Anatomy of an Attitude

by

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Abstract

This thesis investigates syntax and semantics of attitude and speech reports. It is concerned with three questions: (i) what kinds of meanings can tensed embedded clauses have? (ii) how are they integrated into the argument structure of verbs? (ii) why does their distribution sometimes depend not only on the argument structure, but on the embedding environment as well?

Chapter 1 provides a brief summary of my proposal and outlines the assumed framework. Chapter 2 examines clauses that combine with nouns like *claim* and *situation* in Buryat, Korean and Russian. It argues that displacement in attitude and speech reports comes from a projection ContP in the left periphery of embedded clauses (cf. Kratzer 2006, Bogal-Allbritten 2016, a.o.), and clauses differ in whether they have ContP and thus displacement. I also argue for *equality* semantics of displacement (Moulton 2009, Elliott 2020): clausal embedding does not involve semantics of a universal modal. Chapter 3 examines conjunction and disjunction of embedded CPs, and shows that interpretations of these structures, as well as the impossibility of true CP conjunction follow from my proposal. Chapter 4 investigates how nominalized and bare CPs are integrated with verbs in Buryat, Korean and Russian, and shows that they systematically receive different interpretations. I argue that this difference emerges because while nominalized CPs are arguments of verbs, bare CPs are always modifiers. I show that the integration path of an embedded CP, as well as its internal structure, matter for whether it is transparent for extraction or behaves like an island. Chapter 5 examines two types of polarity subjunctives in Russian: embedded subjunctive clauses whose ability to occur with certain verbs depends on the entailment properties of the environment. I argue that the subjunctive particle activates alternatives which have to be acted upon by a higher focus operator, and intervening projections, including ContP, can change the set of alternatives that the operator receives, making the sentence L-analytic and thus ungrammatical (Gajewski 2002, a.o.) in some cases but not in others. Chapter 6 summarizes the findings of the thesis, and the typology of tensed embedded clauses that it gives rise to.

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These five years have been one hell of a ride. If someone told me 5 years ago that my PhD time would fall on the times of a global pandemic and a horrifying war initiated by my home country, I would have been certain I'd never make it. Yet here I am, about to submit my thesis. This has been possible only because of how happy my MIT life has been, and because of all the people who supported me in so many different ways throughout these years.

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I started getting advice from Kai von Fintel before I met him. One of the most impactful things that I've read before entering my PhD program was Kai's blog post about stupidity in scientific research. Embracing the feeling of stupidity, I decided that the stupider I felt at a thing, the more I should do it. Nothing made me feel more stupid than attitude reports, and this is how the work that led to this thesis started. I'm very grateful to Kai for being very supportive, for patiently teaching me how to understand and use semantics formalisms, for finding things that don't make sense, and for always knowing what literature would be helpful to look into.

Roger Schwarzschild had an enormous impact on how I do linguistics, and how I approach challenges that my theories face. I am very grateful to Roger for always going along with my ideas and helping me get the best out of them, for teaching me how to think deeper about what the things I'm saying actually mean, and for being such a scrupulous reader of my manuscripts. His patience with me trying to understand presupposition projection deserves an additional thank you. I'm also grateful for his sense of humor, for the best colloquium speaker introductions, and for sending me a picture of a tree during lockdown.

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When I heard that Patrick Elliott was coming to MIT, I looked up his work, found his thesis, and thought: "Crap! The guy wrote the thesis I wanted to write!" I wasn't annoyed for long: I very quickly realized how incredibly lucky I am to have him at

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I would like to dedicate this thesis to the memory of my grandpa Slava (Stanislav Veniaminovič Mel'nikov), whose passion for science and life I've always admired.

Table of Contents

List of Abbreviations

1	1st person
2	2nd person
3	3rd person
ABL	ablative case
ADN	adnominal marker
ACC	accusative case
ALSO	Korean suffix *-to*
ATT	attitude (gloss for Navajo's verb *nízin*)
AUX	auxiliary
BUT	Korean suffix *-ciman* 'but', Russian contrastive conjunction *a* 'but'
CAUS	causative
CEK	Korean adjectival suffix *-cek*
CLASS	class marker
COM	comitative case
COMP	complementizer
COMP.DIR	complementizer used in direct perception reports (Russian *kak*)
CONJ	conjunction
CONJ2	Korean conjunction *kuliko*
CONTR	contrastive marker (Korean *-un*)
COP	copula
CVB	converb (Buryat suffix *-žA*)
CVB2	converb (Buryat suffix *-A:d*)
DAT	dative case
DECL	declarative marker
DEM	demonstrative
EMPH	emphatic particle (Russian *až*)
FEM	feminine gender
FUT	future tense
FCI	free choice item
GEN	genitive case
GER	gerund
HAB	habitual
HON	honorific
IMP	imperative
IMPF	imperfect (Italian *Imperfetto*)
IND	indicative mood
INF	infinitive
INSTR	instrumental case
INTR	Russian intransitivizing suffix *-sja*

IPFV	imperfective
KOE	Russian particle *koe-*
LIBO	Russian particle *-libo*
LOC	locative case
MASC	masculine gender
NCI	negative concord item
NEG	negation
NEG1	French negation element *ne*
NEG2	French negation element *pas*
NEG3	Russian colloquial negation *xuj* 'dick'
NEU	neuter gender
NIBUD'	Russian particle *-nibud'*
NOM	nominative case
ONLY	Korean suffix *-man* 'only'
OPT	optative
PART	participle
PASS	passive
PFCT	perfect (Buryat suffix *-hAn*, with a contracted form *-a:n*)
PFV	perfective aspect
PL	plural
POSS	possessive marker
POT	potential mood/tense (Buryat suffix *-xA*)
PRS	present tense
PST	past tense
PTCL	particle
Q	question particle
REFL	reflexive
REL	relative clause
S	subject
SG	singular
SPEC	specific (indefinite)
SUBJ	subjunctive mood
TOP	topic marker
TRPR	Italian verbal form *Trapassato Prossimo*
WITH	Korean suffix *-kwa*

Chapter 1

Introduction

This thesis is concerned with the question of how attitude and speech reports are built compositionally. In particular, I try to contribute to the following questions:

1. What kinds of meanings can embedded clauses have?
2. How are embedded clauses integrated into the argument structure of verbs?
3. Does the distribution of embedded clauses depend just on argument structure, or do the properties of the embedding environment matter as well?

In examining these questions, I will restrict myself to looking at clauses that show at least some temporal distinctions, and presumably include TP in their structure.[1] Thus, I will not discuss here e.g. infinitives or VP-level nominalizations.

This introductory chapter is structured as follows. In section 1.1 I will go over the questions 1–3 above and for each briefly sketch my proposal regarding it, situate the proposal in the existing literature on attitude/speech reports and complementation, and mention some arguments in its favor. In section 1.2 I will discuss the framework that I will be using: the assumptions about syntax, ontology and semantics that I will be adopting in this thesis. In section 1.3 I will discuss my assumptions about what can lead to a sentence being ungrammatical, and in particular the notion of *L-analyticity*. Section 1.4 outlines the structure of the thesis.

[1] I will not investigate the question of whether the temporal specification of embedded clauses is the same as in unembedded sentences.

1.1 Brief summary of the proposal

1.1.1 Meanings of embedded clauses

I propose that embedded CPs can receive two kinds of denotations, which are presented in a simplified form in (1) for a clause *that the squirrel ate the nut*.[2]

(1) $[\![\text{that the squirrel ate the nut}]\!]^s =$

a. $\lambda x.\ \textsc{Cont}(x) = \{s' : \text{the squirrel ate the nut in } s'\}$ *Cont-CP*

b. $\lambda s'.\ s'$ is a minimal situation of the squirrel eating the nut *Sit-CP*

As one can see, on both denotations the embedded clause denotes a predicate. In (1a) we have a predicate of individuals (which I assume situations are a subtype of), whose propositional content (Cont) equals the embedded proposition—the set of situations in which the squirrel ate the nut. I will call embedded clauses with such a meaning *Cont-CPs*. In (1b) we have a predicate of minimal situations: they contain the squirrel eating the nut and nothing else. I will call such clauses *Sit-CPs*.

The idea that clauses are predicates of entities with propositional content has been proposed before (Moltmann 1989, Kratzer 2006, Moulton 2009, Moltmann 2013, 2014, Moulton 2015, Bogal-Allbritten 2016, Kratzer 2016, Elliott 2016, 2020, a.o.). The intuition that papers within this framework share is that clauses like (1) are predicates true of abstract objects like **ideas**, **rumors**, or **thoughts**. The particular implementation in (1a), in which Cont is a function that takes an individual and returns back a proposition, has been argued for by Moulton (2009, 2015) and Elliott (2020). A big motivation for treating clauses as predicates of things with content came from sentences where CPs combine with nouns like *idea* or *hypothesis*:

(2) a. the idea/rumor/fact/hypothesis/claim [that the squirrel ate nut]

b. The idea/rumor/fact/hypothesis/claim was [that the squirrel ate nut].

In examples like (2a) the clause seems to describe the propositional content of the individual described by the noun. In (2b) we see that such clauses can also appear in predicative positions of copular constructions with these nouns. If we think that embedded CP have the same meanings in all of their uses, we can hypothesize that

[2]The denotations I provide here are simplified in order to convey the general idea of the proposal without going into the technical details. See section 2.3 of chapter 2 for the actual proposal.

they describe individuals with content when they combine with verbs as well.

The idea that tensed embedded clauses can denote predicates of minimal situations, to my knowledge, has not been explicitly pursued in the literature. The closest proposal to (1b) comes from truthmaker semantics, in which the denotation of a sentence is taken to be a set of its *exact verifiers* or *truthmakers* (Fine 2017c,a,b, Moltmann 2020, a.o.).[3] One difference of this proposal from (1b) is that exact verifiers in truthmaker semantics are assumed to be primitives, and a proposition is a set of exact verifiers. On the other hand, I will assume that a proposition is a set of non-minimal situations, and thus the denotation of a Sit-CP in (1b) is not a proposition. What it means to be a *minimal situation* will be defined with the help of the notion of *exemplification* from Kratzer's situation semantics (Kratzer 1989, 2020).[4]

There exist many other proposals for meanings of embedded clauses in the literature. A popular idea is that the meaning of an embedded finite clause is a proposition. Propositions can be modeled in different ways, and thus the meaning of embedded clauses could differ accordingly: *that the squirrel ate the nut* could denote a set of possible worlds in which the squirrel ate the nut (Hintikka 1969, a.o.), or a set of possible non-minimal situations—parts of worlds of various sizes—in which the squirrel ate the nut (Kratzer 1989, 2020, a.o.), or a downward closed set of information states—a set contatining the set of worlds in which the squirrel ate the nut, and all the subsets thereof (Ciardelli, Groenendijk & Roelofsen 2018, a.o.).

There are also some approaches in which the meaning of the embedded clause is not a proposition. For example, one hypothesis is that embedded clauses denote individual correlates of propositions (Potts 2002): propositions are turned into entities by a type-shifting operation nominalization (Chierchia 1984, 1985). Another idea is that they denote functions from reference situations to propositions (Portner 1992). Szabolcsi (1997, 2016) proposes that declarative embedded clauses are lifted propositions: they are functions which take verbal meanings as their arguments and apply them to the embedded proposition.

In this thesis I argue that we need both denotations in (1), and they correspond to a syntactic difference in the left periphery of embedded clauses: Cont-CPs have an extra projection, which I will call ContP, that Sit-CPs lack. This is the projection

[3]This is only one version of the denotation of a statement in truthmaker semantics (a unilateral definition). Another version (a bilateral definition) posits that a statement denotes a duple consisting of a set of its verifiers and a set of its falsifiers.

[4]See Deigan 2020 for arguments that inexact truthmaking should be taken as a primitive notion.

responsible for introducing the CONT function into the meaning of the embedded clause. In some languages (Korean, Buryat) the Cont head is overtly exponed, but in others (English, Russian) it is null, making clauses like *that the squirrel ate the nut* ambiguous between Cont-CP and Sit-CP readings.

One crucial difference between (1a) and (1b) is that only the former introduces **displacement** (Hockett 1960, von Fintel & Heim 1997-2020). Displacement is an important property of natural language: we are not restricted to speaking only about here and now, but can talk about different times and circumstances. For example, if I utter (3a), I will be making a claim about some time that precedes the time of my utterance. If I utter (3b), I will be talking about possible situations/worlds in which a bunny comes to my backyard. And in (3c) I will be talking about situations/worlds that are compatible with my evidence.

(3) a. Yesterday, I saw a bunny eating apples. *temporal displacement*
b. If a bunny comes to my backyard, I will feed it. *modal displacement*
c. A bunny must have eaten the apples. *modal displacement*

The sentences in (3b) and (3c) make statements about the actual situation/world by telling us something about the situations that stand in some relation to it: e.g. "in situations according to my evidence in the actual situation, a bunny ate the apples".

Attitude reports have been argued to also involve displacement. Indeed, when I utter (4), I am not making a claim that the squirrel ate the peanut in the actual world. In fact, I could very well believe that this did not happen. Yet I can still truthfully say (4), because I am talking about worlds *according to Nadya's thoughts*.

(4) Nadya thinks [that the squirrel ate the nut].

We can ask several questions about displacement in attitudes and speech reports: (i) is it always present in such sentences? (ii) how is the shift to other situations achieved, what kind of semantics is behind it? (iii) what lexical item triggers the shift to other situations? Below I discuss my proposals regarding these questions.

1.1.1.1 Presence vs. lack of displacement

First, I propose that displacement is not always present in attitude and speech reports. If an embedded clause is a Sit-CP with the semantics in (1b), then in the

absence of additional sources of displacement in the embedding environment, it will describe a situation that is part of the evaluation situation. The main argument for this claim comes from referential transparency of clauses that combine with Sit-NPs. Consider the example from Russian in (5).

(5) *Sit-CPs are transparent:* from {(a), (b)} ⇒ (c)

a. Lena zametila slučaj [čto **èta ženščina** priexala na kone].
Lena noticed event COMP **this woman** arrived on horse
'Lena noticed an event that this woman arrived on a horse.'

b. Èta ženščina — [koroleva Velikobritanii].
this woman queen Great.Britain
'This woman is the queen of Great Britain.'

c. Lena zametila slučaj [čto [**koroleva Velikobritanii**]
Lena noticed event COMP **queen** **Great.Britain**
priexala na kone].
arrived on horse
'L. noticed an event that the queen of Great Britain arrived on a horse.'

If the premises in (5a) and (5b) are true in the actual world, we can conclude that (5c) is true as well—it is not possible to assert (5a) and (5b) and negate (5c). This is true irrespective of what Lena takes the event that she noticed to be: she might have thought that she saw a boy riding a donkey. As long as she noticed an event of this woman arriving on a horse, and in the actual world this woman is the queen, Lena noticed an event of the queen arriving on a horse. In other words, we have to evaluate the predicates within the embedded clause in (5) with respect to the actual world, suggesting that the sentence involves no displacement.

This differs from how we interpret clauses that combine with nouns like *slux* 'rumor'. Consider (6), which has the same embedding verb *zametit'* 'notice':

(6) *Cont-CPs are opaque:* from {(a), (b)} ⇏ (c)

a. Lena zametila slux [čto **èta ženščina** priexala na kone].
Lena noticed rumor COMP **this woman** arrived on horse
'Lena noticed a rumor that this woman arrived on a horse.'

b. Èta ženščina — [koroleva Velikobritanii].
this woman queen Great.Britain

'This woman is the queen of Great Britain.'

c. Lena zametila slux [čto [**koroleva Velikobritanii**]
Lena noticed rumor COMP **queen** **Great.Britain**
priexala na kone].
arrived on horse
'L. noticed a rumor that the queen of Great Britain arrived on a horse.'

One can truthfully assert (6a) and (6b) and negate (6c), because the meaning of this sentence involves displacement, and it has a reading in which the expressions *this woman* and *the queen of Great Britain* are interpreted not with respect to the actual world, but with respect to worlds/situations in which things are according to some rumor that Lena noticed.[5] Thus, if Lena noticed a rumor whose content was *"This woman arrived on a horse"*, the fact that this woman is the queen does not imply that Lena noticed a rumor with content *"The queen arrived on a horse"*—there might not have been a rumor with such a content for Lena to notice.

Thus, having an embedding attitude/speech verb does not necessarily imply that the sentence will involve displacement, and data from languages like Russian show us that embedded clauses with the same morphosyntactic appearance can be ambiguous as to whether their meaning involves displacement. That some embedded clauses can be referentially transparent has been observed in the literature on perception reports (Barwise 1981, Perry & Barwise 1983, Higginbotham 1983, a.o.)[6] What is new about my proposal is that I argue that not only small, non-finite clauses can be transparent, but that tensed, finite clauses can lack displacement as well.

1.1.1.2 The semantics behind displacement

If we consider the meaning of the Cont-CP in (1a) again, repeated below as (7), we will see that displacement is achieved with the help of the function CONT(ENT).

(7) *Equality semantics for Cont-CP*
$[\![$that the squirrel ate the nut$]\!]^s$ =

[5] (6a) and (6c) also have *de re* interpretations of these expressions. But what is crucial here is that they do not have to be interpreted in that way: *de dicto* interpretations are available as well, which is not the case for (5a) and (5c), where clauses modify the noun *slučaj* 'event'.

[6] Perception reports have been discussed as an argument for adopting the sitution semantics framework, but later it has been later concluded that event semantics (Davidson 1967) could deal with such constructions as well (Kratzer 2020).

λx. Cont(x) = {s': the squirrel ate the nut in s'}

Cont is a partial function from the domain of individuals into the domain of propositions. It is defined for entities like **ideas**, **beliefs** or **claims**, but it is undefined for many others: e.g. **apples** or **trains** will not be in its domain. We could entertain different possible relations between the set of situations Cont(x) for some individual with content x and the embedded proposition. In this thesis I follow Moulton (2009, 2015) and Elliott (2020) in arguing that the relationship between Cont(x) and the embedded proposition should be *equality*.

Moulton argues that embedded clauses are modifiers, and that their inability to stack, (8), is due to the equality semantics: since Cont is a function, it cannot be the case for any x and any $p \neq q$ that Cont(x)=p and Cont(x)=q at the same time.

(8) a. *The rumor that Fred was happy, that he was in Paris, that he could see ghosts.
b. The rumor that Fred made, that Jill believed, that Bill spread to his friends...
(Moulton 2009: p. 29)

Elliott claims that equality semantics can explain why the noun *fact* requires a definite article when it occurs with an embedded clause (9b).

(9) a. Darcy mentioned a fact (*that it's raining).
b. Darcy mentioned the fact (that it's raining).
c. Darcy mentioned two facts (*that it's raining).
(Elliott 2020: 146, ex. (275))

He suggests that this pattern arises due to *Maximize Presupposition (MP)!* (Heim 1991): every proposition that is true in a world w is the content of a unique fact in w, and thus whenever *it is raining* is true in w, the presupposition of the definite article will be met — there will be a unique fact with content p in w, and hence by MP, the definite article must be used. Elliott shows that if the relationship between Cont(x) and the embedded proposition is different, this account of the need for the definite article is lost (see section 2.4 of the chapter 2 for discussion).[7]

[7]The notion of content we're using is more abstract, and might not correspond to our intuitions about the use of the English noun *content*. We might find it rather odd to talk about *the content of the fact*, but facts in our system will be in the domain of the content function Cont, as linguistically

I discuss three new arguments in favor of the equality semantics and against the subset semantics for clauses whose meanings involve displacement (Kratzer 2006, 2016, Bogal-Allbritten 2017, Moltmann 2020, a.o.), illustrated in (10).

(10) *Subset semantics for Cont-CP*
$[\![\text{that the squirrel ate the nut}]\!]^s =$
$\lambda x.\ \textsc{Cont}(x) \subseteq \{s' : \text{the squirrel ate the nut in } s'\}$

First, I show that the subset semantics makes incorrect predictions for interpretations of some sentences in which Cont-CPs modify nouns (section 2.4 of chapter 2). For example, the sentence *A claim that Swuna got the award surprised Mina* under the subset semantics will come out as true if someone claimed that Swuna won the award and didn't thank anyone, and Mina was surprised by this claim due to her expectation that Swuna will thank people while actually expecting Swuna getting the award. The equality semantics does not make this prediction.

Another argument originates from my joint work with Itai Bassi (Bassi & Bondarenko 2021). In our paper, we showed that conjunction of embedded clauses in languages like English, Hebrew, Italian, Russian for many speakers does not have the interpretation that one would expect conjunction of embedded CPs to have under the subset semantics. Under the semantics in (10) conjunction of two embedded CPs should have the same meaning as conjunction of two embedded TP under a single CP-layer, because conjunction of two universal statements is equivalent to one universal scoping over conjunction (11).

(11) For any $x \in D_e$, $p \in D_{st}$:
$(\textsc{Cont}(x) \subseteq p) \wedge (\textsc{Cont}(x) \subseteq q) \Leftrightarrow \textsc{Cont}(x) \subseteq (p \wedge q)$

However, we observed that conjunction of two CPs always takes wide scope with respect to the embedding predicate. We proposed that true CP conjunction is actually impossible, and strings like [*CP and CP*] are derived by Conjunction Reduction. Impossibility of CP conjunction follows from the equality semantics in (7): since Cont is a function, for any two propositions $p \neq q$ and individual x, if $\textsc{Cont}(x)=p$, it cannot be the case that $\textsc{Cont}(x)=q$.

In this thesis I strengthen this argument with data from Korean. In chapter 2 I argue that the Cont function in Korean is introduced by a so-called declarative

they behave like other individuals with content (see chapter 2, especially ft. 6, for discussion).

marker *-ta*. In chapter 3, I show that attempts to conjoin embedded clauses with this marker fail: resulting sentences are ungrammatical (12).

(12) *ContP conjunction with Cont-CP*
*Mina-ka [Swuna-ka nolayha-ss-**ta**]-**ko** [Hani-ka
Mina-NOM Swuna-NOM sing-PST-**DECL-CONJ** Hani-NOM
chwumchwu-ess-**ta**]-nun cwucang-ul kiekha-n-ta
dance-PST-**DECL**-ADN claim-ACC remember-PRS-DECL
'Mina remembers the claim that Swuna sang and that Hani danced.'

I argue that Korean allows us to observe the predicted impossibility of conjoining two Cont-CPs because its intersective conjunction *-ko* cannot occur in structures with Conjunction Reduction or other kinds of ellipsis.

