA. И проработала тут до 1972 г., вышла замуж, родила трех сыновей. Здесь же она познакомилась с Р. Монтегю, ходила на его лекции и это определило ее дальнейшую научную карьеру.

Вчера она возила меня в каньон Топанго, показывала дом, который она снимала тут в 1965 г., пятьдесят лет тому назад. Мы посмотрели на этот дом, заехали чуть повыше — чудный пейзаж вокруг, горки, море вдаль. Потом погуляли немного в state-park'e Topanga. А когда ездили между всеми этими местами на машине, произошла любопытная история. В самом начале Барбара включила свой iPhone в режиме GPS, он работал, показывал дорогу, но «не разговаривал», не давал указаний, куда повернуть и т.п. Она что-то нажимала — ничего не помогало. Потом она подключила его через USB вход к приемнику и вдруг в приемнике запел Окуджава. Мы оба ничего не поняли — неужели здесь какая-то радиостанция передает песни Окуджавы? Но быстро сообразили, что это

ее iPhone, в котором хранятся записи, проигрывает их через приемник.

У Барбары особое отношение к Окуджаве. Когда-то давно я подарил ей его пластинку, потом она переписала ее на кассету, слушала и не все понимала. А в 1996 г. на симпозиуме в Амстердаме Катя Рахилина и Лена Падучева помогали ей разобраться с непонятными местами.

Теперь она знает многие его песни почти наизусть и он воплощает для нее грамматику русского языка.

Об этом тексте

В основном, это мои комментарии о некоторых вехах научной карьеры Барбары, комментарии весьма субъективные и отрывочные. Я затрону следующие темы:

- Swarthmore¹ (1957–1961) — колледж, в котором она училась;
- MIT² (1961–1965) — аспирантура у Хомского;
- UCLA³ (1965–1972) — первое место работы, знакомство с Р. Монтегю, «первая миссия»;
- Москва (1996–2014) — преподавание в МГУ, РГГУ, ВШЭ, «вторая миссия».

Ну и, наконец, немного о том, как это связано со мной, почему Барбара столько лет преподавала в Москве.

Наше знакомство

Я познакомился с Барбарой очень давно, в сентябре 1968 г. в Венгрии. Там была небольшая конференция в Балатон Сабади, в каком-то академическом пансионате на берегу Балатона.

Тогда из Советского Союза нелегко было поехать на конференцию за границу, даже в «социалистические» страны. Самый простой путь был

1 <http://www.swarthmore.edu>

2 web.mit.edu

3 www.ucla.edu

(хотя тоже не совсем тривиальный) — приехать по частному приглашению. Меня пригласил Денеш Варга — мой венгерский друг и аспирант Шрейдера.

На конференции было четыре американских лингвиста — Ч. Филлмор, Дж. Катц, Д. Перлмуттер и Барбара.

У Барбары потом сложился большой рассказ про наше знакомство. Я ограничусь одной деталью. На банкете я подсел к ней и она сказала: «Не уходите...»

Говорили мы по-русски. Мой разговорный английский был тогда почти на нуле. А Барбара довольно хорошо говорила по-русски. Она вообще была русофилкой — изучала русский язык и русскую музыку еще в колледже. А в 1959 г. участвовала в специальной программе, организованной после запуска Спутника⁴ — 6 недель русского языка в языковом колледже Middlebury, а потом 6-недельная поездка по Советскому Союзу.

После этой конференции мы время от времени переписывались с Барбарой, посылали друг другу статьи. А увиделись снова только через 26 лет, когда Барбара приехала в январе 1995 г. в Москву на конференцию в МГУ со звонким названием «Лингвистика на исходе XX века: итоги и перспективы».

Научная карьера Барбары — пунктиром

Действительно пунктиром, подробное описание в статью не уложить, нужна книга.

Колледж

Барбара училась в Swarthmore, одном из самых престижных колледжей Америки. Это liberal arts колледж. Основной задачей таких колледжей провозглашается не подготовка к какой-нибудь конкретной деятельности, а формирование личности. А серьезную специальность обычно получают в другом месте — в аспирантуре или в каком-нибудь специализированном заведении, типа Medical School, Law School etc.