Finally, in chapter 5, where I examine subjunctive clauses that behave like NPIs, I argue that the equality semantics for Cont-CPs can explain why these clauses cannot behave like weak NPIs. For example, in (13) we see that under negation, it is possible to have a subjunctive clause combine with a noun *situacija* 'situation', but not with a noun *utverždenie* 'claim'.

(13) Mitja ne pomnit situacii, /*utverždenija
Mitya NEG remembers situation /claim
[**čto-by** grabitel' pytalsja proniknut' na sklad].
COMP-SUBJ robber tried to.get.in on warehouse
'Mitya does not remember a situation/claim that the robber was trying to get into the warehouse.'

The equality and the subset semantics differ in their predictions about how the presence of the Cont relation affects the entailment properties of the environment: under the equality semantics, presence of Cont should disrupt the monotonicity of the environment, but under the subset semantics, it should not. I argue that sentences like (13) with nouns like *utverždenie* 'claim' are ungrammatical because the monotonicity of the environment is indeed disrupted by the Cont relation, providing an argument in favor of the equality semantics.

Thus, the current proposal differs from approaches that treat attitude reports as involving modal semantics: both from approaches that attribute universal semantics to attitude reports (Hintikka 1969, a.m.o.), (14), and the ones that attribute

existential semantics (e.g. see discussions in Močnik 2019, Močnik & Abramovitz 2019, Staniszewski 2019, Jeretič 2021, Staniszewski 2021, a.o.), (15).

(14) *Subset/Universal Semantics*
$[\![$Nadya thinks that the squirrel ate the nut$]\!]^s$ =
{s′: s′ is compatible with Nadya's thoughts in s}
$\subseteq$ {s′: the squirrel ate the nut in s′}

(15) *Non-Empty Intersection/Existential Semantics*
$[\![$Nadya thinks that the squirrel ate the nut$]\!]^s$ =
{s′: s′ is compatible with Nadya's thoughts in s}
$\cap$ {s′: the squirrel ate the nut in s′} $\neq \varnothing$

The relation that we postulate between *the projected set of situations* (the set that the function Cont returns when applied to an individual in approaches like Kratzer 2006; the doxastic set in approaches like Hintikka 1969) and *the set of situations denoted by the embedded proposition* has consequences for the inference patterns that we will predict. See (Grano 2021) for discussing predictions of the Hintikkan proposal (closure under entailment, conjunction, and logical equivalence, anti-closure under negation—(Grano 2021: pp. 33–36)) and of several other approaches to attitude reports. For example, it has been long known that Hintikkan semantics gives rise to the problem of *logical omniscience*: due to universal quantification, attitude holders turn out to be omniscient with respect to all of the logical consequences of their beliefs. Existential and equality semantics are weaker and do not impose such requirements; predictions of these proposals need further research.

1.1.1.3 The source of displacement

Regarding the question about triggering displacement, I argue, following Kratzer (2006, 2016), and Bogal-Allbritten (2016, 2017) that the shift to other situations occurs due to the lexical items in the left periphery of the embedded clause. As we can see in (1), repeated below as (16), the Cont function, which is responsible for displacement, is part of the meaning of the embedded clause.

(16) $[\![$that the squirrel ate the nut$]\!]^s$ =
λx. Cont(x) = {s′: the squirrel ate the nut in s′}

Thus, denotations of attitude verbs like *think* in this framework do not involve displacement: *think* just denotes a predicate of thinking situations (17), and it is the embedded CP that links the thinking situations to the embedded proposition (18).

(17) $[\![\text{think}]\!]^s = \lambda s'.\ \text{think}(s')$

(18) $[\![\text{think that the squirrel ate the nut}]\!]^s =$
$\lambda s'.\ \text{think}(s') \wedge \textsc{Cont}(s') = \{s\text{: the squirrel ate the nut in } s\}$

Here are a few arguments that have been proposed for attributing displacement to the embedded clause. First, Kratzer (2013) discusses harmonic attitudes (19).

(19) Ralph **advised** that Ortcut **should** turn himself in.

The sentence in (19) seems intuitively true if Ortcut turns himself in all worlds that are compatible with the content of Ralph's advice. This interpretation is not expected if the attitude verb itself is a source of displacement, as we would expect double quantification—first over the worlds compatible with Ralph's advice, then, within those worlds, over worlds in the modal base of *should*. If however all displacement happens in the embedded CP, we do not necessarily expect a double modal reading. Imagine that displacement in a sentence like *Ralph adviced that Ortcut turn himself in* is done by a null element $\varnothing_{Cont}$ inside of the embedded clause, (20), then *should* could be in complementary distribution with such an element, making it so that there is only one source of displacement in sentences like (19).

(20) Ralph **advised** [that **{$\varnothing_{\textbf{Cont}}$/should}** [Ortcut turn himself in]].

Second, Kratzer notes that attributing displacement to attitude verbs is at odds with the fact that there are many verbs[8] that don't seem to describe attitudes on their own, but can do so when an embedded clause combines with them. For example, verbs 'sigh' can combine with embedded CPs in both German and Russian:

[8]She mentions the verbs in (i), saying that the full list of verbs can be found in (Levin 1993).

(i) **Some English non-attitude verbs taking embedded clauses:** *Babble, bark, bawl, bellow, bleat, boom, bray, burble, cackle, call, carol, chant, chaner, chirp, cluck, coo, croak, croon, crow, cry, drawl, drone, gabble, gibber, groan, growl, grumble, grunt, hiss, holler, howl...*

(21) Ralph **seufzte**, dass er betrogen worden sei.
Ralph **sighed** that he betrayed been was.SUBJ
'Ralph sighed that he had been betrayed.' (Kratzer 2013: p. 29)

(22) Egor Egorovič dostal skljanku s vinom, —vsego na dva stakančika,
Egor Egorovich got flask with wine only for two glasses
vzdoxnul, [čto bol'še ne dostat'].
sighed COMP more not get.INF
'Egor Egorovich took out the flask with wine—it only had two glasses (of wine), sighed that it's not possible to get more.' (from A.N. Tolstoy's "Russian character", via the Russian National Corpus: <Link-to-source>)

It seems odd to consider such verbs some sort of modals, when they allow us to talk about some other situations different from the situation of evaluation only when they combine with an embedded clause.

Finally, there are attitude verbs whose meaning is dependent on the material inside of the embedded clause. Bogal-Allbritten (2016, 2017) observed that the verb *nízin* in Navajo (Na-Dené) can describe both thoughts and desires, depending on material inside of the complement that it selects:

(23) *nízin* as 'think'
Mary [nahałtin] **nízin**
Mary 3s.rain.IPFV 3s.ATT.IPFV
'Mary **think**s it is raining.'
(Bogal-Allbritten 2017: ex. (2a))

(24) *nízin* as 'wish'
Alice [nisneez laanaa] **nízin**
Alice 1s.tall.IPFV wishful 3s.ATT.IPFV
'Alice **wishes** she (I) were tall.'
(Bogal-Allbritten 2017: ex.(2c))

One could think that maybe the verb *nízin* is lexically underspecified or ambiguous, but Bogal-Allbritten presents arguments against such hypotheses. She examines how *nízin* receives its interpretations, and argues based on that that attitude reports are built in syntax: the verb itself is just a predicate of mental states s, and it is the material in the left periphery of the embedded clause that is responsible for determining what sets of world we will project from s and quantify over.[9]

In this thesis, I provide an additional argument for embedded clauses being

[9]Similar dependence of the meaning of an attitude verb on the embedded clause can also be observed with the verb *hanaxa* in Buryat (Mongolic):

the source of displacement: I show that in some languages we find overt lexical items within embedded clauses that introduce displacement. I argue that Korean declarative marker *-ta* and Buryat grammaticalized morpheme *gə* 'say' are such items. In chapter 2 I show that these items must occur in Cont-CPs and cannot occur in Sit-CPs. For example, embedded clauses that combine with nouns like *cwucang* 'claim' have to contain *-ta*, (25), but clauses that combine with nouns like *sanghwang* 'situation' cannot include *-ta* in their structure, (26).

(25) [Swuna-ka mwuncey-lul phwul-**ess-*(ta)-nun**] cwucang-i
Swuna-NOM problem-ACC solve-**PST-(DECL)-ADN** claim-NOM
sasil-i-ta.
fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

(26) [Swuna-ka mwuncey-lul phwul-**ess-(*ta)-nun**] sanghwang-i
Swuna-NOM problem-ACC solve-**PST-(DECL)-ADN** situation-NOM
hungmilop-ta
interesting-DECL
'The situation that Swuna solved the problem is interesting.'

I show that the presence/absence of *-ta* in these CPs correlates with whether they are referentially opaque or transparent, and suggest that *-ta* is the source of displacement: it introduces the CONT function into the meaning of the embedded CP.

I also show that attributing displacement to an item in the left periphery of embedded clauses provides an answer to why nominalized clauses with the same verb can have different presuppositions despite receiving the same Θ-role. Consider the difference between Buryat sentences in (27)–(28):

(i) a. Səsəg [Badma ajagad-i:jə uga:-**xa** gəžə] **hana-na**.
Seseg Badma dishes-ACC wash-**POT** COMP think-PRS
'Seseg **thinks** that Badma will wash the dishes.'
b. Səsəg [Badma ajagad-i:jə uga:-**haj** gəžə] **hana-na**.
Seseg Badma dishes-ACC wash-**OPT** COMP think-PRS
'Seseg **wants** Badma to wash the dishes.'
c. Sajana [Darim-i:n Xuramxa: oš-**o:š**-i:jə] **hana-na**.
Sajana Darima-GEN Kurumkan go-**PART**-ACC think-PRS
'Sajana **remembers** that Darima went to Kurumkan.'

In section 4.4.3 of chapter 4 I will discuss how interpretations like (ia) and (ic) come about.

(27) Dugar [mi:sgəi-n zagaha ədj-ə:š-i:jə-n′] han-a:,
Dugar cat-GEN fish eat-PART-ACC-3 think-PST
#xarin mi:sgəi zagaha ədj-ə:-güj.
but cat fish eat-PST-NEG
'Dugar remembered the cat's eating the fish, but the cat didn't eat the fish.'
✓ factive presupposition

(28) Dugar [mi:sgəi-n zagaha ədj-ə: **g**-ə:š-i:jə] han-a:,
Dugar cat-GEN fish eat-PST **say**-PART-ACC think-PST
xarin mi:sgəi zagaha ədj-ə:-güi.
but cat fish eat-PST-NEG
'Dugar remembers (the claim) that the cat ate the fish, but the cat didn't eat the fish.'
✗ factive presupposition, ✓ existential presupposition

The clauses in (27) and (28) are both nominalized and describe some entity that Dugar's mental state is *about* (see section 4.4.3 of chapter 4 for more discussion). But (27) has a factive presupposition that there is a situation of the cat eating the fish in the actual world, whereas (28) lacks such a presupposition; instead, it has a presupposition that there has been some idea/claim that the cat ate the fish. I propose that the difference that we observe is not because the verb introduces different presuppositions, but because only the clause with the morpheme *gə* inside the embedded clause (28) involves displacement. Thus, existence of a situation of the cat eating the fish in (27) is evaluated with respect to the actual world, leading to factivity, but in (28) existence of such a situation is evaluated with respect to the set of situations that are the propositional content of some entity (claim/idea) that exists in the actual world. This results in the absence of the factive inference, but presence of an existential inference ("there is an entity with this content") in (28).

A very common idea in the literature is that the verb is the source of displacement. For example, Hintikkan (1969) semantics (31) assumes that verbs like *think* have modal semantics (29), where the embedded clause denotes a proposition—a set of worlds in which the squirrel ate the peanut in (30).

(29) $[\![\text{think}]\!]^w = \lambda p.\lambda x.\ \text{Dox}_{x,w} \subseteq p$,
$\text{Dox}_{x,w} = \{w' : w' \text{ is compatible with what x believes in w}\}$

(30) $[\![\text{that the squirrel ate the peanut}]\!]^w = \{w': \text{the squirrel ate the peanut in } w'\}$

(31) $[\![\text{Nadya thinks that the squirrel ate the peanut}]\!]^w = 1$ iff
$\text{Dox}_{Nadya,w} \subseteq \{w': \text{the squirrel ate the peanut in } w'\}$
$\equiv \forall w' [w' \in \text{Dox}_{Nadya,w} \rightarrow w' \in \{w': \text{the squirrel ate the peanut in } w'\}]$

Thus, this thesis argues together with other works within Kratzer (2006)'s framework against this lexicalist perspective and for severing displacement from the verb.

1.1.2 Argument structure integration

I propose that clauses are never direct arguments of verbal or nominal predicates. With nouns, clauses are modifiers (Higgins 1973, Stowell 1981, Nichols 2003, Aboh 2005, Kratzer 2006, Kayne 2008, Moulton 2009, Arsenijević 2009, Kayne 2010, Haegeman 2012). They combine with nouns intersectively by Predicate Modification, resulting in the denotations in (32)–(33).

(32) $[\![\text{idea that the squirrel ate the nut}]\!]^s =$
$\lambda x.\ \text{idea}(x)_s \wedge \textsc{Cont}(x) = \{s: \text{the squirrel ate the nut in } s\}$

(33) $[\![\text{situation that the squirrel ate the nut}]\!]^s =$
$\lambda s'.\ \text{situation}(s')_s \wedge s'$ is a minimal situation of the squirrel eating the nut

With verbs, I argue that two paths of embedding are available. First, clauses can combine by modifying the situation argument of verbal predicates (*via Situation argument* path). For example, in (34) the embedded clause is combined by Predicate Modification, and it is specifying the propositional content of the thinking state s':

(34) $[\![\text{think that the squirrel ate the nut}]\!]^s =$
$\lambda \mathbf{s'}.\ \text{think}(\mathbf{s'}) \wedge \textsc{Cont}(\mathbf{s'}) = \{s: \text{the squirrel ate the nut in } s\}$

This path of composition has been proposed within the framework that views embedded CPs as predicates of things with propositional content before (Moltmann 1989, Kratzer 2016, Bogal-Allbritten 2016, 2017, Elliott 2020, a.o.)

Second, clauses can describe individual arguments of verbs (*via DP argument* path). This is illustrated with a Cont-CP in (35) and (36).[10]

[10]This is an abstract illustration that is not meant to be the actual meaning of the English VP. In chapter 4 we will see that this is how Buryat *hanaxa* 'think' combines with Cont-CPs like (28).

(35) $[\![\text{Nadya thinks that the squirrel ate the nut}]\!]^s = \exists s'[\text{think}(s')_s \wedge \textsc{Exp}(s')=\text{N.} \wedge \textsc{About}(s')=\iota\mathbf{x}(\textsc{Cont}(\mathbf{x})=\{s\text{: the squirrel ate the nut in s}\})]$

(36) $[\![\text{Nadya thinks that the squirrel ate the nut}]\!]^s = \exists s',\mathbf{x}[\text{think}(s')_s \wedge \textsc{Exp}(s')=\text{N.} \wedge \textsc{About}(s')=\mathbf{x} \wedge \textsc{Cont}(\mathbf{x})=\{s\text{: the squirrel ate the nut in s}\}]$

In (35) the clause is the predicate of a definite description, in (36) the clause is the restrictor of an indefinite description. In both cases it describes the individual that Nadya's thinking is *about*: it provides the propositional content associated with this individual. The idea that clauses describe individual arguments of verbs has been pursued in the literature as well, with different implementations of how this is achieved compositionally: e.g., Kratzer (2006) suggested that they compose via *Restrict* (Chung & Ladusaw 2003), Moulton (2015) proposed that embedded CPs that denote predicates must undergo movement in order to compose with the verb.

In this thesis I provide arguments for the recently emerging view that both paths of integration are needed (Özyıldız 2020, T. Roberts 2020, Bochnak & Hanink 2021), and propose that there is a tight correlation between the syntactic structure of the clause and how it can be integrated into the argument structure: only bare, non-nominalized clauses can combine *via Situation argument* path, and only nominalized clauses can combine *via DP argument* path. Thus, clauses that describe individual arguments of verbs combine with determiners (indefinite or definite, can have null exponence), and no special mechanism is needed to integrate them with the verb.

The evidence I discuss comes from languages that make overt morphological distinctions between nominalized and non-nominalized clauses (Buryat, Korean, Russian). I show that there is a systematic difference between how these types of clauses are interpreted: nominalized clauses can play the same roles in the event structure as DP arguments, but cannot describe propositional content associated with the verb's eventuality, whereas bare clauses cannot have the same interpretations as DP arguments, and always describe propositional content of the situation described by the verb. For example, consider Buryat examples in (37)–(38):

(37) Dugar [$_{\text{CP}}$ mi:sgəi zagaha ədj-ə: gəžə] han-a:.
Dugar cat.NOM fish eat-PST COMP think-PST
'Dugar thought that the cat ate the fish.'
✗ **About**: 'Dugar thought about the cat eating the fish/about the claim that

the cat ate the fish.'
✓ **Content-of-Thoughts**:
'The content of Dugar's thoughts was: *The cat ate the fish*.'

(38) a. Dugar mi:sgəi-jə han-a:.
Dugar.NOM cat-ACC think-PST
'Dugar remembered (lit. 'thought of') the cat.'
(a cat is the **About**-argument of his mental state)

b. Dugar [mi:sgəi-n zagaha ədj-ə: **g**-ə:š-i:jə] han-a:.
Dugar cat-GEN fish eat-PST **say**-PART-ACC think-PST
'Dugar remembers (the claim/idea) that the cat ate the fish.'
✓ **About**: 'Dugar thought about a claim/idea that the cat ate the fish.'
✗ **Content-of-Thoughts**:
'The content of Dugar's thoughts was: *The cat ate the fish*.'

In (37) we have a non-nominalized clause, and the only way it can be interpreted is as providing the content of Dugar's mental state. I propose that this is the only available interpretation because bare clauses are predicates, and thus the only possible way for them to compose with the verb is by modifying its situation argument. Since there are no presuppositions introduced about the situation argument, no presuppositions are perceived in (37).

We see in (38) that when a clause is nominalized (bears case and possessive marking), it cannot describe the content of Dugar's thoughts. It can only describe some entity that Dugar's thinking is about. This is the same interpretation that regular DP arguments receive (38a). I propose that only this reading is available because once a clause is nominalized, it is not a predicate anymore, and so it can't serve as a verbal modifier, but must integrate like other DPs. There is a presupposition associated with About-arguments of *hanaxa*: the individuals that the thinking is about have to exist before the time of thinking. This inference is responsible for the verb in sentences like (38) being naturally translated as "remember".

I argue that the pattern we see in Buryat is not unique: bare and nominalized clauses always receive distinct interpretations, as they are never integrated with the verb in the same way. Moreover, I show that it is in principle possible to have two clauses combine with the same verb at once, provided they use different paths of integration. This is shown in (39), where the nominalization describes an event

Sajana recalled, and the bare CP describes her thoughts about that event.

(39) **Context:** Last night Badma returned from Kurumkan and made a lot of noise. Sajana heard the noise and was convinced that a burglar entered the house. She later recalled this event when I spoke with her.

Sajana [Badm-i:n Xurumxa:n-ha: jər-ə:d bai-ga:š-i:jə-n']
Sajana Badma-GEN Kurumkan-ABL come-CVB2 be-PART-ACC-3
[gər-tə xulgaišan or-o: gəžə] han-a:.
house-DAT burglar go.in-PST COMP think-PST

'Sajana recalled the/an event of Badma returning from Kurumkan, (thinking) that a burglar entered the house.'

Given my proposal that tensed embedded clauses can have two meanings (Cont-CPs and Sit-CPs), we can now raise the question: are there restrictions on combinations of clausal meanings and clausal integration paths? I argue that there are. For attitude and speech verbs, only 3 out of 4 logically possible combinations are attested, as is illustrated in table 1.1.[11]

	Path of composition	
Meaning	*via DP argument*	*via Situation argument*
Cont-CP	✓	✓
Sit-CP	✓	✗

Table 1.1: Combinations of CP meanings and composition paths

While Cont-CPs can be both predicates inside nominal arguments and verbal modifiers, Sit-CPs can only combine *via DP arguments* path with attitude and speech verbs. I argue that this follows from the semantics of clauses and verbal predicates: trying to combine Sit-CPs with verbal meanings intersectively leads to sentences that are always trivially false, which makes them ungrammatical.

I show that the path of integration is important not only for how a clause is interpreted and what presuppositions are associated with it, (37)–(38), but also for whether extraction out of it is available (section 4.6 of chapter 4). I argue that clauses that combine *via Situation argument* path observe the same restrictions on

[11] This generalization does not hold for verbs of occurrence like Russian *byvat'* 'happen', *slučat'sja* 'occur', *proisxodit'* 'take place'. See section 4.3.3 of chapter 4 for discussion.

movement as other verbal modifiers do: being modifiers, they can attach at different positions in the structure, and they are islands when they merge with phrases, but transparent when they merge with heads (see Uriagereka 1999, Nunes & Uriagereka 2000, Johnson 2003, Sheehan 2010, Privoznov 2022, a.o.). This is illustrated with Russian data in (40)–(41).

(40) **Kogo**$_1$ Petja obradoval-sja,
who.ACC Petya got.happy-INTR
[čto ego druž'ja priglasili **t**$_1$ v gosti]?
COMP his friends invited to guests
'**Who**$_1$ did Petya get happy that his friends invited **t**$_1$ for a visit?'

(41) ***Kogo**$_1$ Petja obradoval Katju,
who.ACC Petya made.happy Katya.ACC
[čto ego druž'ja priglasili **t**$_1$ v gosti]?
COMP his friends invited to guests
'**Who**$_1$ did Petya make Katya happy that his friends invited **t**$_1$ for a visit?'

When the verb is intransitive, (40), the bare embedded clause is the first thing it combines with, and such clauses are transparent for movement. When the verb is transitive, (41), the bare embedded clause combines with a phrase that is the result of combining the verb and the object. Such clauses are islands for movement.

Clauses that combine *via DP argument* path exhibit more restrictions: even when they combine directly with the verb, extraction out of them is not possible in many cases. I show that internal structure of nominalized clauses imposes additional restrictions on extraction (table 1.2): data from Russian and Buryat suggest that nominalized Cont-CPs are islands for movement, whereas whether nominalized Sit-CPs are islands can depend on the presence of overt determiners in them.