В отличие от советских институтов и даже университетов, там нет жесткой программы. Студенты сами выбирают предметы, которые они

⁴ Тогда, по-моему, это слово писалось с большой буквы, это было имя собственное.

хотят изучать («берут курсы» и получают за них «кредиты»). Надо набрать какое-то количество кредитов, а кроме того, из этих предметов должны, в частности, сформироваться *major* и *minor* — так сказать, главная и дополнительная специализации. Если студент претендует на какое-то специальное отличие, надо выбрать два *minors*.

Барбара выбрала математику как *major*, и два *minors* — русский язык⁵ и философию. Все эти специализации ей нравились, но они выглядели очень уж разнородными и она, боясь, что их не утвердят, советовалась со своим куратором. Тот, почесав в голове, предложил объединяющую *fiction*-идею: вроде бы недавно появились новые направления типа математической лингвистики или машинного перевода и для них пригодятся как математика, так и русский язык — как область приложения, ну а философия всегда хороша.

Барбаре этот *fiction* понравился и она стала воплощать его в жизнь. Накануне окончания колледжа она узнала, что в соседней Филадельфии, в Penn (University of Pennsylvania) будет что-то вроде летней школы с таким уклоном, а осенью в MIT открывается новая программа в аспирантуре по лингвистике — у Хомского.

Она поучилась летом в Penn'e и написала письмо Хомскому и он ей ответил. Написал, что машинным переводом он не занимается, что это что-то техническое и пока вообще несколько сомнительное. А вот лингвистика — да, и математика там нужна. Так она поступила к нему в аспирантуру.

Когда уже после нашей уже второй встречи я спросил её — почему её туда взяли, она ответила: “Because I was wonderful”.

Аспирантура (MIT)

Американская аспирантура отличается от советской (скажем, от той, в которой я когда-то учился в Москве) тем, что там действительно учат — читают лекции, проводят семинары, учат писать статьи и тезисы на конференции. Обычно в начале третьего года аспирант выбирает тему диссертации. Создается *committee* из трех-четырех профессоров, один из которых становится руководителем (*dissertation advisor*). Члены этого

⁵ Она колебалась, не выбрать ли русский язык как *major*. Но тогда это означало углубленное изучение русской литературы. Ей нравилась русская литература, но не в качестве основной специализации.

committee обсуждают работу, читают подготовленные части диссертации по мере их написания.

Программа по лингвистике (Linguistics Program) в MIT, как я уже писал, была создана в 1961 году, т.е. Барбара попала в первый «класс» (набор). Ей повезло — она оказалась в нужное время в нужном месте, начиналась «хомскианская революция».⁶

Лингвистике в аспирантуре ее учили Хомский, Моррис Халле и Эдвард Клима.

А сама она вызвалась читать своим сокурсникам курс математики — основы теории множеств, логику, немного алгебры. На основе этих лекций она опубликовала позже учебник математики для лингвистов (Partee 1978), который, в свою очередь потом (в несколько переработанном виде) стал составной частью учебника (Partee, ter Meulen & Wall 1990).

Когда Барбара была на втором курсе, Хомский и Халле попросили ее посмотреть только что вышедшую в Москве книгу С.К. Шаумяна и П.А. Соболевой «Аппликативная порождающая модель и исчисление трансформаций в русском языке». Они были заинтригованы — о каком исчислении трансформаций идет речь?

Понятие трансформации было тогда центральным в теории Хомского, но никакого исчисления он не предлагал. Барбара почитала, вроде бы разобралась в этой теперь уже давно забытой шаумяновской модели и никакого содержательного исчисления не обнаружила. Хомский и Халле попросили ее написать рецензию в *Language*.

Барбара написала рецензию (Hall 1964), заметив, что то, что авторы называют формальным описанием трансформаций, относится скорее к области орнаменталистики.⁷ Это была ее первая печатная работа.