	Type of embedded clause			
	via DP argument (*nominalized*)		*via Situation* (*bare*)	
Language	CONT-CP	SIT-CP	CONT-CP	SIT-CP
Russian	✗	✗ with overt D, ✓ without	✓	✓
Buryat	✗	✓	✓	no data

Table 1.2: Extraction out of embedded CPs when they combine with the verbal head

To sum up, while a prominent view in the literature is that embedded clauses are propositional arguments of verbs (Hintikka 1969, a.m.o.) or individual-denoting arguments of verbs (e.g., Chierchia 1984, 1985, Potts 2002, Djärv 2019, Faure 2021), I argue that constituents of the category CP are never true verbal arguments. Following previous literature (Higgins 1973, Stowell 1981, Koster 1978, Moltmann 1989, Nichols 2003, Aboh 2005, Kratzer 2006, Arsenijević 2009, Moulton 2009, Haegeman & Ürögdi 2010, Kayne 2010, Haegeman 2012, Kratzer 2013, Moltmann 2013, 2014, Moulton 2015, Kratzer 2016, Bogal-Allbritten 2016, 2017, Safir 2019, Elliott 2020, Moltmann 2020, Özyıldız 2020, T. Roberts 2020, Bochnak & Hanink 2021, a.o.), I argue that embedded CPs are semantically predicates, and that determines the two paths of integration available to them: they can be modifiers of verbal situation arguments or predicates inside nominal arguments of verbs.

In the past decades, we have learned that embedded clauses can contain different amount of verbal projections (see Wurmbrand & Lohninger 2019 and the references therein, as well as James 2005, Haegeman 2006, De Cuba 2007, De Cuba & Urogdi 2010, a.o., for more distinctions in the structure of the left periphery), and that they can be nominalized, with different kinds of nominal projections on top of the verbal ones (Rosenbaum 1967, Lees 1960, Kiparsky & Kiparsky 1970, Roussou 1991, Davies & Dubinsky 1999, 2009, Picallo 2002, Kallulli 2006, Takahashi 2010, Hartman 2012, Kastner 2015, Pietraszko 2019, Moulton 2020, a.o.). In this thesis I argue that there is a tight connection between the structural differences and the interpretations: clauses receive the same interpretations as nominal arguments if and only if they are nominalized; bare clauses that combine with attitude and speech predicates always describe their propositional content. While we could easily imagine a system where bare clauses can have the same roles as DPs and nominalized clauses describe content of mental and speech events, that does not happen.

1.1.3 Environment-sensitivity in clausal embedding

I argue that the distribution of embedded clauses can depend not just on the argument structure of embedding verbs, but also on the properties of the embedding environment. Clausal selection is commonly thought of as a very local relationship between the verb and the embedded clause, where the verb selects for the syntactic category (Bresnan 1972, Chomsky 1973 a.o.), or imposes semantic restrictions

(Grimshaw 1979, Pesetsky 1982, 1991, a.o.). But it has been noted in the literature that there are cases where some elements well "above" the verb and the clause it combines with influence clausal selection. For example, consider (42).

(42) a. *Susan believes which town was obliterated by the meteor.
(T. Roberts 2019: 665, ex. (1b))
b. Susan can't believe which town was obliterated by the meteor.
(T. Roberts 2019: 666, ex. (2))

While *believe* usually cannot combine with interrogative complements (42a), adding an ability modal and negation to the sentence enables it to combine with an embedded question (42b). Cases like (42) raise the question: How and why does environment-sensitivity of clausal embedding arise?

In this thesis I try to contribute to this question by investigating the phenomenon of polarity subjunctives (Rivero 1971, Farkas 1992, Stowell 1993, Brugger & D'Angelo 1995, Giannakidou 1995, Giannakidou & Quer 1997, Quer 1998, Siegel 2009, Quer 2009, Giannakidou 2011, a.o.) in Russian: the phenomenon of subjunctive embedded clauses being sensitive to the properties of the embedding environment with some matrix verbs. Consider the examples in (43)–(45).[12]

(43) *"Positive" environment*
a. Mitja pomnit čto /*čto-**by** Lena smotrela futbol.
Mitya remembers COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya remembers that Lena watched soccer.'
b. Mitja dumaet čto /*čto-**by** Lena smotrela futbol.
Mitya thinks COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya thinks that Lena watched soccer.'
c. Mitja vyskazalsja čto /*čto-**by** Lena smotrela futbol.
Mitya stated COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya stated that Lena watched soccer.'

[12]Some of these sentences with *čto-by* are grammatical under the irrelevant reading where the clause is a purpose clause rather than a complement clause: e.g. (43c) can be interpreted as *Mitya made some statement in order for Lena to watch soccer*.

(44) *Under Negation*

a. Mitja ne pomnit čto /čto-**by** Lena smotrela futbol.
Mitya NEG remembers COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya doesn't remember that Lena watched soccer.'

b. Mitja ne dumaet čto /čto-**by** Lena smotrela futbol.
Mitya NEG thinks COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya doesn't think that Lena watched soccer.'

c. Mitja ne vyskazalsja čto /*čto-**by** Lena smotrela futbol.
Mitya NEG stated COMP /COMP-SUBJ Lena watch.PST soccer
'Mitya didn't state that Lena watched soccer.'

(45) *Scope of tol'ko 'only'*

a. Tol'ko Mitja pomnit čto /čto-**by** Lena smotrela futbol.
only Mitya remembers COMP /COMP-SUBJ Lena watch.PST soccer
'Only Mitya remembers that Lena watched soccer.'

b. Tol'ko Mitja dumaet čto /*čto-**by** Lena smotrela futbol.
only Mitya thinks COMP /COMP-SUBJ Lena watch.PST soccer
'Only Mitya thinks that Lena watched soccer.'

c. Tol'ko Mitja vyskazalsja čto /*čto-**by** Lena smotrela futbol.
only Mitya stated COMP /COMP-SUBJ Lena watch.PST soccer
'Only Mitya stated that Lena watched soccer.'

We see that verbs like *pomnit'* 'remember', *dumat'* 'think', and *vyskazat'sja* 'state, make a statement' cannot combine with subjunctive clauses in "positive" contexts, where no special operators are present in the matrix clause (43). The verb *pomnit'* 'remember' can combine with subjunctive complements once we create an environment in which weak NPIs are usually licensed: e.g., it is possible in sentences containing negation and in the scope of *tol'ko* 'only'. The verb *dumat'* 'think' can combine with subjunctives under negation, but not in other contexts that usually license weak NPIs: it is not possible in the scope of *tol'ko* 'only', for example. The verb *vyskazat'sja* 'state, make a statement' differs from both *pomnit'* 'remember' and *dumat'* 'think' in that it can never combine with subjunctive clauses, no matter what the embedding environment is. While it has been observed in the literature that some subjunctive complements show polarity-sensitivity, the question of why verbs differ in their ability to take polarity subjunctives to my knowledge has not received

much attention. I try to address this question for polarity subjunctives in Russian.

I propose that environment-sensitivity in selection of subjunctive clauses arises because the subjunctive morpheme is lexically marked for focus, and it activates alternatives that must be acted upon by a higher operator. Thus, my proposal follows Villalta (2000, 2008) in that subjunctive morphology is associated with consideration of alternatives to the embedded proposition, and it falls into the group of approaches that treat polarity items as indefinites that come with obligatorily active alternatives (Lahiri 1998, Chierchia 2013, Crnič 2019, a.o.).

I argue that what meaning(s) of the embedded clause an embedding verb allows (Cont-CP vs. Sit-CP) will matter for whether a subjunctive clause will be able to behave with this verb like a weak NPI: only verbs that can combine with Sit-CPs can combine with clauses that behave like weak NPIs. I propose that the difference between verbs like *pomnit'* 'remember' and verbs like *dumat'* 'think' stems from the nature of alternatives that are activated and the focus operator that acts on them. I argue that with verbs like *pomnit'* 'remember', the subjunctive morpheme activates the subdomain alternatives of the embedded proposition, and the operator, which is located in the matrix clause, requires that the prejacent entail all of its alternatives. With verbs like *dumat'* 'think', I argue that the subjunctive morpheme activates the set of alternatives containing only the prejacent and its negation, and a focus operator similar to *even* (Lahiri 1998, Crnič 2019, a.o.), which is located within the embedded clause, requires that the prejacent is less likely than its alternative (= its negation). I show that this difference in the alternatives activated and the focus operators present in the structure can account for the different distribution of subjunctives with these two classes of verbs.

My proposal about licensing of polarity subjunctives provides further support to the growing body of literature (Mayr 2018, 2019, T. Roberts 2019, Theiler, Roelofsen & Aloni 2019, Uegaki & Sudo 2019) that argues that certain restrictions in the domain of clausal embedding arise not due to selection (syntactic or semantic), but due to the fact that combinations of certain elements result in illicit meanings and lead to ungrammaticality (see section 1.3).

1.2 The Framework

In this thesis I will be using a version of situation semantics (Barwise 1981, Perry & Barwise 1983, Kratzer 1989, Portner 1992, Kratzer 2020, Elbourne 2005, a.o.), a

possibilistic version thereof: a conservative extension of possible worlds semantics, in which propositions are sets of world parts rather than full worlds. The system that is set up is based mostly on a combination of assumptions from (Kratzer 1989, 2020, Portner 1992) and (von Fintel & Heim 1997-2020, Heim & Kratzer 1998). I describe the ontology in section 1.2.2, and certain other assumptions about the semantic system, such as semantic types and domains, sample lexical entries and rules of semantic composition, in section 1.2.3. In 1.2.1 and 1.3 I briefly describe some hypotheses about the syntactic component that I adopt and my assumptions about possible causes of ungrammaticality. The framework set up in this chapter will be elaborated on and modified in future chapters as needed.

1.2.1 Syntax

I will be generally following the framework of the Minimalist Program (Chomsky 1993, 1995b,a). I assume the Y-shaped architecture of the grammar, according to which narrow syntax, which operates on bundles of syntactic features and roots, feeds into two interfaces: Phonological Form (PF) and Logical Form (LF).

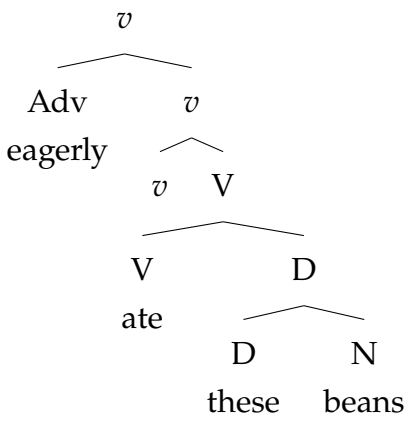
In narrow syntax, a hierarchical phrase structure is built: a set of labeled nodes with corresponding sets of syntactic features becomes ordered by the dominance relation. The operation that is ordering the nodes is **Merge**: it is an operation of taking two syntactic objects and combining them to form a new one (via set formation). **Internal Merge** is a subcase of Merge (Chomsky 1995b): it is Merge that occurs between a constituent X and one of its subconstituents. Internal Merge is the mechanism behind movement: e.g., in (46) the constituent [These beans] undergoes Internal Merge with the constituent [I eagerly ate [~~these beans~~]] that contains it. The strike-through indicates that only one of the two copies of the constituent [these beans] will be pronounced—the higher one.

(46) [[These beans], [I eagerly ate [~~these beans~~]]].

Another operation that takes place in narrow syntax is **Agree**, but it will not be relevant for anything we'll be discussing in this thesis.

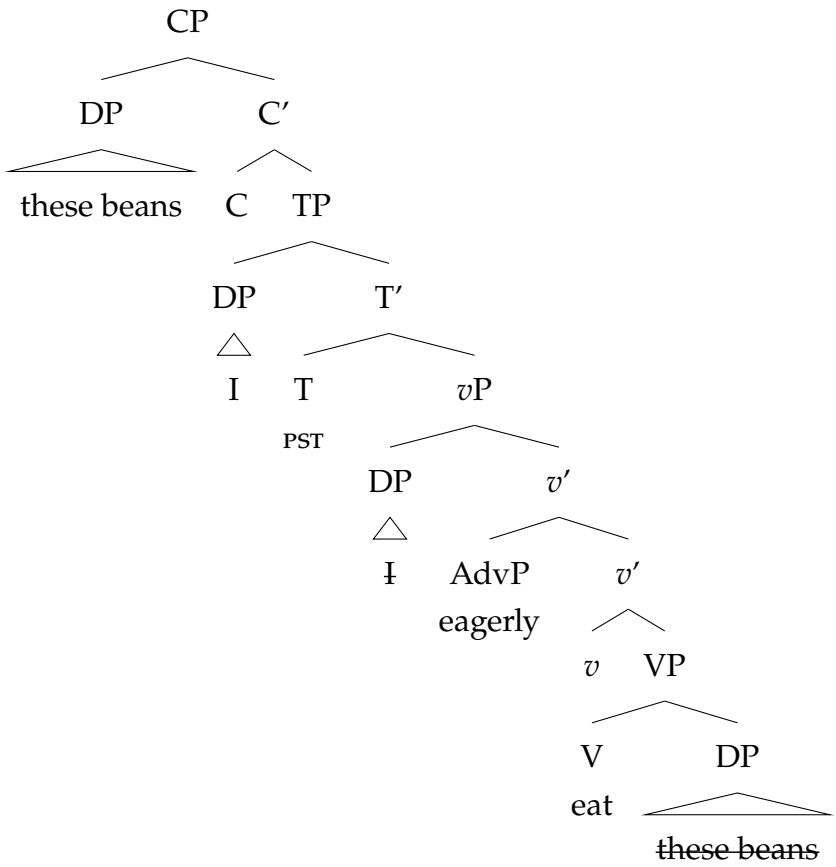
I will be assuming Bare Phrase Structure (Chomsky 1995a): a derivational model of building phrasal structure that does away with the non-branching nodes and bar-level projections that have been previously assumed. This is illustrated in (47).

(47) *Verbal Phrase in the Bare Phrase Structure* (*before the subject is merged*)



In practice, I will nevertheless often label certain nodes as XPs or X's, but this is done just for the sake of making it easier to refer to them. For example, I might draw a tree like (48) for a sentence like in (46).

(48) *Structure of* (*46*)



In (48) I am using some labels for nodes that are commonly assumed: D(eterminer), Adv(erb), V(erb), *v*(erb), T(ense), C(complementizer). The exact labels of nodes in trees will not be crucial for anything discussed in this thesis.

Here are some definitions of syntactic objects and relations that might be useful in the forthcoming discussions:[13]

(49)
a. **A head X** is a node that doesn't dominate any other nodes: there is no node that can be reached by moving only "down" the tree from X.
b. **A projection of the head X** is a constituent that has the same label as X, dominates X, and from which one can reach X by moving only "down" the tree by a path of nodes with the same label as X.
c. **Maximal Projection of X** is the first projection of X such that its mother node does not have the label X.
d. **Complement of the head X** is the sister of the head X, such that its mother has the same label as X.
e. **Specifier of the head X** is the constituent that is not a projection of X whose mother node is the maximal projection of X.
f. **Adjunct of the head X** is a constituent that X combines with during its projection that is neither a complement nor a specifier.

For example, in (48) C, T, *v*, V, Adv are heads (with Adv being a maximal projection at the same time), and DPs contain D heads inside of them (as well as Ns inside of NPs). Whenever two syntactic objects undergo Merge, one of them projects its label onto the resulting syntactic unit. For example, when V and DP combine in (48), V projects its label. Heads project until they merge with a syntactic object that projects its label. For example, in the structure in (48) *v* projects three times:

[13] The definitions in (49) do not allow there to be multiple specifiers (I'm grateful to Danny Fox for pointing this out). So, for example, in a sentence with multiple wh-movement like (i) under the definitions in (49) the higher wh-phrase is the specifier of C, but the lower one is an adjunct.

(i) $[_{CP}$ [Kto] $[_{C'}$ [kogo] $[_{C'}$ [C] $[_{TP}$ t_1 pozval v gosti t_2]]]]?
who whom invited in guests
'Who invited whom to their place (lit. 'to guests')?'

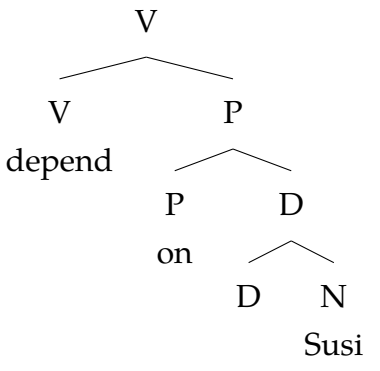
Thus, if we think that the two wh-phrases should bear the same syntactic relation to C, we might want to redefine the notions of the specifier and adjunct. But for our purposes, the definitions in (i) will be sufficient, as we will never have to distinguish between these two types of phrases, only the distinction between combining with a head vs. with a phrase will be important for our discussion.

first when it combines with VP, then when it combines with AdvP, then when it combines with DP. When *v* combines with T, T projects. Thus, the mother node of DP and *v* is the maximal projection of *v*.

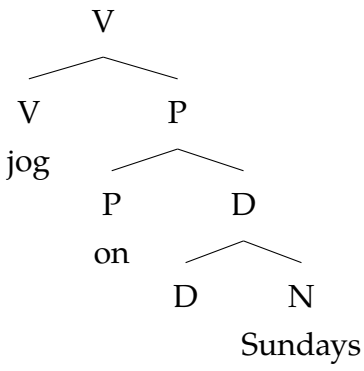
The complement of a head is the first constituent that the head combines with it when it projects. For example, in (48) TP is the complement of C, *v*P is the complement of T, VP is the complement of *v*, and DP is the complement of V. The specifier of a head is the last constituent that the head combines with as it projects. In (48) DP *these beans* is a specifier of C, DP *I* is the specifier of T and of *v*. A given head can have only one complement and one specifier. Specifiers and complements are always maximal projections. Adjuncts are defined negatively: they are constituents that projecting heads combine with that are neither complements nor specifiers. AdvP is the only adjunct in the structure in (48).

Note that the definitions above are purely structural: there is no semantic property that needs to be met for a constituent to classify as a complement or an adjunct. Importantly, this means that not only arguments, but also modifiers can be structurally complements. For example, consider (50) and (51). It seems plausible that the PP that *depend* combines with has a different status compared to the PP that *jog* combines with: intuitively, the PP in (50) is a necessary component of the meaning of the VP, whereas the PP in (51) could be omitted with no consequences. Even if we decide that the two PPs have different semantic status—the former is an argument and the latter is a modifier, structurally they are both complements to the head. The distinction between semantic arguments/modifiers and structurally defined complements/adjuncts will be further discussed in chapter 4.

(50) Julia [depends on Susi].



(51) Julia [jogs on Sundays].



After all the operations within the narrow syntax component are done, **Spell-**

Out occurs—the resulting syntactic representation is shipped off to PF and LF interfaces.[14] At the PF interface, the structure undergoes **Linearization** which decides the order of constituents with respect to each other, and syntactic nodes undergo **Vocabulary Insertion**, which maps them to exponents. I am assuming Distributed Morphology kind of framework (Halle & Marantz 1993, Harley & Noyer 1999, a.m.o.), in which a variety of morphological operations could occur at PF before the result is sent to narrow phonology. LF is the input to the semantic component. I will assume a system with direct interpretation: the semantic component will assign denotations directly to the objects generated by syntax, without translation into an intermediate language. More concretely, I will assume that syntactic nodes undergo **Sense Insertion** (Schwarzschild 2022), a process parallel to Vocabulary Insertion, in which syntactic nodes are paired with meanings (see (67) in section 1.2.3).

1.2.2 The ontology

Here are some ontological ingredients that I will be assuming:

(52) *Some ingredients of the ontology*

a. E — a set, the set of possible individuals.
b. S — a subset of E, the set of possible situations.
c. W — a subset of S, the set of possible worlds: the set of joins of the disjoint sets that together form S.
d. $\sqsubseteq$ — a partial ordering on E.
e. $\mathbb{P}(S)$ — the powerset of S, the set of propositions.
f. T — a set, the set of possible time intervals.
g. τ — a function from E to T, the temporal trace function that maps individuals onto time intervals.
h. κ — a function from E to functions from W to E, the counterpart function that takes an individual and finds its counterpart in another world.

I assume that the ontology has the set E containing all possible individuals. I take possible situations to be particulars, and form a subset of E: S. I make this ontological choice for the same reason as Portner (1992) does: it will help us avoid

[14] It could be that the structures built in the narrow syntax are spelled out in phases. As far as I can see, nothing in this thesis hinges on whether the Spell-Out is cyclic or not.

postulating ambiguities for certain linguistic expressions. Consider (53).

(53) a. Anya remembers the cat.
b. Anya remembers the cat playing with a toy.

Intuitively, Anya remembers an individual in (53a), but a situation or event of a certain sort in (53b). If E and S were ontologically disjoint, we would need to postulate two verbs meaning 'remember', *remember*$_1$ that takes an individual as its internal argument and *remember*$_2$ that takes a situation. Since there are many verbs that seem to combine with both individuals and situations, I choose to regard situations as special kinds of individuals and thus avoid postulating ambiguities. On this view, *remember* always combines with an individual, and it is not picky as to what kind of an individual that is—both ordinary individuals and situations will do.[15]

I assume that $\sqsubseteq$ is a binary relation defined for the elements of E which is a partial order: it is reflexive, transitive and antisymmetric (54).

(54) *Properties of* $\sqsubseteq$*:*

a. **Reflexivity:**
$\forall x \in E, x \sqsubseteq x$.

[15]The outlined view does not address the distinction between "thick particulars"—individuals taken with all of their properties, and "thin particulars"—individuals "stripped off" of all their properties (Armstrong 1978, Kratzer 1989) (see also the discussion of "concrete" individuals and situations and the issue of whether certain concrete situations are identical to ordinary individuals in Portner 1992: pp. 33–36). One could imagine the following set up, for example. For each individual in E there is a "thin particular" corresponding to it. Expressions like proper names denote "thick particulars", but when predicates take them as their arguments, they make claims about the "thin particulars" corresponding to the "thick" individuals (i). In this way, if in our world Anya is both sleepy and happy at the same time, we could still distinguish the situation of Anya being sleepy from the situation of Anya being happy. To keep things simple, I will not be making reference to "thin particulars" in my lexical entries, but if I write "the individual x is sleepy in s" that can be understood as a shortcut for a more elaborate denotation making reference to the "thin particular".

(i) a. $[\![\text{Anya}]\!]^{s,t,g}$ =
the "thick particular" individual $x \in E$ such that x is the counterpart of Anya in w_s.
b. $[\![\text{sleepy}]\!]^{s,t,g} = \lambda x$: $x \in E$ and x is a "thick particular". the "thin particular" of x is part of s and is sleepy in s.
c. $[\![\text{Anya is sleepy}]\!]^{s,t,g} = 1$ iff the "thin particular" of the "thick particular" individual $x \in E$ such that x is the counterpart of Anya in w_s is part of s and is sleepy in s.
d. $[\![\text{Anya is happy}]\!]^{s,t,g} = 1$ iff the "thin particular" of the "thick particular" individual $x \in E$ such that x is the counterpart of Anya in w_s is part of s and is happy in s.

b. **Transitivity:**
$\forall$x,y,z $\in$ E, x $\sqsubseteq$ y and y $\sqsubseteq$ z imples x $\sqsubseteq$ z.

c. **Anti-symmetry:**
$\forall$x,y $\in$ E, x $\sqsubseteq$ y and y $\sqsubseteq$ x imples x = y.

One can think of "$\sqsubseteq$" intuitively as a "part of" relation. For example, if we take a complex individual consisting of Mitya and Anton—**Anton** $\sqcup$ **Mitya**, we could say that Mitya is part of that individual (**Mitya** $\sqsubseteq$ (**Anton** $\sqcup$ **Mitya**)) and that Anton is part of that individual (**Anton** $\sqsubseteq$ (**Anton** $\sqcup$ **Mitya**)). I will remain uncommitted about how ordinary individuals (the ones in E but not in S) are ordered by $\sqsubseteq$.

Situations can also stand in the "part of" relation. For example, if we take a situation s of *the squirrel on my windowsill eating a walnut on April 20, 2022*, then the situation s' of *the squirrel on my windowsill cracking the walnut's shell on April 20, 2022* is part of that situation: $s' \sqsubseteq s$. Both situations would be part of the situation s''', the situation of *everything going on on my windowsill on April 20, 2022*. s''' could include many other things in addition to the squirrel eating the walnut, for example a blue jay taking a peanut, a sparrow eating some seeds and so on.

I will assume that the set of possible situations S is partitioned into disjoint sets. Each of these disjoint sets has a mereological structure—a complete join-semilattice:

(55) *Mereological Definitions*

a. **Upper Bound**
For any set of situations S, s is an upper bound of S iff $\forall s' \in$ S, $s' \sqsubseteq s$.

b. **Join (= Least Upper Bound = Supremum)**
For any set of situations S, s is the join (= supremum, = least upper bound) of S iff s is an upper bound of S and $\forall s'$ [s' is an upper bound of S $\Rightarrow$ $s \sqsubseteq s'$].
Notation:
For any set S = {a,b,c}, I will write $\sqcup$S or $a \sqcup b \sqcup c$ for its supremum.

c. **Join-semilattice**
S is a join-semilattice if it is an ordered set such that $\forall x,y \in$ S, $x \sqcup y \in$ S.

d. **Complete join-semilattice**
S is a complete join-semilattice if it is a join-semilattice such that $\forall$S'[S' $\subseteq$ S $\Rightarrow$ $\sqcup$S' $\in$ S].

Given this set up, each disjoint set into which S is partitioned will have a join—its maximal element derived from summing up all situations in this set. The set of such maximal elements from all sets into which S is partitioned is the set of possible worlds W. Thus, any situation s in S will be part of a unique world w_s.

Propositions in this framework are sets of possible situations. $\mathbb{P}(S)$ is the powerset of S and thus is the set of propositions.

I will also be assuming a set T—a set of possible time intervals, and a function τ, which maps individuals onto time intervals. When an individual is a situation, τ will give back an interval corresponding to the duration of this situation. When given an ordinary individual, τ will return its life span. We will only require T and τ in chapter 4, and I will disregard tense in all other chapters for simplification.

I will assume that any individual exists only in one world at a time, and that there is a counterpart function κ, which finds counterparts of individuals in different worlds (Lewis 1968, 1971). As far as I can see, this is not a crucial assumption, but I am adopting it for concreteness.

1.2.3 Semantics

I assume that expressions of natural language are interpreted directly by the interpretation function $[\![]\!]$, which is relativized to a situation $s \in$ S, a time interval $t \in$ T, and an assignment function g, which is a partial function from the set of pairs consisting of a natural number (in $\mathbb{N}$) and a semantic type σ (see below) to D_σ. I will often omit the t parameter when it doesn't matter to simplify representations.

The semantic types that expressions of the natural language can be are defined in terms of the ontology introduced above:

(56) **Types**

a. *Primitive types:*
e (individuals), s (situations), i (temporal intervals), t (truth-values)

b. *Recursive definition of types:*
For any types σ_1 and σ_2, $<\sigma_1,\sigma_2>$ is a type.
Nothing else is a type.

The system of semantic types creates typed domains:

(57) **Typed domains**

a. $D_e = E$

b. $D_s = S$

c. $D_i = T$

d. $D_t = \{0,1\}$

e. For any type $<\sigma_1,\sigma_2>$, $D_{<\sigma_1,\sigma_2>}$ is the set of functions from D_{σ_1} to D_{σ_2}.

Note that while e and s are distinct semantic types, the domain of individuals D_e includes the domain of situations D_s as its subset. In other words, situations are in both the domain of individuals (D_e) and in the domain of situations (D_s). I will use the following conventions in representing functions. I will use the letters *x,y,z* for variables that range over individuals (in D_e), the letter *s* for variables that range over situations (in D_s), *t* for variables over time intervals (in D_i), and the letters *f,k,p,q,r,v* as variables ranging over predicates (in D_{et}, including those in D_{st}), unless specified otherwise. Types of other arguments will be indicated explicitly.

I will be working with an intensional system. Following (von Fintel & Heim 1997-2020), I will be assuming that lexical items differ in whether their semantic values are dependent on the situation of evaluation.[16] In particular, open-class items like nominal predicates receive situation-dependent denotations:

(58) *Sample lexical entries for nominal predicates*

a. $[\![\textit{squirrel}]\!]^{s,g,t} = \lambda x\text{: } x \in D_e.\ x \sqsubseteq s \wedge x \text{ is a squirrel in } s \text{ at } t$
$=_{abbr} \lambda x.\ \text{squirrel}(x)_{s,t}$

b. $[\![\textit{peanut}]\!]^{s,g,t} = \lambda x\text{: } x \in D_e.\ x \sqsubseteq s \wedge x \text{ is a peanut in } s \text{ at } t$
$=_{abbr} \lambda x.\ \text{peanut}(x)_{s,t}$

For example, the semantic value of *squirrel* with respect to an evaluation situation *s* and a time interval *t* is a set of individuals that are part of the situation *s* and that are squirrels in *s* at *t*.[17] I will often use abbreviations to simplify descriptions of semantic values, as in (58). These are not representations of a separate meta-language.

Let us now consider verbal predicates, which are situation-dependent as well.

[16] In (von Fintel & Heim 1997-2020) the discussion is about world-dependence, not situation-dependence, but the distinction is the same—whether the meaning of a certain expression is sensitive to the state of affairs with respect to which it is evaluated.

[17] The requirement that individuals are part of the evaluation situation ensures that we will not try to evaluate if something outside of a situation *s* is a squirrel in *s*.

I will be assuming a neo-Davidsonian approach (Castañeda 1967, a.o.), according to which all arguments are severed from the verb and are introduced by functional projections. To marry neo-Davidsonian way of incorporating arguments with situations semantics, we will need to assume that verbs are predicates of exemplifying situations. The definition of exemplification is given in (59).

(59) **Exemplification** (based on Kratzer 1989, 2002, Deigan 2020)
For any individual $x \in D_e$ and function $p \in D_{et}$:
x exemplifies p $=_{abbr}$ $x \Vdash_e p =_{def}$
$x \in p \quad \wedge \quad (\forall x'[x' \sqsubset x \Rightarrow x' \in p] \quad \vee \quad \forall x'[x' \sqsubset x \Rightarrow x' \notin p])$

I will be assuming that exemplification is defined not only for situations, but for all individuals *x* and predicates *p*. It is a relation that holds of *x* and *p* iff *x* is in *p* and proper parts of *x* are homogeneous with respect to *p*: either in all proper parts of *x* *p* should be true, all in all proper parts of *x* *p* should be false.

With the exemplification relation in hand, we can provide examples of verbal predicates. Let's consider *move* and *eat* in (60).

(60) *Sample lexical entries for verbal predicates*

a. $[\![move]\!]^{s,g,t} =$
$\lambda s'$: $s' \in D_s$. $s' \sqsubseteq s \wedge s'$ is at t $\wedge$ $s' \Vdash_e$ {s'': there is a moving in s''}
$=_{abbr} \lambda s'.\ ^{\Vdash_e}\text{moving}_{s,t}(s')$

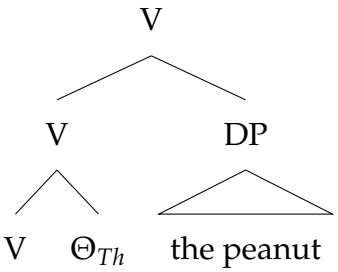
b. $[\![eat]\!]^{s,g,t} =$
$\lambda s'$: $s' \in D_s$. $s' \sqsubseteq s \wedge s'$ is at t $\wedge$ $s' \Vdash_e$ {s'': there is an eating in s''}
$=_{abbr} \lambda s'.\ ^{\Vdash_e}\text{eating}_{s,t}(s')$

Both verbs denote sets of exemplifying situations which are part of the evaluation situation *s* and occur at the evaluation time *t*. Assuming the meaning paired with the root $\sqrt{\text{MOVE}}$ describes an atelic eventuality, but $\sqrt{\text{EAT}}$ is paired with a telic meaning (see Krifka 1998, a.m.o.), what it means to be an exemplifying situation of moving will differ from what it means to be an exemplifying situation of eating. If we consider any situation in which there is some moving, we will be able to find infinitely many other situations of moving contained within it. This means we will never be able to find a minimal situation of moving. Thus, exemplifying situations of moving will be any situations of moving such that in all of their proper parts there is moving. If on the other hand we consider a situation of a completed eating

of something, none of its proper parts will be situations of a completed eating of that thing. Thus, situations that exemplify eating will be minimal situations of someone eating something: they will not contain any subparts that are irrelevant to eating.

I assume that when a situation s' exemplifies a certain proposition p, it has to contain certain individuals with certain roles as its parts. For example, if s' is a minimal eating situation, it has to contain someone who is eating and something that is being eaten. A situation cannot be regarded as eating without those individuals. I assume that such integral parts of exemplifying situations can be introduced by functional projections. For example, the internal argument of eating will be introduced by Θ_{Th} (62), which combines directly with the verb:

(61)



(62) $[\![\Theta_{Th}]\!]^{s,g,t} = \lambda p.\lambda x.\lambda s'.\ p(s')=1 \wedge \textsc{Theme}(s')=x$

The result of this combination is in (63): it is a function that will take an individual and return a set of exemplifying situations of eating (that are parts of the evaluation situation) in which the thing being eaten is that individual.

(63) $[\![\textit{eat}\ \Theta_{Th}]\!]^{s,g,t} =$
$\lambda x.\lambda s'.\ s' \sqsubseteq s \wedge s'$ is at $t \wedge s' \Vdash_e \{s'': \text{there is an eating in } s''\} \wedge \text{Theme}(s')=x$
$=_{abbr} \lambda x.\lambda s'.\ {}^{\Vdash_e}\text{eating}_{s,t}(s') \wedge \textsc{Theme}(s')=x$

Note that if the verb denoted a set of potentially non-minimal situations in which there is eating (64), then the result of adding an internal argument would be quite strange. For example, after saturating the function by an individual **the peanut**, we would get a set of situations (of different sizes) in which there is some eating and in which the peanut is an undergoer of something. Under this description, a situation in which a blue jay is eating seeds and Tanya is shelling the peanut would be a situation of eating the peanut. This is intuitively wrong.

(64) *Non-minimal meaning for eat* (*wrong*)
$[\![eat\ \Theta_{Th}]\!]^{s,g,t} = \lambda s'.\ s' \sqsubseteq s \wedge s'$ is at t $\wedge\ s' \in \{s'': \text{there is an eating in } s''\} \wedge$ Theme(s')=**the peanut**

Thus, in order to severe arguments from verbs, we need verbs to denote predicates of exemplifying situations.[18]

I assume that "functional" items like determiners, connectives, quantifiers, etc. have semantic values that are situation-independent:[19]

(65) *Sample lexical entries for functional words*

a. $[\![the]\!]^{s,g,t} = \lambda f: f \in D_{et}.\ \iota x(f(x)=1)$
b. $[\![a]\!]^{s,g,t} = \lambda f: f \in D_{et}.\lambda k: k \in D_{et}.\ \exists x[f(x)=1 \wedge k(x)=1]$
c. $[\![\text{NEG}]\!]^{s,g,t} = \lambda p: p \in D_t.\ \neg p$
d. $[\![\text{AND}]\!]^{s,g,t} = \lambda p: p \in D_{st}.\lambda q: q \in D_{st}.\lambda s': s' \in D_s.\ p(s')=1 \wedge q(s')=1.$

I will assume that the interpretation of traces and pronouns is done with the help of the assignment function g: they denote the object that g returns when applied to the pair of the number and type that we find on the trace/pronoun.

(66) *Trace & Pronoun Interpretation:*
For any situation s, assignment g and time interval t,
$[\![t_{<n,\sigma>}]\!]^{s,g[<n,\sigma>\rightarrow x],t} = [\![pro_{<n,\sigma>}]\!]^{s,g[<n,\sigma>\rightarrow x],t} = x$

I will assume that syntactic roots are paired with meanings by the operation of *Sense Insertion* (Schwarzschild 2022), (67), which is parallel to *Vocabulary Insertion*, and pairs meanings with abstract roots that syntax operates on (see Harley 2014, a.o., on the identity of roots). Just as *Vocabulary Insertion* is subject to *allomorphy*, *Sense Insertion* is subject to *allosemy*: what meaning is paired with the root can de-

[18] If we took a more traditional Davidsonian apparoach (Davidson 1967), according to which all arguments are introduced directly by the verb, we wouldn't necessarily have to commit ourselves to the minimal semantics for verbs:

(i) $[\![eat]\!]^{s,g,t} = \lambda x.\lambda y.\lambda s'.\ s' \sqsubseteq s \wedge s'$ is at t $\wedge$ x,y $\sqsubseteq s' \wedge$ there is an eating of x by y in s.

Severing the arguments will however turn out to be useful for us, as we will be looking at cases where the same verbal root is inserted into different argument structures.

[19] I will however propose in section 2.3 of chapter 2 that one of the functional elements in the left periphery of embedded clauses, Comp, is situation-dependent. This choice will become important for the analysis of polarity subjunctives in chapter 5.

pend on the syntactic environment in which the root finds itself, (67b).

(67) *Sense Insertion*

a. *Sense Insertion* is an operation of association of meanings with abstract roots that occupy terminal nodes.
$\sqrt{\text{SQUIRREL}} \Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda x.\ \text{squirrel}(x)_{s,t}$
$\Theta_{Caus} \Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x.\lambda s'.\ p(s')=1 \wedge \textsc{Causer}(s')=x$

b. *Allosemy* is a situation of *Sense Insertion* being dependent on the syntactic environment: the choice of the meaning paired with an abstract root depends on the syntactic nodes in its vicinity.
$\Theta_{Appl} \Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x.\lambda s'.\ p(s')=1 \wedge \textsc{Recipient}(s')=x\ /\_\_\_\sqrt{\text{GIVE}}$
$\Theta_{Appl} \Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x.\lambda s'.\ p(s')=1 \wedge \textsc{Benefactor}(s')=x\ /\_\_\_\sqrt{\text{OPEN}}$

The rule for interpreting terminal nodes within this framework is stated in (68): the interpretation of a terminal α with respect to a situation s, an assignment function g and a time interval t is the result of applying the meaning m paired with the abstract root r in this terminal node to s, g and t.

(68) *Interpreting Terminal Nodes*
If α is a terminal node that is a pair <*r*,*m*> of an abstract root r (with its syntactic features) and a meaning m, then $[\![\alpha]\!]^{s,g,t} = m(s)(g)(t)$.

In addition to (68), I will assume four main rules of semantic composition, written after the rules in (Heim & Kratzer 1998) and (von Fintel & Heim 1997-2020): Functional Application (69), Intensional Functional Application (70), Predicate Modification (71) and Predicate Abstraction (72). In chapter 5 we will need an additional rule for interpreting focus, and it will be introduced in that chapter.

(69) *Functional Application* (*FA*)
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are and $[\![\beta]\!]^{s,g,t}$ is a function whose domain contains $[\![\gamma]\!]^{s,g,t}$. In this case, $[\![\alpha]\!]^{s,g,t} = [\![\beta]\!]^{s,g,t}([\![\gamma]\!]^{s,g,t})$.

(70) *Intensional Functional Application* (*IFA*)

a. If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are and $[\![\beta]\!]^{s,g,t}$ is a function whose domain contains λs: s $\in$ D_s.$[\![\gamma]\!]^{s,g,t}$. In this case, $[\![\alpha]\!]^{s,g,t} = [\![\beta]\!]^{s,g,t}(\lambda$s: s $\in$ D_s.$[\![\gamma]\!]^{s,g,t})$.

b. If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are and $[\![\beta]\!]^{s,g,t}$ is a function whose domain contains λt: t $\in$ D_i.$[\![\gamma]\!]^{s,g,t}$. In this case, $[\![\alpha]\!]^{s,g,t} = [\![\beta]\!]^{s,g,t}(\lambda$t: t $\in$ D_i.$[\![\gamma]\!]^{s,g,t})$.

(71) *Predicate Modification* (*PM*)

If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are, if there is some domain $D_{<\sigma,t>}$ such that both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are in it, and there is some item $x \in D_\sigma$ such that $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are both defined for it. In this case, $[\![\alpha]\!]^{s,g,t} = \lambda$x: x in D_σ and x is in the domain of both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$. $[\![\beta]\!]^{s,g,t}$(x) = $[\![\gamma]\!]^{s,g,t}$(x) = 1.

(72) *Predicate Abstraction* (*PA*)

If α is a branching node, $\{\lambda_i,\gamma\}$ is the set of α's daughters, where i is an index—a pair of a natural number $n \in \mathbb{N}$ and a type σ, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if $[\![\gamma]\!]^{s,g,t}$ is. In this case, $[\![\alpha]\!]^{s,g,t} = \lambda$x: x $\in$ D_σ. $[\![\gamma]\!]^{s,g[i\to x],t}$.

Note that Intensional Functional Application is divided into two parts. If a certain operator wants a property of time intervals, we will abstract only over temporal intervals (temporal intension). If a certain operator wants a property of situations, we will abstract only over situations (situational intension).[20]

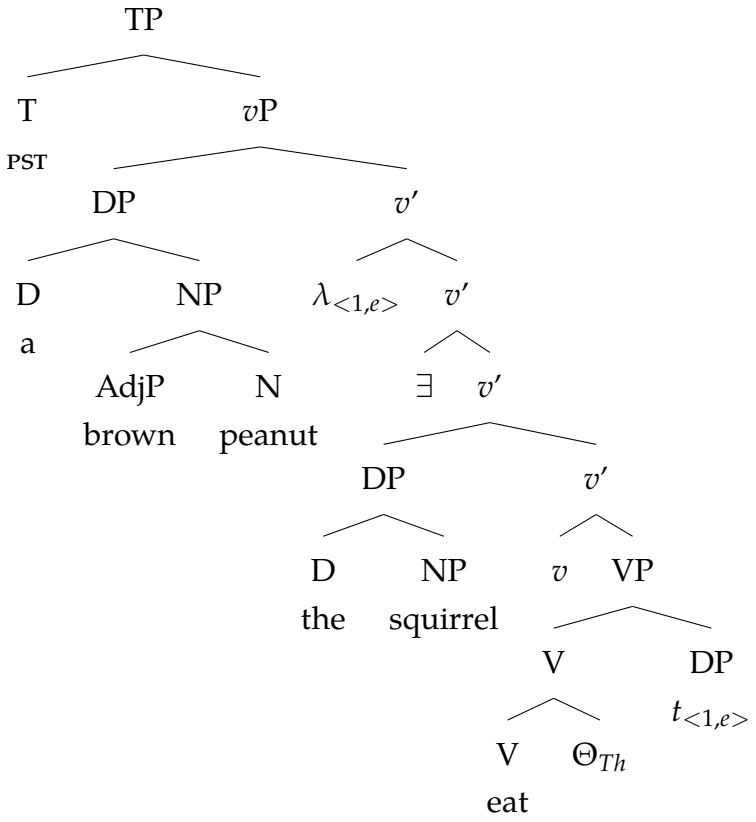
[20] As currently stated, Intensional Functional Application doesn't allow for operators that would shift both the situation parameter and the time parameter at the same time. We will not have a need for such operators within the context of this thesis, but if such operators are needed for other phenomena, another clause could be added to the rule that would enable such composition:

(i) If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are and $[\![\beta]\!]^{s,g,t}$ is a function whose domain contains λs: s $\in$ D_s. λt: t $\in$ D_i. $[\![\gamma]\!]^{s,g,t}$.
In this case, $[\![\alpha]\!]^{s,g,t} = [\![\beta]\!]^{s,g,t}(\lambda$s: s $\in$ D_s. λt: t $\in$ D_i.$[\![\gamma]\!]^{s,g,t})$.

Let us now illustrate how the system works by deriving the denotation of the sentence in (73). The external argument is introduced by v, the internal argument is introduced by Θ_{Th}. I will assume that at LF the external argument is in Spec,vP. In (74) the quantificational phrase *a brown peanut* undergoes QR to avoid a type mismatch in its base generated position, and leaves a trace of type e.[21,22]

(73) The squirrel ate a brown peanut.

(74) LF for (73).



Let us first consider the derivation of the vP (75).

(75) $[\![[_{vP}$ *the squirrel eat a brown peanut*$]]\!]^{s,g,t}$ = by FA

a. $[\![[_{DP_1}$ *a brown peanut*$]]\!]^{s,g,t}([\![[_{v'}\ \lambda_{<1,e>}$ *the squirrel eat* $t_{<1,e>}]]\!]^{s,g,t})$
= by FA and PA

[21] Whether or not movement should be handled by the copy theory will not be important for anything discussed in the thesis. One can assume that there is a copy of the DP in the complement position of the verb, but it undergoes Trace Conversion at LF—a post-syntactic operation that replaces lower copies of determiners with bound definite determiners (Fox 2002, 2003).