И лекции по математике, и рецензия были, конечно, побочными заня-

6 Initially housed within the Department of Foreign Languages & Literatures, the Linguistics Program joined with the Philosophy Program in 1976 to form the Department of Linguistics and Philosophy.

Under the leadership of Noam Chomsky and Morris Halle in the 1960's and 1970's, the Linguistics Program at MIT rapidly acquired an international reputation as a leading center for research on formal models of human-language phonology, morphology and syntax, guided by the bold (and, at the time, novel) hypothesis that language should be studied using the intellectual tools of the natural sciences. (web.mit.edu/linguistics/graduate).

7 Говорят, что Шаумян был скорее доволен рецензией — книгу заметили и о ней написал журнал *Language*.

тиями. На третьем курсе Барбара написала и в 1965 г. успешно защитила диссертацию “Subject and Object in Modern English”.⁸ Ее руководителем (dissertation advisor) был Хомский.

Любопытно, что первоначально Барбара собиралась в качестве диссертации формально описать грамматику английского языка. Она советовалась с Хомским и он сказал: “It would be nice”. Но, конечно, очень быстро она поняла всю наивность этого намерения.

UCLA, встреча с Монтегю, первая миссия

Я уже писал, что после аспирантуры Барбара получила место (position) Associate Professor of Linguistics в UCLA. Она преподавала лингвистику и тут уже действительно приняла участие в описании грамматики английского языка (Stockwell, Schachter & Partee 1973).

Но, наверное, главным событием ее научной карьеры здесь была встреча с Ричардом Монтегю (1930–1971), основателем формальной семантики.

Монтегю был логиком, учеником Тарского. Именно Тарский ввел понятие теоретико-модельной семантики для формальных языков, прежде всего для исчисления предикатов.

Монтегю в конце 60-х и начале 70-х заинтересовался семантикой естественного языка. Его знаменитая работа “English as a Formal Language” (1970) начинается следующим тезисом:

I reject the contention that an important theoretical difference exists between formal and natural languages... In the present paper I shall accordingly present a precise treatment, culminating in a theory of truth, of a formal language that I believe may reasonably be regarded as a fragment of ordinary English... The treatment given here will be found to resemble the usual syntax and model theory (or semantics) of the predicate calculus, but leans rather heavily on the intuitive aspects of certain recent developments in intensional logic.

В этой и других работах того времени он рассматривает фрагмент английского языка (небольшой, но достаточно существенный) и формальную

⁸ Через 14 лет диссертация была опубликована в виде книги (Partee 1979).

(теоретико-модельную) семантику для этого фрагмента. Предлагаемая им семантика в значительной мере опирается на его собственные работы по интенциональной логике, далеко выходящей за пределы стандартной логики предикатов.

Барбара, занимаясь историей формальной семантики, подчеркивает революционность этих работ Монтегю в контексте того времени. Обсуждая предшествующие работы философов и логиков о соотношении естественного и формальных языков, она пишет, что они “were in agreement that logical methods of formal language analysis do not apply to natural language”. Такого же мнения придерживался и Хомский.⁹

Барбара откопала в архиве Монтегю его заметки к докладу 1968 г. в Ванкувере:

This talk is the result of 2 annoyances:

- The distinction some philosophers, esp. in England, draw between “formal” and “informal” languages; [“ссылка” на Рассела].
- The great sound and fury that nowadays issues from MIT under the label of “mathematical linguistics” or “the new grammars” — a clamor not to the best of my knowledge, accompanied by any accomplishments. [а тут уже на Хомского].
- I therefore sat down one day and proceeded to do something that I previously regarded, and continue to regard, as both rather easy and not very important — that is, to analyze ordinary language. I shall, of course, present only a small fragment of English, but I think a rather revealing one.

Барбара добавляет: “Later notes (1970) suggest he eventually found it not entirely easy”.

А тогда, в конце 60-х, по совету своего сокурсника по Swarthmore, философа и логика Дэвида Льюиса (David Lewis), она ходила на лекции Монтегю в UCLA. Она вспоминает, что ей было нелегко разбираться в

⁹ Здесь и ниже я цитирую или пересказываю работы Барбары по истории формальной семантики. См. например ее доклад (Partee 2015).

не очень знакомой ей области математики, в частности, в λ -исчислении и Дэвид помогал ей.

Барбара опять оказалась в нужное время в нужном месте.

Работы Монтегю произвели на нее сильное впечатление и она считала очень важным познакомиться с ними лингвистов. И, главное, соединить исследования в области синтаксиса и семантики. Она говорит, что она считала это своей миссией и ее основные дальнейшие работы были посвящены этому.

Видимо это ощущение миссии усилилось после гибели Монтегю в 1971 г.

Формальная семантика — это семантика синтаксиса

Слова Монтегю в приведенной выше цитате о том, что нет “important theoretical difference ... between formal and natural languages”, не стоит принимать чересчур прямолинейно. Все-таки формальная семантика — это (по удачному выражению Падучевой) семантика синтаксиса. Лексической семантикой Монтегю не занимался.

Приведу еще одну длинную цитату, на этот раз уже из нашего совместного с Барбарой доклада “Ontology and integration of formal and lexical semantics” на конференции «Диалог 2014»:¹⁰

Formal semantics of natural language is historically associated with the name of R. Montague. Montague showed that the syntax and semantics of natural language can be described using the tools developed by logicians for the formal description of their formal languages. These methods give a model-theoretic semantic interpretation of syntactic structures, obeying the principle of compositionality. The tools for such formal description have been greatly extended in the last forty years by the cooperative efforts of linguists, logicians, and philosophers of language.

Over the last forty-plus years formal semantics has become (especially in the West) the mainstream approach to semantic research.

But especially in the beginnings, formal semantics by no means described the whole semantics of natural language. Montague

¹⁰ См. (Borschev & Partee 2014)

did not try to describe lexical semantics, considering that a more empirical task. Montague's semantics can be reasonably characterized as *the semantics of syntax* (Paducheva's term).

Formal semanticists are always thinking about compositionality, how the meaning of a sentence (or any other complex expression) is built up from the meanings of its parts. And on the one hand, this requires having some ideas about the meanings of the smallest parts — words and morphemes — because they form the starting point for semantic composition. So formal semantics needs some kind of lexical semantics to start from. The bare minimum is to make some assumptions about the nature of lexical meanings and not make any specific claims about any particular lexical meanings — that was Montague's strategy, since he had neither the interest nor the competence to address empirical matters of lexical semantics. He limited himself to trying to figure out the “semantic type” of various classes of lexical items, and the actual semantics for certain key ‘logical words’.

В этом докладе мы предложили некоторые средства для интеграции лексической и формальной семантики. Но это уже другая тема.

UMass¹¹, Amherst, 1972—present

Эту часть я, в основном, пропускаю, только несколько слов. Барбара получила здесь место Associate Professor of Department of Linguistics в 1972 г. Department был новым. Одной из причин переезда была география. Ей хотелось, чтобы дети жили в климате с нормальной сменой сезонов — зима, весна, лето, осень.

Преподавательская и научная жизнь была насыщенной, тут она написала большую часть своих работ.

Я приехал в Америку в 1997 г. и с 1998 г. Барбара перешла (в российской терминологии) на полставки, с тем, чтобы каждый год в весеннем семестре ездить в Москву.

В 2004 Барбара формально ушла на пенсию. Было грандиозное мероприятие по этому поводу. Демонстрировалось «генеалогическое дерево»

¹¹ University of Massachusetts

Барбары — ее ученики, ученики ее учеников, etc. Дерево это наглядно доказывало, что Барбара выполнила свою миссию — формальная семантика действительно “has become the mainstream approach to semantic research”.

После этого формального выхода на пенсию она продолжала преподавать в UMass — первые несколько лет читала какой-нибудь курс в осеннем семестре, а потом участвовала в том или ином семинаре. Ей придумали неформальную «должность» — гуру.

Мы с ней дважды получали NSF¹²-гранты, каждый раз на три года. В грантах каждый раз участвовали наши московские коллеги — Лена Падучева, Яша Тестелец, Катя Рахилина и Игорь Янович (формально, как консультанты, реально — как полноправные участники), а также иногда аспиранты Department of Linguistics.