[22] In this thesis I will omit potential aspectual projections and their contribution for simplification.

b. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.[\![\exists \textit{ the squirrel eat } t_{<1,e>}]\!]^{s,g[<1,e>\rightarrow x],t}) =$
by multiple applications of FA

c. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ [\![\exists]\!]^{s,g[<1,e>\rightarrow x],t}(\ [\![v]\!]^{s,g[<1,e>\rightarrow x],t}$
$([\![\textit{eat } t_{<1,e>}]\!]^{s,g[<1,e>\rightarrow x],t})([\![\textit{the squirrel}]\!]^{s,g[<1,e>\rightarrow x],t})))$
= by multiple FA

d. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ [\![\exists]\!]^{s,g[<1,e>\rightarrow x],t}(\ [\![v]\!]^{s,g[<1,e>\rightarrow x],t}$
$([\![\Theta_{Th}]\!]^{s,g[<1,e>\rightarrow x],t}([\![\textit{eat}]\!]^{s,g[<1,e>\rightarrow x],t})([\![t_{<1,e>}]\!]^{s,g[<1,e>\rightarrow x],t}))$
$([\![\textit{the}]\!]^{s,g[<1,e>\rightarrow x],t}([\![\textit{squirrel}]\!]^{s,g[<1,e>\rightarrow x],t}))))$
= by lexical entries for $t_{<1,e>}$, *eat*, FA and Trace Interpretation

e. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ [\![\exists]\!]^{s,g[<1,e>\rightarrow x],t}([\![v]\!]^{s,g[<1,e>\rightarrow x],t}$
$(\lambda s'.\ ^{\Vdash_e}\text{eating}_{s,t}(s') \wedge \textsc{Theme}(s')=x\ )\ ([\![\textit{the}]\!]^{s,g[<1,e>\rightarrow x],t}$
$([\![\textit{squirrel}]\!]^{s,g[<1,e>\rightarrow x],t})))$
= by the lexical entries for v and *the*, FA

f. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ [\![\exists]\!]^{s,g[<1,e>\rightarrow x],t}\ ((\lambda p.\lambda y.\lambda s'.p(s')=1$
$\wedge \textsc{Agent}(s')=y)(\lambda s'.\ ^{\Vdash_e}\text{eating}_{s,t}(s') \wedge \textsc{Theme}(s')=x\ )(\iota y(\text{squirrel}(y)_{s,t}))))$
= by Lambda Conversion

g. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ [\![\exists]\!]^{s,g[<1,e>\rightarrow x],t}(\lambda s'.^{\Vdash_e}\text{eating}_{s,t}(s')$
$\wedge \textsc{Theme}(s')=x \wedge \textsc{Agent}(s')=(\iota y(\text{squirrel}(y)_{s,t})))$
= by existential closure

h. $[\![a]\!]^{s,g,t}([\![\textit{brown peanut}]\!]^{s,g,t})(\lambda x.\ \exists s'[^{\Vdash_e}\text{eating}_{s,t}(s') \wedge \textsc{Theme}(s')=x$
$\wedge \textsc{Agent}(s')=\iota y(\text{squirrel}(y)_{s,t})])$
= by lexical entries for *brown* and *peanut* and PM

i. $[\![a]\!]^{s,g,t}(\lambda x.\ \text{brown}(x)_{s,t} \text{ and } \text{peanut}(x)_{s,t})(\lambda x.\ \exists s'[^{\Vdash_e}\text{eating}_{s,t}(s')$
$\wedge \textsc{Theme}(s')=x \wedge \textsc{Agent}(s')=\iota y(\text{squirrel}(y)_{s,t})])$
= by the lexical entry for *a* and FA

j. $\exists x[\text{brown}(x)_{s,t} \text{ and } \text{peanut}(x)_{s,t} \wedge \exists s'[^{\Vdash_e}\text{eating}_{s,t}(s')$
$\wedge \textsc{Theme}(s')=x \wedge \textsc{Agent}(s')=\iota y(\text{squirrel}(y)_{s,t})]]$

For any situation s, assignment g and time interval t, the semantic value of the vP is the truth-value "true" if and only if there is an individual x in s such that x is brown in s at t and x is a peanut in s at t, and there is a minimal situation of eating s' in s at t such that the unique individual y that is a squirrel in s is the agent of s' and x is the Theme of s'. This is the extension of the vP.

A situational intension of the vP will be a set of situations s which contain a

minimal situation of the squirrel eating a brown peanut:

(76) $\lambda s.[\![[_{vP}$ *the squirrel eat a brown peanut*$]]\!]^{s,g,t} =$
$\{s: \exists x[\text{brown}(x)_{s,t}$ and $\text{peanut}(x)_{s,t} \wedge \exists s'[{}^{|\vdash_e}\text{eating}_{s,t}(s')$
$\wedge$ Theme$(s')=x \wedge$ Agent$(s')=\iota y(\text{squirrel}(y)_{s,t})]]\}$

In other words, such an intension of the *v*P is a proposition—it is not a set of minimal situations, but a set in which we have situations of any size as long as they contain a minimal situation of the squirrel eating a brown peanut.

For now let us assume a simplified existential lexical entry for the past tense, which takes a property of time intervals and returns "true" if the temporal intension of the *v*P is true of some time interval t' that precedes the evaluation time t:

(77) $[\![\text{pst}]\!]^{s,g,t} = \lambda p: p \in D_{it}.\ \exists t' < t\ [p(t')=1]$

The past tense T combines with the *v*P by IFA: it takes its temporal intension, (78), as its argument, resulting in the extension of the TP in (79).

(78) $\lambda t: t \in D_i.[\![[_{vP}$ *the squirrel eat a brown peanut*$]]\!]^{s,g,t} =$
$\{t: \exists x[\text{brown}(x)_{s,t}$ and $\text{peanut}(x)_{s,t} \wedge \exists s'[{}^{|\vdash_e}\text{eating}_{s,t}(s') \wedge$ Theme$(s')=x$
$\wedge$ Agent$(s')=\iota y(\text{squirrel}(y)_{s,t})]]\}$

(79) $[\![\text{TP}]\!]^{s,g,t} = 1$ iff $\exists t' < t\ [\exists x[\text{brown}(x)_{s,t'}$ and $\text{peanut}(x)_{s,t'} \wedge \exists s'[{}^{|\vdash_e}\text{eating}_{s,t'}(s')$
$\wedge$ Theme$(s')=x \wedge$ Agent$(s')=\iota y(\text{squirrel}(y)_{s,t')}]]\ ]$

For any situation s, assignment g and time interval t, the denotation of the TP will be "true" if there is a time interval t' preceding t such that the situation s at t' contains a minimal situation of the squirrel eating a brown peanut.

The situational intension of TP is shown in (80).

(80) $\lambda s.[\![\text{TP}]\!]^{s,g,t} = \{s: \exists t' < t\ [\exists x[\text{brown}(x)_{s,t'}$ and $\text{peanut}(x)_{s,t'} \wedge \exists s'[{}^{|\vdash_e}\text{eating}_{s,t'}(s')$
$\wedge$ Theme$(s')=x \wedge$ Agent$(s')=\iota y(\text{squirrel}(y)_{s,t')}]]]\}$

This is a set of situations s of all sizes such that there is a time interval t' preceding t at which s contains a minimal situation of the squirrel eating a brown peanut.

Thus, in the system that we set up, although verbal predicates range over minimal situations of a certain kind (we can think of them as events), intensions of both *v*Ps and TPs are sets of situations that are not restricted in their size—propositions.

1.3 Causes of ungrammaticality

I assume that there are at least two kinds of reasons why a given sentence could be perceived as ungrammatical:

(81) *Causes of ungrammaticality*

a. Underivability

b. Uninterpretability

(i) failure to compute the value of some object(s)

(ii) semantic triviality (*L-analyticity*)

The first cause of ungrammaticality is **underivability**: the syntactic structure that would correspond to this sentence is not derivable by the syntactic component. For example, if we assume that Agree is a syntactic operation that must be initiated, then we could say that the version of the sentence in (82) without agreement cannot be derived by the English grammar, because it corresponds to a derivation in which Agree is not triggered by the probe on T.

(82) Helen *jog /✓ jogs on Sundays.

Any ungrammaticality that is due to a syntactic principle that rules out a certain syntactic configuration is ungrammaticality from underivability.

The second reason why sentences could be ungrammatical is **uninterpretability**: the syntactic representation that is the output of the narrow syntax itself is well-formed, but running it through the LF component and attempting to derive its semantic value fails. I assume that uninterpretability comes in at least two sorts. Some sentences are not interpretable because there is some syntactic object (or several) at LF for which the semantic value cannot be computed. This would arise, for example, if there is some object α with branching daughters β and γ such that no principle of semantic composition could apply to determine the semantic value of α. For example, if in (74) we did not do QR of the indefinite phrase, we would have gotten a type mismatch, and the sentence would have been uninterpretable.

I will assume that there is another sort of uninterpretability: *L-analyticity* (Barwise & Cooper 1981, von Fintel 1993, Gajewski 2002, Chierchia 2013, a.m.o.). *L-analyticity* is a property of sentences: sentences whose meanings are always true or always false in the virtue of their logical structure are L-analytic. A hypothesis

proposed in the literature is that L-analytic sentences are ungrammatical, (83).

(83) *L(ogical)-analyticity* (Gajewski 2002)

a. L-analytic sentences are those that are true or false in virtue of their logical structure.

b. L-analytic sentences are ungrammatical.

The question that an approach assuming L-analyticity as a source of ungrammaticality needs to address is what exactly is considered to be "the logical structure" (see Gajewski 2002 and Chierchia 2013 for formulations). The general intuition pursued in the literature is that natural language makes a distinction between *logical, functional vocabulary* and *non-logical, open-class vocabulary*. If the sentence is always true or always false when we keep the logical building blocks of the sentence constant but change non-logical items in arbitrary ways, then it is L-analytic. If however some arbitrary manipulation of open-class items makes the sentence non-trivial (sometimes true, sometimes false), then it should not be considered L-analytic and should not lead to ungrammaticality.

The question of which vocabulary items should be considered logical and which non-logical is of course something that still needs to be worked out. Overall, people employing L-analyticity as a concept would probably agree that items like *determiners, negation, connectives, quantifiers* belong to the logical vocabulary, whereas items like *nouns, adjectives,* and *verbs* belong to the non-logical, open-class vocabulary.

Now let me illustrate the idea of L-analyticity by comparing a case of non-logical triviality with a case of logical triviality. In (84) we see sentences that could be thought of as trivial: (84a) is a sentence that should be always true, (84b) is a sentence that should be always false.[23]

[23]It is worth noting that it is not obvious from the way such sentences are used that they are always true and false respectively. Dialogues in (i) and (ii) suggest that it is possible for someone to argue that (84a) is false and (84b) is true.

(i) A: A cat is a cat!
B: That's not true. Some cats are a lot cuter than others.

(ii) A: This is fun, and this is not fun.
B: Totally. Who would have thought that participating in this event could be great and awful at the same time.

If (84a) and (84b) were always true and false respectively, it is not clear that we should expect their truth/falsity to be up for debate. It seems to me that in felicitous uses of (84a) and (84b) the

(84) a. A cat is a cat.
b. This is fun and this is not fun.

The fact that (84a) is trivially true and (84b) is contradictory does not however lead to ungrammaticality. The idea is that this is the case because these sentences are not L-analytic: they are not trivial due to the *logical* structure involved in them. Both *cat* and *fun* are open-class, non-logical lexical items. If we decide to substitute the second uses of these items in (84) for some other open-class items of the same kind, the sentences will no longer be trivially true or false:[24]

(85) a. A cat is a pet.
b. This is fun and this is not tiring.

In (86b) we see a case of an ungrammatical sentence which has been argued to be ungrammatical due to being trivially false (von Fintel 1993). We see in (86) that well-formedness of sentences with exceptives depends on the quantifiers involved, in particular on the whether the quantifiers are downward monotone with respect to their restrictor: *no one* and *everyone* are, but *someone* and *exactly one* are not.

(86) a. No one/everyone but John smokes.
b. *Someone/exactly one student but John smokes.

von Fintel (1993) proposes semantics for exceptives that can be generally characterized as in (87):

(87) *General idea of what exceptives mean:*
$\mathbf{Q(Restrictor — Individual)(Scope) = 1 \wedge Q(Restrictor)(Scope) = 0}$,
where "Q" is the quantifier, "Individual" is the set containing the individual introduced by the exceptive, "—" = operation of subtraction

A sentence containing an exceptive phrase tells us that the relation described by the quantifier holds between the scope set and the restrictor set out of which the individual introduced by the exceptive phrase has been substracted. It also tells us

sentences are not really interpreted as tautologies, and some mechanism of interpreting the same two predicates in two different ways might be involved.

[24]It is assumed that in the substitution procedure we do not have to uniformly substitute *all* occurences of an open-class item for a different open-class item. This allows us to substitute only second, but not first occurences of *cat* and *fun* in the sentences.

that the relation described by the quantifier does not hold between the scope set and the restrictor set.

If we apply this semantics to quantifiers like *no one*, which are downward entailing on their first argument, we will get a reasonable meaning (88).

(88) No one but John smokes.
$(\{x\text{: x is a person}\} - \text{John}) \cap \{x\text{: x smokes}\} = \emptyset \wedge$
$\{x\text{: x is a person}\} \cap \{x\text{: x smokes}\} \neq \emptyset$

(88) tells us that the intersection of the set of (perhaps, contextually salient) people minus John and the set of smokers is empty. It also tells us that if we don't remove John from the set of people, and take its intersection with the set of smokers, it will not be null. This correctly derives the inference that John must be a smoker.

Now consider what meaning we will get with a quantifier like *someone*, which is upward entailing on its first argument (89).

(89) *Someone but John smokes.
$(\{x\text{: x is a person}\} - \text{John}) \cap \{x\text{: x smokes}\} \neq \emptyset \wedge$
$\{x\text{: x is a person}\} \cap \{x\text{: x smokes}\} = \emptyset$

(89) is a conjunction of two statements. The first one tells us that the intersection of the set of people minus John and the set of smokers is not null. This means that there must exist a person who smokes. The second conjunct tells us that the intersection of the set of people and the set of smokers is null. This means that there is no person who smokes. Thus, the two conjuncts contradict each other, and the sentence will always be false. Note though that in this case it is not possible to find a substitution of some open-class elements that would make the meaning of a sentence non-trivial. We could swap *John* for *Susi*, or *smokes* for *runs*, or *person* for *student*—it will not make any difference. As long as we keep the meanings of the quantifier and the exceptive (both logical items) intact, we will always get a sentence that is false. Thus, the sentence in (89) is L-analytic—always false in the virtue of its logical structure—and the grammar renders it ungrammatical.

To sum up, it has been argued in the literature that there is a general principle that declares that sentences are ungrammatical if their logical structure necessarily produces meanings that are trivially true or trivially false. I will adopt this principle, and try to provide further evidence for the view that L-analyticity is responsible

for the impossibility of certain patterns of clausal embedding (see Mayr 2018, 2019, T. Roberts 2019, Theiler, Roelofsen & Aloni 2019, Uegaki & Sudo 2019, a.o.).

1.4 Roadmap of the chapters

Chapter 2 argues that embedded finite clauses can have at least two different meanings: they can be predicates of individuals with propositional content or predicates of exemplifying situations. The discussion is primarily based on clauses that combine with nouns like 'idea' and nouns like 'situation' in Russian and Korean. This chapter grew out of my procedings paper:

> The dual life of embedded CPs: evidence from Russian *čto*-clauses. In Nicole Dreier, Chloe Kwon, Thomas Darnell, and John Starr (eds.) *Proceedings of the 31st Semantics and Linguistic Theory Conference* (*SALT 31*). P. 304-323. <Link>

Chapter 3 formulates the predictions that the two meanings postulated in chapter 2 make for clausal conjunction and disjunction, and evaluates these predictions. The crucial data comes from Korean, but there is also data from English, Hebrew, Italian and Russian. Among other things, I show that while constituents whose situational intensions are propositions (vPs and TPs) can be conjoined by intersective conjunction, constituents of higher projections in the C-domain cannot. I argue that the semantics introduced in chapter 2 provides a simple account of this restriction. It's good to be familiar with the chapter 2 before reading this chapter. This chapter grew out of a proceedings paper by Itai Bassi and me:

> Composing CPs: evidence from disjunction and conjunction. In Joseph Rhyne, Kaelyn Lamp, Nicole Dreier, and Chloe Kwon (eds.) *Proceedings of the 30th Semantics and Linguistic Theory Conference* (*SALT 30*). P. 583–602. <Link>

Chapter 4 explores the relation between the inner syntax of finite embedded clauses and the way they are integrated into the matrix clause. I argue that there is a one-to-one mapping between nominalization of the CP and its role in the argument structure: nominalized CPs (containing clausal constituents with both types of meaning

from the chapter 2) are always arguments with nominal Θ-roles, and bare CPs are always event modifiers describing propositional content. I show that the integration path of the clause, together with its meaning, can have consequences for the presuppositions associated with it, as well as for whether it is transparent for extraction. The data used in this chapter is primarily from Russian and Buryat; some Korean data is discussed as well. Familiarity with the chapter 2 will be helpful, knowledge of the chapter 3 is not needed. This chapter grew out of my project on verbs like *ob"jasnit'* 'explain' in Russian and of the study of Buryat complementation, in particular of Buryat factivity alternation with the verb *hanaxa*:

> How do we explain that CPs have two readings with some verbs of speech? To appear in *Proceedings of the 39th West Coast Conference on Formal Linguistics* (*WCCFL 39*). <Link>
>
> Factivity from pre-existence: Evidence from Barguzin Buryat. *Glossa: a journal of general linguistics* 5(1): 109. 1–35. 2020. <Link>

Chapter 5 attempts to contribute to the question of how the environment in which the clause and the embedding verb find themselves might influence selection. This is a case study of two classes of polarity subjunctives in Russian: subjunctive complement clauses that behave like weak NPIs, and subjunctive complement clauses that behave like strong NPIs. I will be concerned with two questions: (i) why does the environment matter for selection?, and (ii) why do only certain verbs take these weak/strong NPI subjunctives?

I propose that environment can matter for selection because clauses can contain elements that activate alternatives, and whether these alternatives will be successfully dealt with can depend on the matrix environment. I argue that the meanings of embedded clauses and integration paths a verb allows are important for whether it can occur with polarity subjunctives: e.g., only Sit-CPs, but not Cont-CPs, can behave like weak NPIs, which restricts the range of verbs that can combine with weak polarity subjunctives. It's good to be familiar with the chapter 2 before reading this chapter, familiarity with other chapters is not needed.

Conclusion summarizes the key ideas argued for in this thesis and the typology of clausal embedding strategies for tensed clauses that emerges from them. It also briefly discusses some open research questions that arise from my proposal.

Part I

Meanings of Embedded Clauses

Chapter 2

Two meanings for embedded CPs

2.1 Introduction

This chapter is concerned with the following question: what kinds of meanings do tensed embedded clauses have? Here are some candidates that we might consider as potential meanings of the embedded clause *that the squirrel ate the nuts*:

(1) $[\![$*that the squirrel ate the nuts*$]\!] = ?$

a. $\{s : \text{the squirrel ate the nuts in } s\}$

b. $\{w : \text{the squirrel ate the nuts in } w\}$

c. $\{s : s \text{ is a minimal situation of the squirrel eating the nuts}\}$

d. $\{x : \textsc{Content}(x) = \{s' : \text{the squirrel ate the nuts in } s'\}\}$

The denotation in (1a) proposes that the meaning of the embedded clause is a set of situations in which the squirrel ate the nuts. This set will contain situations of all sizes, from very small situations that contain the squirrel eating the nuts and nothing else[1] to whole worlds containing such situations, as is shown in figure 2.1.[2]

[1] One might wonder if there are such minimal situations: is it possible for a situation to contain the squirrel eating the nuts and nothing else? E.g., if a squirrel is hungry, would a minimal situation of the squirrel eating the nuts contain the squirrel's hunger? This question is a complicated one, and the answer depends on how we define what *a minimal situation* is (see Kratzer 1989, 2002, 2020 for discussion of this in Kratzer's situation semantics, and Fine 2017a,b,c for the notion of an *exact verifier* in truthmaker's semantics), and also on our assumptions about how individuals become parts of situations (see discussion of "thick" and "thin" particulars in Armstrong 1978, Kratzer 1989).

[2] According to von Fintel & Heim (1997-2020: p. 6), *"a possible world is a way that things might have been"*. Thus, the leftmost picture in this figure is not quite accurate: it should contain not only the Earth, but in addition to it *"the solar system, the entire Milky Way, the remote galaxies we see through*

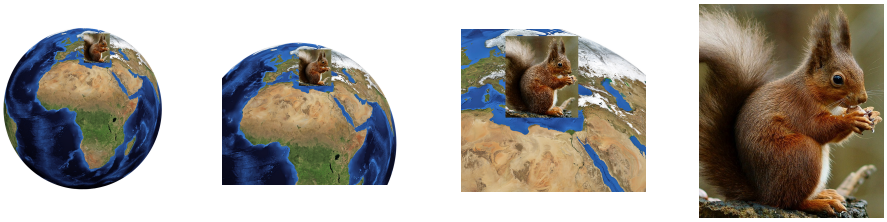


Figure 2.1: Sample situations in the set of situations in which the squirrel ate the nuts.

In Kratzer's situation semantics (Kratzer 1989, 2002, 2020), (1a) is the meaning of a proposition. Thus, equating it with the meaning of the embedded clause would imply that embedded clauses denote propositions.

The denotation in (1b) also suggests that embedded clauses denote propositions, but it involves a different idea of what kinds of objects propositions contain. According to (1b), propositions are sets of worlds, and thus *that the squirrel ate the nuts* would denote the set of maximal situations—*possible worlds*—in which the squirrels ate the nuts (figure 2.2).