Москва, 1995–2014. Вторая миссия

Как я уже писал, в 1995 г. Барбара приезжала на конгресс «Лингвистика на исходе XX века: итоги и перспективы». В мае 1995 она приехала снова и сделала ряд докладов — в ВИНИТИ и где-то еще. А в 1996 г. она читала в МГУ на ОТиПЛе курс лекций по формальной семантике.

В 1997 г. Барбара получила полугодовой грант на совместную работу со мной¹³. Я приехал в январе, а 13 апреля мы поженились.

Начиная с весеннего семестра 1998 г. Барбара читала тот же курс формальной семантики в РГГУ, и потом почти каждый год попеременно в МГУ и в РГГУ. В МГУ на ОСИПЛе у Кибрика, а в РГГУ в Институте лингвистики, у Веры Подлесской. Курс обычно состоял из более или менее постоянной вводной части — введение в формальную семантику, и «тематической» части, посвященной какой-нибудь конкретной проблеме.

Лекции читались по-английски, а после лекции был семинар, где обсуждались домашние задания (homework) и любые другие проблемы, это обсуждение могло быть на любом языке.

Для поездки в Москву каждый раз надо было получать визу, визу давали по программе «Научно-техническое сотрудничество». И за билеты,

¹² National Science Foundation.

¹³ COBASE Grant, National Research Council, for collaborative research with V. Borschev, “Towards an integration of formal and lexical semantics: Meaning postulates and fine-grained sortal structures”, Jan–July 1997.

и за визу она платила сама. Денег в МГУ ей не платили вообще, а РГГУ платили небольшие деньги как почасовику. Основным гонораром была годовая многократная виза в Россию.

В последнем, 2014 году она преподавала в Вышке (Высшей школе экономики), там появилось отделение лингвистики, которым заведовала Катя Рахилина.

В Вышку в первый и единственный раз за все эти годы ее пригласили именно преподавать, она получала настоящую зарплату и немаленькую.

Конечно, выбор такой жизни — «одной ногой в Москве, другой в Америке» — был именно нашим выбором на эти годы.

Но при этом Барбара рассматривала преподавание в Москве и вообще разную научную и учебную деятельность в России, как миссию «по наведению мостов» между российской и западной лингвистикой.

Теперь в этом «мостостроении» участвуют ее ученики. Наверное больше десятка ее учеников из Москвы училось или учится в аспирантуре в Америке и в Европе.

Дважды она получала Фуллбрайтские гранты на поездки.¹⁴ Они, в частности, давали возможность привезти довольно много научной литературы. Она и сама покупала и привозила массу научных книг. В РГГУ был целый шкаф привезенных ею книг, и в ОСИПЛе было немало.

А в ВИНТИ в течении многих лет функционировал наш рабочий семинар по тематике упомянутых выше NSF грантов. По результатам каждого из этих грантов были изданы сборники, один в Америке (Kim, Lander & Partee 2004), другой в Москве (Рахилина 2008).

Барбара участвовали и в других «мероприятиях» — в конференциях «Диалог», в двух летних школах Санкт-Петербургского и Нью-Йоркского университетов, в зимних типологических школах в Подмосковье, в разных конференциях и семинарах в Москве — всего не перечислишь (гораздо более подробное перечисление ее деяний можно найти на ее сайте (<http://people.umass.edu/partee/>) или в Википедии (http://en.wikipedia.org/wiki/Barbara_Partee). Но, наверное, важнее всего множество ее учеников и друзей, приобретенных в Москве и других городах России.

Этот почти двадцатилетний период нашей жизни закончился в 2014 г. Мы уехали. Мы наметили этот срок заранее, года за четыре, по банальной

¹⁴ См. статью В.И. Подлеской в наст.сб. — *прим.ред.*

причине – возраст, трудно ездить два раза в год туда и обратно (прежде всего мне).

Конечно, мы будем приезжать, но это уже другая жизнь.

Первый раз мы собираемся приехать 14 июня 2015 г.

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