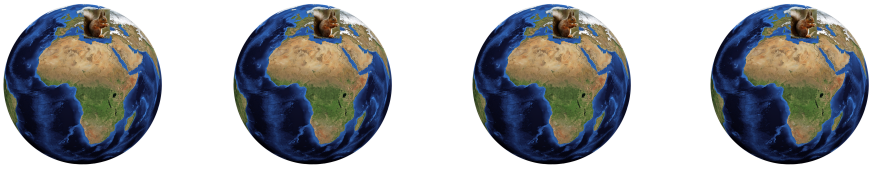


Figure 2.2: Sample worlds in the set of worlds in which the squirrel ate the nuts.

This is the most common hypothesis about the meaning of embedded clauses.

The denotation in (1c) suggests that we should equate the meaning of the embedded clause with the set of minimal situations in which the squirrel ate the nuts. Roughly speaking, we would like to include only those situations that contain the squirrel eating the nuts and do not contain anything else—i.e., contain nothing irrelevant to the squirrel eating the nuts situation (see figure 2.3).

Here I use *a minimal situation* as a pre-theoretical umbrella term covering *exemplifying situations* (Kratzer 1989, 2020), *exact verifiers* (Fine 2017a,b,c, Moltmann 2020, 2021b, a.o.), and *events* (Davidson 1967, Parsons 1990, 1995, Champollion 2015, a.o.). The intuition behind all these notions, as I understand them, is that

telescopes, and (if there are such things) all the bits of empty space between the stars and galaxies" (Lewis 1986: p. 1). So I ask the reader to please imagine all of that in addition to the Earth containing the squirrel eating the nuts on the leftmost picture of 2.1, as well as in the pictures of figures 2.2 and 2.4.

Figure 2.3: Sample situations in the set of minimal situations in which the squirrel ate the nuts.

there are some objects that are minimal chunks of the world in which a certain proposition is true, and natural languages can refer to such objects. The denotation in (1c) proposes that a set of such objects should be the meaning of the embedded clause. Semantic theories that make reference to minimal situations differ in whether they equate a proposition with a set of minimal situations. For example, in Kratzer's situation semantics (Kratzer 1989, 2020) a proposition is not a set of minimal situations, but in truthmaker semantics (Fine 2017c, Moltmann 2020, a.o.) a proposition is equated with the set of minimal situations—its *exact verifiers*.[3]

Finally, the denotation in (1d) does not equate the meaning of the embedded clause with a proposition. Instead, it states that the embedded clause denotes a set of objects of a particular kind: these are objects which are associated with propositional content. For example, objects such as **rumors** and **ideas**, or **events of thinking** or **saying** are abstract entities that have propositional content (Moltmann 1989, Kratzer 2006, Moulton 2009, Moltmann 2013, 2014, Moulton 2015, Bogal-Allbritten 2016, Kratzer 2016, Bogal-Allbritten 2017, Elliott 2020, Moltmann 2020). Formally, we can capture the distinction between objects like **rumors**, which have propositional content, and objects like **apples**, which do not have propositional content, by postulating a partial function CONT(ENT) from the domain of entities to the domain of propositions. The difference between **rumors** and **apples** is then that the former are in the domain of CONT, but the latter are not. What the definition in (1d) then states is that the meaning of the embedded clause is a set of objects with the same propositional content—a set of objects such that the CONT function returns the same proposition *the squirrel ate the nuts* when applied to them (see figure 2.4).

In the figure 2.4 the proposition is illustrated as if it is the set of maximal situ-

[3]This is true only for the unilateral definition of a proposition. Under a bilateral definition of a proposition, it is a pair consisting of a set of verifiers and a set of falsifiers of a certain statement (= situations that verify the negation of that statement).

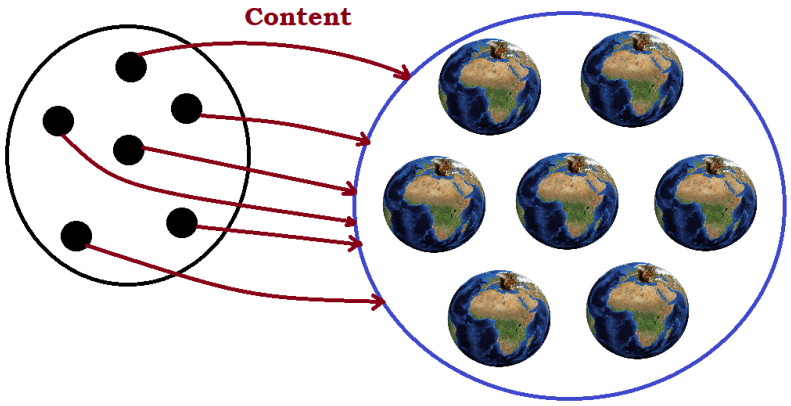


Figure 2.4: A set of individuals with the content "The squirrel ate the nuts".

ations (= worlds) in which the squirrel ate the nuts. This does not have to be the case. However propositions are defined in our theory, we could make CONT return them: it could return the set of minimal situations in which the squirrel ate the nuts, the set of maximal situations of this kind, or the set of situations of all sizes in which the squirrel ate the nuts. The last option is what is written in (1d).

So which meaning(s) in (1), if any, are correct denotations for tensed embedded clauses? This is an empirical question, which this chapter is trying to address by investigating tensed clauses that combine with nouns, such as in (2)-(3).

(2) Kagin dismissed [**the idea** [$_{CP}$ that the coins could be connected to the turn-of-the-century heist]]. <Link-to-source>

(3) Construct a sample space for [**the situation** [$_{CP}$ that the coins are indistinguishable, such as two brand new pennies]. <Link-to-source>

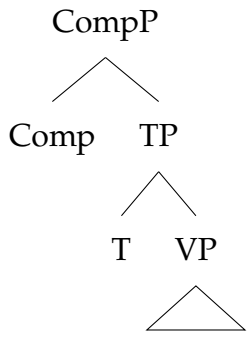
In addition to determining the meanings associated with such clauses, we will be interested in how such meanings are compositionally arrived at. Do the elements at the left periphery of the embedded clause have any semantic contribution to its meaning? Are complementizers like *that* semantically vacuous? A common view in the literature is that complementizers do not carry any meanings.[4] This

[4]There are, of course, exceptions to this common view. For example, Davidson (1968) proposes that a sentence like *Galileo said that the Earth moves* contains two paratactically related sentences, *Galileo said that*, where *that* has the meaning of a demonstrative, and *the Earth moves*, which provides the content of the thing that Galileo said. Chierchia & Turner (1988: 300, fn.14) hypothesize that complementizers might be elements that map information units (= propositions) into their individual correlates. In (Chierchia 2019) factive complementizers are claimed to map propositions to facts.

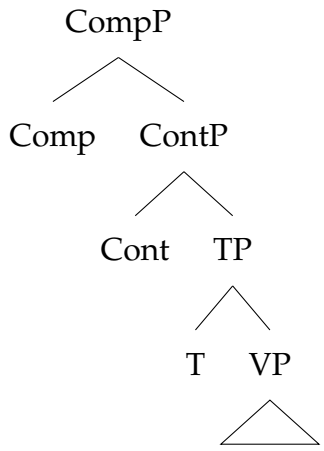
view is common because it is often assumed (following Hintikka 1962, 1969) that embedding verbs are modal operators that apply to propositions. Assuming that TPs denote propositions, this implies that the C-layer is semantically vacuous.[5]

In this chapter, as well as chapter 3, I argue that, contra the common view, elements on the left periphery of embedded clauses have non-trivial semantic contributions. Concretely, they turn propositions, which I will assume to denote sets of situations of all sizes (1), into meanings like (1c) and (1d). I propose that clauses with meanings like (1d) have an extra projection in their left periphery (ContP) which clauses with meanings like (1c) lack, (4)–(5). Cont is the syntactic head that introduces displacement into the meaning of the embedded clause. I argue that the CompP layer introduces the minimality requirement: it demands that we consider only minimal entities in the denotation of the TP/ContP it combines with.

(4) *CP with a meaning like in (1c)*



(5) *CP with a meaning like in (1d)*



This chapter is structured as follows. In section 2.2 I examine clauses that combine with nouns like *situation* and clauses that combine with nouns like *idea*. I discuss the morphosyntax of these two kinds of clauses, argue that they are modifiers to nouns, and show that their meanings are not identical: only clauses that combine with nouns like *idea* involve displacement, and are thus referentially opaque.

Portner (1992: p. 44) proposes that complementizers denote functions that take propositions and return properties. Szabolcsi (1997, 2016) argues that complementizers denote type-shifters that lift propositions into functions that take the meaning of the matrix verb as their argument and return the result of applying it to the embedded proposition.

[5]We see the assumption that declarative embedded CPs denote propositions, for example, in the family of Question-to-Proposition reduction approaches to interrogative embedding (see Uegaki 2019: ex. (5)), among other places in the literature.

In section 2.3 I present my proposal: I argue that CPs that combine with nouns like *situation* have meanings like (1c), and CPs that combine with nouns like *idea* have meanings like (1d). In section 2.4 I provide evidence for the two components of my proposal: the relationship between the CONTENT function and the embedded proposition being that of equality, and the use of *exemplification* (Kratzer 1989, 2020) in implementing the minimality requirement introduced by Comp. In section 2.5 I show that clauses that combine with verbs also come in the same two types as clauses that combine with nouns. Section 2.6 concludes the chapter.

2.2 Sit-CPs and Cont-CPs as complements to nouns

Let us take clauses that combine with nouns as the starting point of our investigation of clausal meanings. There are at least two distinct classes of nouns that finite declarative clauses can combine with. The first class is what I will call **content nouns** (**Cont-NPs**): these are nouns like *idea*, *rumor*, *hypothesis*, *fact*, *lie*. When finite clauses combine with such nouns, they seem to describe propositional content associated with individuals denoted by these nouns:[6]

[6] It might be unintuitive that facts should be considered individuals with content; we might have thought that they are situations—parts of the world—exemplifying propositions. However, linguistically, they seem to behave like individuals with content and not like situations. First, they can combine with predicates like 'true' and 'false' that content nouns can combine with, and they cannot combine with predicates like 'happen' that situation-describing nouns can combine with. To see that this is the case, we cannot look at unembedded sentences like (i) though: if *fact* carries a presupposition that its propositional content is true in the situation of evaluation, then saying it is false could never be true, and saying it is true would be redundant (cf. *#Mary knows that it's raining, and I think she is right.*). Consider examples like in (ii) instead (I thank Patrick Elliott for them).

(i) #This fact is true/false.

(ii) a. John (incorrectly) thinks that this fact is false.
b. #John thinks that this situation is false.
c. #John thinks that this fact didn't happen.
d. John thinks that this situation didn't happen.

We see that (iia) is felicitous: it says that John believes that something which is actually true (= a fact) is false. (iic) shows that predicates like 'happen' cannot occur with *fact*. In (iib) and (iid) we see that nouns like *situation* show the reverse pattern: they can occur with 'happen' but not with 'false'.

Second, data from Korean equative constructions (see section 2.2.2.3) provides another piece of evidence for facts having content. In these constructions, two individuals are equated, and we see that *sasil* 'fact' can be equated with *cwucang* 'claim'. Claims are individuals with content, and so if they can be equated with facts, facts must have content too.

(6) a. Kagin dismissed [**the idea** [$_{CP}$ that the coins could be connected to the turn-of-the-century heist]]. <Link>
b. ...I heard there's [a **rumor** [$_{CP}$ that a certain billionaire investor is about to buy out a specific company]]. <Link>
c. The morphology of tetrahexahedral nanocrystals could be understood on the basis of [a **hypothesis** [$_{CP}$ that the atoms or molecules on or near spherical surfaces can migrate till reaching their equilibrium positions]]. <Link>
d. I really liked [the **fact** [$_{CP}$ that the programme is focused on performance...] <Link>
e. [The **lie** [$_{CP}$ that the election was 'stolen' from Trump]] is building its monuments in ludicrous stories...<Link>

Clauses that combine with content NPs (henceforth, Cont-CPs) received a lot of attention in the literature (Higgins 1973, Stowell 1993, Moltmann 1989, Potts 2002, Kratzer 2006, Arsenijević 2009, Moulton 2009, Moltmann 2013, 2014, Moulton 2015, Kratzer 2016, Elliott 2020, Moltmann 2020, T. Roberts 2020). They have often been used to argue in favor of viewing clauses as modifiers with meanings like in (1d).

The second class of nouns that finite declarative clauses can combine with are what I will call **situation nouns (Sit-NPs):** these are nouns like *situation*, *event*, *case*, *circumstance*, *state of affairs*. In English, *that*-clauses seem to be much less commonly used with such nouns compared to content nouns, however numerous naturally occuring cases can be found, for example:

(7) a. It is [a curious **situation** [$_{CP}$ that the sea, from which life first arose should now be threatened by the activities of one form of that life]]. <Link>

(iii) [Swuna-ka mwuncey-lul phwul-ess-ta-nun] cwucang-i sasil-i-ta.
Swuna-NOM problem-ACC solve-PST-DECL-ADN claim-NOM fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

Finally, note that thinking of facts as exemplifying situations would lose Elliott's account of the definite article restriction that we see when *fact* combines with a *that*-clause (see section 2.4). There is no general requirement that an actual situation has to be unique, one can say things like *Last week there were two situations of Mary being ridiculously late /that Mary was ridiculously late*. So if a fact was just an actual situation exemplifying some proposition, then it would be a mystery why it required a definite article when it combined with a *that*-clause.

b. In [the **event** [$_{CP}$ that an event is canceled due to inclement weather]], they will immediately update the website... <Link>
c. In [the **case** [$_{CP}$ that the President should be unable to perform their duties]], the Vice-President becomes the President. <Link>
d. It was now proposed that he should be accredited as Bavarian ambassador in London; but [the **circumstance** [$_{CP}$ that he was a British subject]] presented an insurmountable obstacle. <Link>
e. It's [a sad **state of affairs** [$_{CP}$ that we've needed to soften our language to debate hard issues]]. <Link>

When finite clauses occur with situation nouns, they seem to describe the situation/event/state that the noun denotes. Clauses that combine with Sit-NPs (henceforth, Sit-CPs) have received little attention in the literature, with the notable exception of Moltmann (2021a), whose proposal is quite similar to the account I will argue for in this chapter.

In the remainder of this section, I will examine the morphosyntax of Sit-CPs and Cont-CPs, comparing languages like English and Russian to languages like Buryat and Korean (section 2.2.1), discuss argument/modifier status of these clauses (section 2.2.2), and show the differences in their meaning (section 2.2.3).

2.2.1 Morphosyntax of Sit-CPs and Cont-CPs

As one can see in (6)-(7), the embedded clauses in English that combine with Cont-NPs and Sit-NPs look exactly alike: these are finite clauses with the complementizer *that*. It is not a priori obvious that these clauses have any differences between them.

The same is true of Russian Cont-CPs and Sit-CPs. In (8) we see the most common strategy of clausal embedding in Russian: a clause with the complementizer *čto* 'what' and a finite verbal form.

(8) Ja dumaju /znaju /pomnju [čto belki s"eli vse orexi].
I think /know /remember COMP squirrels ate all nuts
'I think/know/remember that squirrels ate all the nuts.'

Clauses that look exactly the same appear with Cont-NPs like *mysl'* 'thought' or *slux* 'rumor' and Sit-NPs like *slučaj* 'event' or *situacija* 'situation', illustrated below in (9a)-(9b) and (10a)-(10b) respectively.

(9) a. Mne prišla v golovu [**mysl'** [$_{CP}$ čto belki s"eli vse orexi]].
to.me arrived in head **thought** COMP squirrels ate all nuts
'I had a thought that squirrels ate all the nuts.'

b. Ja slyšala [**slux**, [$_{CP}$ čto universitet rešil dobrovol'no
I heard **rumor** COMP university decided voluntarily
priznat' profsojuz]].
recognize.INF union
'I heard a rumor that the university decided to recognize the union voluntarily.'

(10) a. Na prošloj nedele byl [**slučaj**, [$_{CP}$ čto belki s"eli vse orexi]].
on last week was **event** COMP squirrels ate all nuts.
'Last week there was an event of squirrels eating all the nuts.'

b. Predstav' sebe [**situaciju**, [$_{CP}$ čto universitet rešil
imagine.IMP self.DAT **situation** COMP university decided
dobrovol'no priznat' profsojuz]].
voluntarily recognize.INF union
'Imagine a situation that the university decided to recognize the union voluntarily.'

At least for some speakers, the use of *čto*-clauses with Sit-NPs is stylistically marked, some people reported to me that they would not use such constructions in colloquial speech. However one finds many naturally occurring examples of this kind outside of formal registers, for example:

(11) Byl clučaj, [čto priloženie pokazyvaet, čto mašina pod"exala,
was event COMP application shows COMP car arrived
ždët, no po faktu ne bylo taksi]. <Link>
is.waiting but on fact NEG was taxi

'There was an event when the app showed that the car arrived and was waiting, but there was no taxi.'

(12) Tak složilas' situacija, [čto mnogo futbolistov vybylo]. <Link>
so arose situation COMP many soccer.players dropped.out
'A situation in which many soccer players dropped out arose.'

Not in all languages Sit-CPs and Cont-CPs look alike. Buryat and Korean belong to the group of languages that overtly distinguish clauses that combine with nouns like 'rumor' and clauses that combine with nouns like 'situation'.

Let us illustrate the distinction for Buryat first. Buryat has several different complementation strategies, but the ones of interest to us right now are the ones in (13)-(15) (see chapter 4 for more discussion of Buryat clauses):[7]

(13) Dugar [mi:sgəi zagaha ədj-ə: gə-žə] han-a:.
Dugar.NOM cat.NOM fish eat-PST say-CVB think-PST
'Dugar thought that the cat ate the fish.'

(14) Dugar [mi:sgəi-n zagaha ədj-ə:š-i:jə-(n')] han-a:.
Dugar.NOM cat-GEN fish eat-PART-ACC-(3) think-PST
'Dugar remembered (an event of) the cat's eating the fish.'

(15) Dugar [mi:sgəi-n zagaha ədj-ə: g-ə:š-i:jə] han-a:.
Dugar.NOM cat-GEN fish eat-PST say-PART-ACC think-PST
'Dugar remembered (a claim) that the cat ate the fish.'

In (13) we see a finite non-nominalized clause which has the complementizer *gə* 'say' that bears converbial morphology. The clauses in (14)-(15) are nominalized (bear case, can bear optional possessive marking) and both contain a participial marker that precedes case. They differ however in whether the complementizer *gə* 'say' is present in them: in (14) the participial marker attaches directly to the verb, but in (15) it attaches to the complementizer, which follows a finite verbal form.

Cont-NPs, but not Sit-NPs can combine with clauses that contain the complementizer *gə* 'say'. Consider (16)-(17) with the noun *zuga:* 'talk, rumor':

(16) [[Badma tərgə əmdəl-ə: gə-žə] zuga:] züb.
Badma cart break-PST say-CVB talk correct
'The rumor (lit. 'talk') that Badma broke the cart is correct.'

(17) [[Badm-i:n tərgə əmdəl-ə: g-ə:šə] zuga:] züb.
Badma-GEN cart break-PST say-PART talk correct
'The rumor (lit. 'talk') that Badma broke the cart is correct.'

[7] You might note that the same verb *hanaxa* is translated as 'think' in (13), but as 'remember' in (14)-(15). This alternation is discussed in section 4.4.3 of chapter 4.

We see that this noun can combine with both *gəžə*-clauses and *gə:šə*-clauses. When it combines with a *gə:šə*-clause, we don't see case marking on the clause anymore: it is in an unmarked participial form, just like the one we see in relative clauses that modify nouns (18).[8]

(18) [Gər-tə oro-x-i:jə-n' du:d-a:ša] xün-i:n' malgai-ga:
house-DAT come.in-POT-ACC-3 call-PART man-3.NOM hat-REFL
tail-a:.
take.off-PST
'The man who was invited to come into the house took off his hat.'

It might be surprising that in (16) we see a converbial form modifying a noun, as converbial forms seem to exist only as modifiers of verbs, not nouns, elsewhere in the language. I'd like to note however that many, if not all, content nouns in Buryat have a corresponding verb with the same root. For example, for *zuga:* 'rumor, talk' there is a verb *zuga:lxa* 'talk'. This raises the question of whether all content nouns could be nominalizations of a very small size. If that is the case, then the *gəžə*-clause in (16) might have merged to a constituent that was still syntactically a verb.

Sit-NPs cannot combine with clauses that contain the complementizer *gə* 'say':

(19) *[[Badma tərgə əmdəl-ə: gə-žə] ušar] gomdoltoi.
Badma cart break-PST say-CVB event sad
'The situation (lit. 'event') that Badma broke the cart is sad.'

(20) *[[Badm-i:n tərgə əmdəl-ə: g-ə:šə] ušar] gomdoltoi.
Badma-GEN cart break-PST say-PART event sad
'The situation (lit. 'event') that Badma broke the cart is sad.'

Note that removing the clause makes the sentence grammatical:

(21) Ušar gomdoltoi.
event sad
'The situation (lit. 'event') is sad.'

[8] In this thesis, I will be using the gloss PART for all participial suffixes of Buryat. *-A:šA* (capital letters represent vowels before harmony rules have applied to them) is only one among many participial suffixes that can occur in nominalizations and relative clauses. Different participial suffixes seem to be in complementary distribution, and the differences between them have to do with aspectual, temporal or modal characterizations of clauses that they occur in.

Thus, we observe incompatibility between the clauses that contain the complementizer *gə* 'say' and *ušar* 'event': *gəžə*-clauses and *gə:šə*-clauses seem to not be able to describe what kind of situation or event the speaker is talking about.[9,10]

Now if we consider participial clauses without the complementizer *gə* 'say', they show the opposite pattern with nouns. Content nouns like *zuga:* 'rumor, talk' or *ürgən* 'rumor, jaw' cannot combine with participial clauses which lack the complementizer *gə* 'say', as is shown in (22).

(22) a. *Sajana [[Badm-i:n tərgə əmdəl-ə:šə] zuga:] hana-na.
Sajana.NOM Badma-GEN cart break-PART talk think-PRS
'Sajana remembers a rumor (lit. 'talk') that Badma broke the cart.'

b. *Namajə [[Badm-ain tərgə əmdəl-hən] ürgən] jəx-ə:r
1SG.ACC Badma-GEN cart break-PART jaw big-INSTR
honirx-o:-go:.
be.interested-CAUS-PST
'The rumor (lit. 'jaw') that Badma broke the cart surprised me a lot.'

[9]Sometimes *gə:šə*-clauses are accepted with *ušar* 'event' under the relative clause interpretation, which is not relevant for the current discussion:

(i) Sajana Badm-i:n tərgə əmdəl-ə: g-ə:šə ušar-i:jə han-a:.
Sajana.NOM Badma-GEN cart break-PST say-PART event-ACC think-PST
'Sajana recalled an event about which it was said that Badma broke the cart.'
Comment from a consultant: "In this case she did not directly perceive the event, someone just told her about it."

The sentence in (i) entails existence of an actual speech event: someone told Sajana about an event, and what they said about it is that Badma broke the cart.

[10]Note that in (19) the Sit-NP occupies the subject position. This is important for diagnosing whether the clause with the complementizer *gəžə*-clause can modify the noun: when the noun is an object of a verb, there is almost always a possibility that the clause does not form a constituent with the noun itself, but rather modifies the verb. Such cases, which would lead to surface strings '*gəžə*-clause + *ušar*', are indeed attested:

(i) Sajana [[Badma tərgə əmdəl-ə: gə-žə] [ušar-i:jə han]]-a:.
Sajana.NOM Badma cart break-PST say-CVB event-ACC think-PST
'Sajana recalled an event and thought about it: "Badma broke the cart".'

In (i) the CP does not describe the kind of event that Sajana was thinking about, but only the content of her thoughts. She might have been thinking about what in the actual world is an event of Badma fixing the cart, and we could still truthfully utter (i) as long as what she thought about this event was "Badma broke the cart".

Situation nouns like *ušar* 'event' easily combine with participial clauses that lack the complementizer *gə* 'say':

(23) a. Sajana [[Badm-i:n tərgə əmdəl-ə:šə] ušar] hana-na.
Sajana.NOM Badma-GEN cart break-PART event think-PRS
'Sajana remembers an event of Badma breaking the cart.'

b. Namajə [[Badm-ain tərgə əmdəl-hən] ušar] jəx-ə:r
1SG.ACC Badma-GEN cart break-PART event big-INSTR
honirx-o:-go:.
be.interested-CAUS-PST
'The situation that Badma broke the cart surprised me a lot.'

The morphosyntax of Cont-CPs and Sit-CPs in Buryat is summarized in table 2.1. As we see, clauses that combine with Cont-NPs must contain a special element in their structure that has to be absent in clauses that combine with Sit-NPs.

	clauses with *gə* 'say'	clauses without *gə* 'say'
Cont-NPs	✓	✗
Sit-NPs	✗	✓

Table 2.1: Cont-CPs and Sit-CPs in Buryat

Now let us consider Cont-CPs and Sit-CPs in Korean. Korean has several complementation patterns as well, for example here are three common strategies that we see with verbs (Shim & Ihsane 2015):

(24) *Three complementation patterns with verbs in Korean*

a. Kibo-nun [Dana-ka i chayk-ul ilk-**ess-ta-ko**]
Kibo-TOP Dana-NOM this book-ACC read-**PST-DECL-COMP**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

b. Kibo-nun [Dana-ka i chayk-ul ilk-**ess-ta-nun** **kes-ul**]
Kibo-TOP Dana-NOM this book-ACC read-**PST-DECL-ADN** **thing-ACC**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

c. Kibo-nun [Dana-ka i chayk-ul ilk-**un** **kes-ul**]
Kibo-TOP Dana-NOM this book-ACC read-**ADN** **thing-ACC**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'
(Shim & Ihsane 2015: 131, ex. (4))

In (24a) the embedded verb bears a past tense marker, a so-called declarative marker, and a complementizer *ko*. This is not a nominalized clause: no nominal morphology can follow *ko*. Shim & Ihsane (2015) analyze this clause as a CP. In (24b) and (24c) we see an overt noun *kes* 'thing' with case marking that combines with a clause bearing a so-called adnominal marker. This is a marker that we see on certain nominal modifiers, for example on relative clauses (25), and it has several allomorphs, the choice of which depends on the temporal characterization of the clause: -(*u*)*n* for past tense, -*nun* for present tense, -(*u*)*l* for future tense.[11]

(25) a. [nay-ka mek-un] sakwa
I-NOM eat-ADN apple
'the apple that I ate'
b. [nay-ka mek-nun] sakwa
I-NOM eat-ADN apple
'the apple that I'm eating'
c. [nay-ka mek-ul] sakwa
I-NOM eat-ADN apple
'the apple that I will eat'

The difference between (24b) and (24c) is that in the former case the adnominal clause contains past tense and declarative markers, whereas in the latter case the adnominal marker attaches directly to the root. Shim & Ihsane (2015) propose that the complements in (24b) and (24c) are NPs which are headed by the noun *kes* 'thing'. The difference between (24b) and (24c) is that in (24b) the noun combines with a full CP, but in (24c) it combines with a reduced clause.

Clauses that combine with Cont-NPs and Sit-NPs are adnominal clauses of dif-

[11]Unless indicated otherwise, the data presented in this chapter, as well as in chapter 3, is from my own elicitations with native Korean speakers. I thank Eunsun Jou, Yeong-Joon Kim, Soo-Hwan Lee, and Hyun Ji Yoo for sharing their intuitions with me.

ferent sizes. Clauses that combine with Cont-NPs are full CPs, with tense marking and declarative marker preceding the adnominal morpheme (26).

(26) [Swuna-ka mwuncey-lul phwul-**ess-ta-nun**] cwucang-i /somwun-i
Swuna-NOM problem-ACC solve-**PST-DECL-ADN** claim-NOM /rumor-NOM
sasil-i-ta.
fact-COP-DECL
'The claim/rumor that Swuna solved the problem is a fact.'

It is not possible to omit the past tense or the declarative marker in Cont-CPs, as is illustrated in (27)–(29).[12]

(27) *[Swuna-ka mwuncey-lul phwul-**un**] cwucang-i kecis-i-ta
Swuna-NOM problem-ACC solve-**ADN** claim-NOM falsehood-COP-DECL
Intended: 'The claim that Swuna solved the problem is false.'

(28) *[Swuna-ka mwuncey-lul phwul-**ess-un** /phwul-**ess-nun**] cwucang-i
Swuna-NOM problem-ACC solve-**PST-ADN** /solve-**PST-ADN** claim-NOM
kecis-i-ta
falsehood-COP-DECL
Intended: 'The claim that Swuna solved the problem is false.'

(29) *[Swuna-ka mwuncey-lul phwul-**ta-nun**] cwucang-i kecis-i-ta
Swuna-NOM problem-ACC solve-**DECL-ADN** claim-NOM falsehood-COP-DECL
Intended: 'The claim that Swuna solved the problem is false.'

The clause with the complementizer *-ko* that we saw in (24a) cannot combine with Cont-NPs, as is shown in (30).[13]

[12]The sequence *V-ta-nun* is possible with statives, for which the present tense is null, but even with statives we see that the past tense marker cannot be omitted when the sentence has a past interpretation (ii), suggesting that tense must always be present in Cont-CPs.

(i) [Swuna-ka yeppu-ta-nun] cwucang-i kecis-i-ta.
Swuna-NOM pretty-DECL-ADN claim-NOM falsehood-COP-DECL
'The claim that Swuna is pretty is false.'

(ii) [Swuna-ka yeppu-*(ess)-ta-nun] cwucang-i kecis-i-ta.
Swuna-NOM pretty-PST-DECL-ADN claim-NOM falsehood-COP-DECL
'The claim that Swuna used to be pretty is false.'

[13]It is possible to have an adnominal clause with the verb 'do' that takes a *ko*-clause (i), but in

(30) *[Swuna-ka mwuncey-lul phwul-**ess-ta-ko**] cwucang-i sasil-i-ta.
Swuna-NOM problem-ACC solve-**PST-DECL-COMP** claim-NOM fact-COP-DECL
Intended: 'The claim that Swuna solved the problem is a fact.'

Finally, (31)-(32) illustrate that the complements that we've seen in (24b) and (24c) cannot directly combine with Cont-NPs. This is independent of the morphosyntactic marking of *kes*: whether it's unmarked for case, bears nominative case, or has adnominal marking attached to it, the sentence is ungrammatical. This is perhaps not surprising: if *kes* is a noun, it itself can combine with the same kinds of clauses as nouns, but it cannot modify another noun.

(31) *[[Swuna-ka mwuncey-lul phwul-**ess-ta-nun**] **kes** /**kes-i**
Swuna-NOM problem-ACC solve-**PST-DECL-ADN** **thing** /**thing-NOM**
/**kes-(n)un**] cwucang-i sasil-i-ta.
/**thing-ADN** claim-NOM fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

(32) *[[Swuna-ka mwuncey-lul phwul-**un**] **kes** /**kes-i** /**kes-(n)un**]
Swuna-NOM problem-ACC solve-**ADN** **thing** /**thing-NOM** /**thing-ADN**
cwucang-i sasil-i-ta.
claim-NOM fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

Clauses that combine with Sit-NPs have the adnominal marker combine directly with the verbal root (33).

(33) [Swuna-ka mwuncey-lul phwul-**un**] sanghwang-i /kyengwu-ka
Swuna-NOM problem-ACC solve-**ADN** situation-NOM /case-NOM
hungmilop-ta
interesting-DECL
'The situation /the case that Swuna solved the problem is interesting.'

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this case the *ko*-clause does not combine with the noun directly.

(i) [[Swuna-ka mwuncey-lul phwul-**ess-ta-ko**] **ha-nun**] cwucang-i sasil-i-ta.
Swuna-NOM problem-ACC solve-**PST-DECL-COMP** **do-ADN** claim-NOM fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

It's not possible to add overt tense or declarative markers to Sit-CPs, as is shown in (34)-(36).[14] Note however that in (33) a past tense allomorph of the adnominal marker is used. This could indicate that tense is still present in Sit-CPs, but it is just not expressed as a morpheme separate from the adnominal marker.

(34) *[Swuna-ka mwuncey-lul phwul-**ess-ta-nun**] sanghwang-i
Swuna-NOM problem-ACC solve-**PST-DECL-ADN** situation-NOM
/kyengwu-ka hungmilop-ta
/case-NOM interesting-DECL
'The situation/the case that Swuna solved the problem is interesting.'

(35) *[Swuna-ka mwuncey-lul phwul-**ess-(n)un**] sanghwang-i
Swuna-NOM problem-ACC solve-**PST-ADN** situation-NOM
hungmilop-ta
interesting-DECL
'The situation that Swuna solved the problem is interesting.'

(36) *[Swuna-ka mwuncey-lul phwul-**ta-nun**] sanghwang-i hungmilop-ta
Swuna-NOM problem-ACC solve-**DECL-ADN** situation-NOM interesting-DECL
'The situation that Swuna solved the problem is interesting.'

Clauses that combine with Sit-NPs never look exactly like verbal complementation strategies. Non-nominalized *-ko*-clauses cannot combine with Sit-NPs:

[14] It does seem, however, to be possible to have overt past tense in the first conjunct of two coordinated clauses under *sanghwang* 'situation' (i). The verb that the adnominal marker attaches to cannot bear tense marking even in coordinated structures (ii).

(i) Na-nun [Swuna-ka mwuncey-lul phul-**ess**]-**ko** [sensayngnim-kkeyse sungca-ka
I-TOP Swuna-NOM problem-ACC solve-**PST-CONJ** teacher-HON.NOM winner-NOM
iss-ta-ko malssumha-si-ci.anh]-un sanghwang-i silh-ta.
exist-DECL-COMP say.HON-HON-NEG-ADN situation-NOM dislike-DECL
'I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

(ii) *Na-nun [Swuna-ka mwuncey-lul phul-**ess**]-**ko** [sensayngnim-kkeyse sungca-ka
I-TOP Swuna-NOM problem-ACC solve-**PST-CONJ** teacher-HON.NOM winner-NOM
iss-ta-ko malssumha-si-ci.anh-**ess**]-un sanghwang-i silh-ta.
exist-DECL-COMP say.HON-HON-NEG-**PST**-ADN situation-NOM dislike-DECL
Intended: 'I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

(37) *[Swuna-ka mwuncey-lul phwul-**ess-ta-ko**] sanghwang-i
Swuna-NOM problem-ACC solve-**PST-DECL-COMP** situation-NOM
hungmilop-ta
interesting-DECL
Intended: 'The situation that Swuna solved the problem is interesting.'

Clausal complements with *kes* 'thing' that we see with verbs, (24b)-(24c), are not possible as complements of Sit-NPs, (38)-(39), plausibly because those clauses are NPs, and NPs cannot serve as modifiers of other nouns.

(38) *[[Swuna-ka mwuncey-lul phwul-**ess-ta-nun**] **kes** /**kes-i**
Swuna-NOM problem-ACC solve-**PST-DECL-ADN** **thing** /**thing-NOM**
/**kes-(n)un**] sanghwang-i hungmilop-ta.
/**thing-ADN** situation-NOM interesting--DECL
'The situation that Swuna solved the problem is interesting.'

(39) *[[Swuna-ka mwuncey-lul phwul-**un**] **kes** /**kes-i** /**kes-(n)un**]
Swuna-NOM problem-ACC solve-**ADN** **thing** /**thing-NOM** /**thing-ADN**
sanghwang-i hungmilop-ta.
situation-NOM interesting--DECL
'The situation that Swuna solved the problem is interesting.'

To summarize, Korean clauses that combine with nouns fall into two categories as well. While all nouns combine with clauses that bear the so-called adnominal marker, nouns like *cwucangi* 'claim' and *somwuni* 'rumor' (Cont-NPs) combine with clauses that also obligatorily have tense and the declarative marker *-ta* inside of them, while nouns like *sanghwangi* 'situation' and *kyengwuka* 'case' (Sit-NPs) combine with clauses that obligatorily lack *-ta*, and potentially lack some temporal specifications. As we will not focus on tense here, the key take-away for us is that there's a head *-ta* (DECL) that is present only in Cont-CPs.

	clauses with *ta* (DECL)	clauses without *ta* (DECL)
Cont-NPs	✓	✗
Sit-NPs	✗	✓

Table 2.2: Cont-CPs and Sit-CPs in Korean

Our discussion of the morphosyntax of Cont-CPs and Sit-CPs is summarized

in table 2.3. From our mini-sample of four languages, we have found the following two classes. English and Russian belong to the class of languages in which Cont-CPs and Sit-CPs morphosyntactically look identical. Buryat and Korean are languages in which the two kinds of clauses are morphosyntactically different: in both of them Cont-CPs contain certain projections that Sit-CPs lack. What we have not encountered is a language where Cont-CPs and Sit-CPs look different, but it is Sit-CPs that have more syntactic structure.

Morphosyntactic appearance	**Languages**
Cont-CPs and Sit-CPs look identical	English, Russian
Cont-CPs have additional structure	Buryat (*gə*), Korean (tense, *-ta*)
Sit-CPs have additional structure	—

Table 2.3: Morphosyntax of Cont-CPs and Sit-CPs

In the rest of this chapter, I will mainly focus on Russian and Korean data.

2.2.2 Are Sit-CPs and Cont-CPs arguments to nouns?

One question relevant for determining the meanings of Sit-CPs and Cont-CPs is the question of whether these clauses are semantic arguments or modifiers of the nouns they combine with. This is not an easy question: while there are many diagnostics for argument vs. modifier status of a phrase in the literature (Jackendoff 1977, Pollard & Sag 1987, Grimshaw 1990, Schütze 1995, Ackema 2015, a.o.), many of them are language-dependent or structure-dependent, and they are generally considered heuristics rather than definitive conditions (see also chapter 4).

Here I would like to review several such heuristics, which, taken together, favor a view that clauses that combine with Cont-NPs and Sit-NPs are modifiers rather than arguments of such nouns. It is not a new conclusion for Cont-CPs: many authors have argued for a modificational analysis of clauses that combine with nouns like *claim* and *idea* (Higgins 1973, Stowell 1981, Moltmann 1989, Kratzer 2006, Kayne 2008, Arsenijević 2009, Moulton 2009, Kayne 2010, Haegeman & Ürögdi 2010, Haegeman 2012, Moulton 2015, Kratzer 2016, Elliott 2020, a.m.o.), and furthermore took the properties of such constructions as evidence that clauses should generally be treated as modifiers.[15]

[15]For opposing views, see Djärv 2019, who argues that such CPs are propositional arguments to nouns, and Hankamer & Mikkelsen 2021, who propose that CPs are selected by D.

2.2.2.1 Modifier-like appearance

Clauses that combine with nouns often, if not always, bear morphology characteristic of other modifiers in the language: either nominal modifiers like relative clauses, or verbal modifiers (converbial clauses). If the morphology reflects the semantic type of the constituent, then this would suggest that clauses are modifiers. In Korean, clauses that combine with nouns bear the adnominal marker—the same marker that we see on relative clauses:

(40) [Swuna-ka mwuncey-lul phwul-ess-ta-**nun**] cwucang-i sasil-i-ta.
Swuna-NOM problem-ACC solve-PST-DECL-**ADN** claim-NOM fact-COP-DECL
'The claim/rumor that Swuna solved the problem is a fact.'

(41) [Swuna-ka mwuncey-lul phwu-**nun**] sanghwang-i hungmilop-ta
Swuna-NOM problem-ACC solve-**ADN** situation-NOM interesting-DECL
'The situation that Swuna is solving the problem is interesting.'

(42) [nay-ka mek-**nun**] sakwa
I-NOM eat-**ADN** apple
'the apple that I'm eating'

In Buryat, *gəžə*-clauses, which can modify Cont-NPs (43), bear the converbial marker -*žA*, which we find, for example, on adverbial modifiers like in (44).

(43) [[Badma tərgə əmdəl-ə: gə-žə] zuga:] züb.
Badma cart break-PST say-CVB talk correct
'The rumor (lit. 'talk') that Badma broke the cart is correct.'

(44) [Ojuna üxibü: türə-žə], badma əsəgə bolo-bo.
Ojuna child give.birth.to-CVB Badma father become-PST
'As Ojuna gave birth to a child, Badma became a father.'

Other clauses that combine with nouns in Buryat occur with participial marking, (45)-(46), which is the marking we find on relative clauses (47).

(45) [[Badm-i:n tərgə əmdəl-ə: g-ə:šə] zuga:] züb.
Badma-GEN cart break-PST say-PART talk correct
'The rumor (lit. 'talk') that Badma broke the cart is correct.'

(46) Sajana [[Badm-i:n tərgə əmdəl-ə:šə] ušar] hana-na.
Sajana.NOM Badma-GEN cart break-PART event think-PRS
'Sajana remembers an event of Badma breaking the cart.'

(47) [Gər-tə oro-x-i:jə-n' du:d-a:ša] xün-i:n' malgai-ga:
house-DAT come.in-POT-ACC-3 call-PART man-3.NOM hat-REFL
tail-a:.
take.off-PST
'The man who was invited to come into the house took off his hat.'

In languages like English and Russian, it is less obvious that the clauses that combine with nouns share morphological appearance with some modifiers, because usually English *that* and Russian *čto* in such clauses are analyzed as complementizers. However both *that* and *čto* also lead lives as relativizers in the languages, (48)-(49), and such relative complementizers have sometimes been argued to be the same items as relative pronouns (Kayne 2008, 2010, Poletto & Sanfelici 2018).

(48) a. the rumor/circumstance [**that** he was a British subject]
b. the rumor [**that** Helen heard]

(49) a. slux /cituacija, [**čto** belki s"eli vse orexi]
rumor /situation **COMP** squirrels ate all nuts
'the rumor/situation that the squirrels ate all the nuts'
b. Ja skazala vsë, [**čto** ja xotela skazat'].
I said all **COMP** I wanted say.INF
'I said everything that I wanted to say.'

In Russian, some clauses do behave like arguments of nouns, but then these clauses have to be overtly nominalized (see chapter 4 for a more detailed discussion of nominalized clauses in Russian). For example, the noun *aspect* takes an argument that describes the individual whose aspects are being talked about. This argument can be clausal, but then it must occur with a demonstrative *to* 'that' that bears the genitive case, a bare *čto*-clause is impossible:

(50) aspekty ***(togo) čto** načalas' èpoxa Èllinizma
aspects DEM.**GEN COMP** began period Hellenism
'aspects of (the fact) that the Hellenistic time began.'

Cont-NPs and Sit-NPs on the other hand cannot combine with nominalized clauses. As we see in (51a)-(51b), these nouns can only occur with bare *čto*-clauses.

(51) a. Mnenie (***togo***) [**čto** belki vpadajut v spjačku] ošibočno.
opinion (DEM.GEN) **COMP** squirrels fall in hibernation mistaken
'The opinion that the squirrels hibernate is mistaken.'

b. Složilas' takaja situacija (***togo***) [**čto** ja utopil svoj telefon].
developed such situation (DEM.GEN) **COMP** I sunk self's phone
'A situation that I sunk my phone happened.'

Thus, it seems that while some nouns might be able to take clauses as (nominalized) arguments, Cont-NPs and Sit-NPs are not among them.

To sum up, we see that most of the time clauses that combine with Cont-NPs and Sit-NPs look like relative clauses (tabel 2.4).

Morphology	**Where else we see it**	**Languages**
adnominal	adjectives, relative clauses	Korean (*-(n)un*)
participial	relative clauses, within verbal forms	Buryat (e.g., *-AAšA*)
relative COMP	complementizers, relative pronouns	English (*that*), Russian (*čto*)
converbial	adverbial modifiers, within verbal forms	Buryat (*-žA*)

Table 2.4: Morphological marking of clauses that combine with nouns

In Buryat, some Cont-CPs also look like adverbial clauses. If morphology is suggestive of the semantic type of these constituents, then they probably denote predicates over individuals or events.

2.2.2.2 Interpretation

Modifiers are usually thought of as having a constant semantic interpretation across their uses, whereas the interpretation of arguments depends heavily on the head that they combine with (e.g., Pollard & Sag 1987, Schütze 1995).[16] By this heuristic,

[16]For example, Schütze (1995: p. 100) writes:

> *A phrase P is an argument of a head H if the semantic contribution of P to the meaning of a sentence in which P is associated with H depends on the particular identity of H. Conversely, P is a modifier if its semantic contribution is relatively constant across a range of sentences in which it combines with different heads.*

it seems that clauses that combine with nouns should be considered modifiers, as their semantic interpretation seems to be quite independent of the nominal head.

Clauses that combine with Cont-NPs always describe propositional content associated with those NPs. For example, consider (52): whether a clause combines with *claim*, or *lie*, or *opinion*, it seems to have the same semantic relationship to the noun—it describes the content of the claim, of the lie or of the opinion.

(52) *claim/lie/opinion that Mitya is getting married,* ***attested***:

a. $\lambda x.\ \text{claim}(x) \wedge \text{Content}(x) =$ "Mitya is getting married"

b. $\lambda x.\ \text{lie}(x) \wedge \text{Content}(x) =$ "Mitya is getting married"

c. $\lambda x.\ \text{opinion}(x) \wedge \text{Content}(x) =$ "Mitya is getting married"

One could imagine finding a lot more variability of how clauses are interpreted with different content nouns if these clauses were arguments. In (53) I sketch some possible interpretations that do not seem to be attested.

(53) *claim/lie/opinion that Mitya is getting married,* ***non-attested***:

a. $\lambda x.\ \text{claim}(x) \wedge \text{Response}(x) =$ "Mitya is getting married"

b. $\lambda x.\ \text{lie}(x) \wedge \text{Corrected}(x) =$ "Mitya is getting married"

c. $\lambda x.\ \text{opinion}(x) \wedge \text{About}(x) =$ "Mitya is getting married"

A clause that combines with *claim* could be describing the proposition that this claim is in response to or the proposition that was a response to this claim. A clause combining with *lie* could describe the true proposition that one would get if we corrected the lie. A clause combining with *opinion* could describe the proposition that this opinion is about.[17] The fact that we do not find such variability of how the clauses are interpreted suggests that they are modifiers. We get the same result

Here's an example that he discusses. In (ia), *on Sunday* can be correctly interpreted without any reference to the other parts of the sentence, and it has the same meaning: it describes the time of the eventuality. In (ib) and (ic), on the other hand, *on Sandy* can only be interpreted with reference to the main verb, and its meaning varies across these sentences.

(i) a. Kim camps/jogs/meditates on Sunday.
b. Kim depended/decided on Sandy.
c. The authorities blamed/pinned the arson on Sandy.

[17] In Russian this meaning is possible to get when the *čto*-clause does not combine with the noun directly: when 'opinion' combines with a PP, in which the preposition takes the nominalized *čto*-clause as its complement (i).

with clauses that modify Sit-NPs: they seem to always describe the eventuality that the noun denotes (54).

(54) *situation/event/circumstance that squirrels ate the nuts*, ***attested***:

a. λs. situation(s) $\wedge$ eating-the-nuts-by-squirrels(s)

b. λs. event(s) $\wedge$ eating-the-nuts-by-squirrels(s)

c. λs. circumstance(s) $\wedge$ eating-the-nuts-by-squirrels(s)

We could imagine other ways in which an eventuality-describing clause could be related to the situation described by the noun (55). It could describe an event that caused this situation, or an event that preceded this event, or an event that this circumstance has been created for. But again, we don't find such interpretations.

(55) *situation/event/circumstance that squirrels ate the nuts*, ***non-attested***:

a. λs. situation(s) $\wedge \exists$s' [CAUSE(s)(s') $\wedge$ eating-the-nuts-by-squirrels(s')]

b. λs. event(s) $\wedge \exists$s' [BEFORE(s)(s') $\wedge$ eating-the-nuts-by-squirrels(s')]

c. λs. circumstance(s) $\wedge \exists$s' [PURPOSE(s)(s') $\wedge$ eating-the-nuts-by-squirrels(s')]

To sum up, it seems that both Cont-CPs and Sit-CPs that occur with nouns receive interpretations that are not dependent on the particular nouns they combine with, suggesting that they are not arguments of these nouns.[18]

2.2.2.3 Distribution

Distributional properties of clauses that combine with Cont-NPs have been used in the literature to argue for the modifier status of embedded clauses (see for example discussions in Moulton 2009, Elliott 2020, a.o.). Here is one way the argument has been phrased (Moulton 2009): nouns cannot take DP arguments, but they can combine with CPs, hence CPs are not arguments.[19] This can be shown for both

(i) mnenie o tom čto Mitja ženitsja
opinion about that.INSTR COMP Mitya is.getting.married
'an oppinion about the (fact/claim) that Mitya is getting married'

[18] In section 4.5.1 of chapter 4 we will see that the same is true for non-nominalized Cont-CPs that combine with verbs: they receive a constant interpretation no matter what verb they combine with.

[19] For example, Moulton (2009) writes: "...what I call content nouns like *theory* don't take arguments, so the CPs they appear in construction with cannot be arguments either."

non-derived nouns and nouns derived from verbs:

(56) a. *The idea/story/theory/scoop/myth/notion of that, I don't believe.
(Moulton 2009: 23, ex. (10))
b. I don't believe the idea/story/theory/scoop/myth/notion [that Fred didn't report his income]. (Moulton 2009: 21, ex. (3))

(57) a. *John's belief of that idea. (Moulton 2009: 46, ex. (59))
b. The belief [that pigs actually do fly] (is widespread).
(Moulton 2009: 48, ex. (63))

There is a potential objection to this argument, which has been made at least by Djärv (2019): from the fact that nouns cannot take *nominal* arguments, we shouldn't immediately conclude that they cannot take *other types* of arguments. In other words, perhaps the inability of nouns to take DP arguments shouldn't tell us anythings about the argument vs. modifier status of CPs at all.

Here is where the so-called Higgins-Stowell facts come into view (Higgins 1973, Stowell 1981). These authors observed that English *that*-clauses can appear in the copular construction, suggesting that they are predicates:

(58) a. The belief is [that Edna was stealing].
b. Andrea's guess was [that Bill was lying].
c. John's claim was [that he would go].
d. Paul's explanation was [that he was temporarily insane].
(Stowell 1981: p. 199)

These data were contrasted with certain non-finite clauses which could not appear in the post-copular position (59), suggesting that they are arguments.

(59) a. *Jack's attempt was to finish on time.
b. *Jack's pretense was to be my friend.
c. *Jim's refusal was to go swimming.
(Stowell 1981: p. 201)

The idea that *that*-clauses in (58) are predicates rests on the assumption that the copular construction at hand involves *predication*: the property described by the embedded clause is attributed to the individual that the subject denotes. There is

an alternative take on these constructions however: (Potts 2002), and also (Djärv 2019), claimed that sentences like (58) are *equatives*—the individual denoted by the embedded clause is equated with the individual denoted by the subject.

Here I would like to suggest that the two views outlined above are not mutually exclusive, i.e. natural languages have copular constructions that involve predication as well as copular constructions that are equatives. Crucially though, CPs that we see in both kinds of constructions are modifiers.

Let us first briefly discuss English again. While the equative analysis might be a possible analysis of English copular constructions, it can't be the only possible analysis: a variety of constituents of different syntactic categories can occur after the copula (Grimshaw 1990) which are clearly not equated with the individual denoted by the subject (unless some kind of ellipsis is assumed), (60)-(61).

(60) a. the book by/about/on Chomsky
b. The book was by/about/on Chomsky.

(61) a. the interesting book
b. The book was interesting.

The restrictions on what can appear after the copula seem to depend on the relation that that constituent has to the subject (Grimshaw 1990): for example, PPs that are modifiers can appear there (60), but PPs that are arguments cannot (62). The predicative view provides an explanation to this observation: only things that denote predicates can appear in the post-copular position.

(62) a. the destruction of the city
b. *The destruction was of the city.

In other words, if English copular constructions could only be equative, we would expect examples like (60) and (61) to just not be possible.

Now let us consider data from Russian and Korean, and also bring Sit-CPs back into the picture. I would like to suggest that Russian copular constructions involve predication, but Korean copular constructions are equatives in which the clause is a modifier inside of a DP that is being equated with the subject.

The observations reported about the post-copular positions in English hold in Russian too: predicates of different syntactic categories can occur after the copula

(63), but arguments cannot (64).

(63) Ètot rebënok byl umnyj /v škole.
this child was smart.NOM /in school
'This child was smart/at school.'

(64) *Osada byla goroda.
siege was city.GEN
*'The siege was of the city.'

In (65) we see that a DP with a demonstrative has to occur in instrumental case when it occurs in a post-copular position, which has been argued to result from it being embedded in a Predicative Phrase (Bailyn & Rubin 1991, Bailyn 1995, 2001, Bailyn & Citko 1999, a.o.). Importantly, a nominative-marked DP cannot. This cannot be attributed to the lack of nominative case in this position, as adjectives bear nominative case when they occur after the copula (63).

(65) Ètot rebënok byl tem rebënkom /??tot rebënok.
this child was that.INSTR child.INSTR /that.NOM child.NOM
'This child was that child.'

I would like to suggest that the degradedness in (65) is due to the fact that Russian does not have an equative structure available for its copular constructions. Thus, if a DP wants to occur in a copular construction, it has to be embedded in additional syntactic structure (resulting in the DP bearing INSTR) that would turn an individual-denoting constituent into a predicate.

Čto-clauses can occur in post-copular positions as well. In (66) and (67) we see them occuring in predicate positions with Cont-NP and Sit-NP subjects respectively. This suggests that these clauses are modifiers that denote predicates.

(66) A slux byl [čto tebja arestovali]. <Link>
and rumor was COMP you.ACC arrested.3PL.PST
'And the rumor was that you were arrested.'

(67) Prosto tam situacija byla [čto kto-to prozeval odnogo iz
just there situation was COMP who-SPEC yawned one of

napadajuščix]. <Link>
forwards
'It's just that there was a situation that someone missed (lit. "yawned") one of the forwards.'

Crucially, overtly nominalizing post-copular CPs with the help of a demonstrative *to* leads to ungrammaticality:

(68) Ideja byla [(*to) čto Petja otrpavitsja v Moskvu].
idea was (DEM.NOM) COMP Petya will.head.off to Moscow
'The idea was that Petya will head off to Moscow.'

(69) Na prošloj nedele slučaj byl [(*to) čto belki s"eli vse orexi].
on last week event was (DEM.NOM) COMP squirrels ate all nuts
'Last week there was an event of squirrels eating all the nuts.'

This is expected if copular constructions in Russian can't have an equative structure. Thus, constituents following the copula have to be predicates, and what we see is that CPs can be predicates, but their nominalizations cannot.[20]

[20]In (68)-(69) the demonstrative that we see bears nominative case. It is also not possible to use demonstrative in the instrumental case:

(i) *Ideja byla [**tem** čto Petja otrpavitsja v Moskvu].
idea was **DEM.INSTR** COMP Petya will.head.off to Moscow
'The idea was that Petya will head off to Moscow.'

(ii) *Na prošloj nedele slučaj byl [**tem** čto belki s"eli vse orexi].
on last week event was **DEM.INSTR** COMP squirrels ate all nuts
'Last week there was an event of squirrels eating all the nuts.'

We might wonder why this is the case, as adjectival predicates can occur both in nominative case and in instrumental case in post-copular positions, (iii). I would like to suggest that the restriction in (i)–(ii) arises due to the semantics that predicates in the instrumental case receive.

(iii) a. Moj deduška byl krasivyj.
My grandfather was handsome.**NOM**
'My grandfather was handsome.'
⇝ My grandfather is no longer alive, when he was alive he was handsome.
b. Moj deduška byl krasivym.
My grandfather was handsome.**INSTR**
'My grandfather was handsome.'
⇝ My grandfather used to be handsome before, he might be still alive, but then he's probably not handsome anymore.

In Korean copular constructions have different syntax.[21] Things that are syntactically considered to be nouns can directly combine with the copula: e.g., in (70) we see the noun *sengkong* 'success' appearing in the complement of the copula.

(70) Tayhwoy-ka sengkong-*(**i**)-ess-ta
competition-NOM success-**COP**-PST-DECL
'The competition was a success.'

Many nominal modifiers cannot directly combine with this copula: they need to combine with a bleached noun *kes* 'thing', which in turn is the complement to the copula. This is illustrated in (71) for relative clauses and in (72) for possessors.[22]

(71) a. Ku cip-un [Swuna-ka ci-un] kes-i-ta
that house-TOP Swuna-NOM build-ADN thing-COP-DECL
'That house is which/the one Swuna built.'
b. *Ku cip-un [Swuna-ka ci-un]-**i**-(ess)-ta
that house-TOP Swuna-NOM build-ADN -**COP**-(PST)-DECL
'That house is/was which/the one Swuna built.'

(72) a. wusung-un Swuna-uy kes-i-(ess)-ta
victory-TOP Swuna-GEN thing-COP-(PST)-DECL
'The victory is/was Swuna's.'
b. *wusung-un Swuna-uy-**i**-(ess)-ta
victory-TOP Swuna-GEN-**COP**-(PST)-DECL
'The victory is/was Swuna's.'

When a predicate in a post-copular position bears nominative case, (iiia), we get an inference with the past tense copula that the individual is no longer alive, and when they used to be alive, they had the property described by the adjective. Similar readings obtain in (66)–(67): the rumor or situation no longer exist, but when they existed, the predicate described by the CP held of them.

When a predicate in a post-copular position bears instrumental case, (iiib), we do not get the inference that the individual ceased to exist, but get an inference that the property ceased to hold of them. With adjectives like *krasivyj* 'handsome', this reading is felicitous, as beauty can change overtime. The properties described by embedded clauses however cannot change overtime. Ideas cannot change their content: once you have different content, you are no longer the same idea. Situations cannot change the propositions that they exemplify: if you were a squirrel eating the nuts situation yesterday, you can't be a blue jay singing situation today. I suggest that it is the fact that embedded clauses describe inherent, unchangeable properties of individuals that leads to the ban on them occurring within Predicative Phrases.

[21] There are likely to be more than one type of copular constructions. Here I limit my attention to the construction with the copula *-i*.

[22] As far as I can tell, possessors do not seem to exhibit behavior of arguments in Korean.

Thus, the equative analysis is plausible for the construction with the copula *-i*: we can hypothesize that *-i* takes two individuals and equates them. This explains why *-i* would not be able to combine with predicates like relative clauses directly.[23]

Both clauses that combine with Cont-NPs, (73)-(74), and clauses that combine with Sit-NPs, (75)-(76), behave like nominal modifiers: they require the abstract noun *kes* to be used in the copular construction.

(73) Ku cwucang-un [Swuna-ka tayhwoy-lul wusunghay-ss-ta-nun]
that claim-TOP Swuna-NOM competition-ACC win-PST-DECL-ADN
kes-**i**-(ess)-ta
thing-**COP**-(PST)-DECL
'That claim is/was that Swuna won the competition.'

(74) *Ku cwucang-un [Swuna-ka tayhwoy-lul
that claim-TOP Swuna-NOM competition-ACC
wusunghay-ss-ta-nun]-i-ess-ta
win-PST-DECL-ADN-COP-PST-DECL
'That claim was that Swuna won the competition.'

(75) Ku sanghwang-un [Swuna-ka tayhwoy-lul wusungha-n]
that situation-TOP Swuna-NOM competition-ACC win-ADN
kes-**i**-(ess)-ta.
thing-**COP**-(PST)-DECL
'That situation is/was that Swuna won the competition.'

(76) *Ku sanghwang-un [Swuna-ka tayhwoy-lul wusungha-n]-i-ess-ta.
that situation-TOP Swuna-NOM competition-ACC win-ADN-COP-PST-DECL
'That situation was that Swuna won the competition.'

[23]There is one issue that the equative account faces: there are some types of adjectives that can combine with the copula directly, e.g. adjectives with the suffix *cek*, (i).

(i) Ku selmyeng-un nonli-cek-**i**-ess-ta
that explanation-TOP logic-CEK-**COP**-PST-DECL
'That explanation was logical.' (M.-J. Kim 2019: 48, ex. (87c))

The only hypothesis I have at this point is that this class of adjectives is exceptional in permitting type-shifting into an individual-type denotation. This issue needs to be explored further.

Thus, we see that Cont-CPs and Sit-CPs that combine with nouns have the same syntactic distribution as other nominal modifiers in copular constructions, suggesting that they are modifiers of the same sort as relative clauses and possessors.[24]

We can hypothesize that equative readings of English copular constructions, if possible, also involve a null noun in their structure. In other words, the clauses themselves do not denote individuals: DPs that they are part of do. If clauses could denote individuals on their own, there would be no need for adding the noun *kes* in Korean copular constructions. Thus, equative constructions do not constitute an argument against clauses being predicates, but in fact support this view.

Note also that if a noun has a true argument, it cannot occur in the copular construction with *kes* even if it bears genitive case like possessors. This is illustrated with the genitive argument of *ceom-tul-i* 'aspects' in (77), cf. (72a).[25]

(77) a. na-nun i chaek-uy i ceom-tul-ul cohaha-n-ta
I-TOP this book-GEN this aspect-PL-ACC like-PRS-DECL
'I like these aspects of this book.'

[24]It is possible to have a Cont-CP directly combine with the copula if the adnominal marker is dropped. In that case the clause has to be interpreted as a direct quote. This is illustrated in (i).

(i) Swuna: Ku cwucang-un "na-uy ttal-i tayhwoy-lul
Swuna: that claim-TOP I-GEN daughter-NOM competition-ACC
wusunghay-ss-ta"-i-ess-ta
win-PST-DECL-COP-PST-DECL
'Swuna: That claim was "My daughter won the competition"'
✓ the daughter belongs to the person who made the claim
✗ the daughter belongs to Swuna

Here the 1st person noun phrase inside of the clause has to refer to the person who made the claim, not to the speaker, suggesting that it's impossible to understand (i) as indirect speech. I have to leave investigation of this construction for the future.

A parallel form with the dropped adnominal marker is not possible with Sit-CPs, (ii).

(ii) *Ku sanghwang-un [Swuna-ka tayhwoy-lul wusungha]-i-ess-ta.
that situation-TOP Swuna-NOM competition-ACC win-COP-PST-DECL
'That situation was that Swuna won the competition.'

[25]There are other types of predicative structures available in the language, the discussion of which is outside the scope of this chapter (see M.-J. Kim 2019, a.o.). I would like to briefly mention one other common predicativization pattern. Many elements that function like adjectives in Korean are in fact derived from intransitive stative verbal predicates with the help of the adnominal morpheme (M.-J. Kim 2019). Predicative uses of such elements just involve attaching T(ense)A(spect)M(odality) markers directly to the verbal root:

b. *i ceom-tul-i i chaek-uy kes-i-(ess)-ta
this aspect-PL-NOM this book-GEN thing-COP-(PST)-DECL
'These aspects are/were of this book.'

This suggests that arguments resist the separation in copular constructions irrespective of whether they involve predication or equating two individuals.

2.2.2.4 Ordering

The ordering heuristic says that arguments have to combine with heads before modifiers, and so we expect modifiers to not be able to occur closer to heads than

(i) *Adjectives derived from verbs* (M.-J. Kim 2019: 48, ex. (85))
a. twungkul-n thakca
round-ADN table
'a round table'
b. Ku thakca-nun twungkul-ess-ta
that table-TOP round-PST-DECL
'That table was round.'

This strategy is impossible with Cont-CPs and Sit-CPs, (ii)-(iii), as well as with relative clauses and adjectives that are not formed from stative verbs, (iv)-(v).

(ii) *Ku cwucang-un Swuna-ka tayhwoy-lul wusunghay-ss-ta-(ess)-ta
that claim-ADN Swuna-NOM competition-ACC win-PST-DECL-(PST)-DECL
'That claim is/was that Swuna won the competition.'

(iii) *Ku sanghwang-un Swuna-ka tayhwoy-lul wusungha-(ess)-ta.
that situation-TOP Swuna-NOM competition-ACC win-(PST)-DECL
'That situation is/was that Swuna won the competition.'

(iv) a. nay-ka [Swuna-ka ci-un] cip-ul po-ass-ta
I-NOM Swuna-NOM build-ADN house-ACC see-PST-DECL
'I saw the house that Swuna built.'
b. *Ku cip-un [Swuna-ka ci]-(ess)-ta
that house-TOP Swuna-NOM build-(PST)-DECL
'That house is which/the one Swuna built.'
(acceptable if it is parsed as a sentence with a topicalized object that does not contain a relative clause: "That house, Swuna built.")

(v) a. nonli-cek selmyeng
logic-CEK explanation
'a logical explanation'
b. *Ku selmyeng-un nonli-cek-ess-ta
that explanation-TOP logic-CEK-PST-DECL
'That explanation was logical.'

arguments. This has been used to explain contrasts like in (78), where *of Parliament* (argument) has to be closer to *member* and precede *with gray hair* (modifier).

(78) a. a member [of Parliament] [with gray hair]
b. *a member [with gray hair] [of Parliament]
(Schütze 1995: p. 107)

Applying this heuristic to Cont-NPs and Sit-NPs is very difficult, as most of such nouns don't take any obvious arguments that we could use for investigating the ordering of the embedded clause. But I was able to find one noun in Russian that we could test this with: *aspekt* 'aspect'. This noun takes a genitive argument which describes the individual whose aspect(s) we are talking about. When this individual is a Cont-NP like *gipoteza* 'hypothesis', *aspect of this hypothesis* can be understood as a content noun—as referring to a part or a component of the hypothesis.

Then *aspekt* 'aspect' can combine with a *čto*-clause in addition to the genitive argument. The order of their combination with the head is fixed: *aspekt* 'aspect' has to combine with the genitive argument first, and only then it is able to combine with the embedded clause, (79)-(80).[26]

(79) Tot aspekt [ètoj gipotezy], [čto trivial'nost' možet privodit' k negrammatičnosti], mne očen' nravilsja.
this aspect this hypothesis.GEN COMP triviality can lead to ungrammaticality I.DAT very liked
'I liked a lot the aspect of this hypothesis that triviality can lead to ungrammaticality.'

(80) *Tot aspekt, [čto trivial'nost' možet privodit' k negrammatičnosti], [ètoj gipotezy] mne očen' nravilsja.
this aspect COMP triviality can lead to ungrammaticality this hypothesis.GEN I.DAT very liked
'I liked a lot the aspect of this hypothesis that triviality can lead to ungrammaticality.'

[26]There is another irrelevant parse that is possible for the string in (79): the embedded clause can be understood as modifying the noun 'hypothesis'. Here we're interested in the reading where the CP modifies the noun 'aspect'.

This suggests that when clauses combine with nouns, they are their modifiers.[27,28]

[27]Lyutikova (2014) investigates the structure of noun phrases with genitive dependents in Russian and argues that heads of nominal phrases never appear in their base-generation position. If this is correct, it raises the question of whether the argument about the order of merging two constituents outlined here can be still maintained. I think that it can. Note that according to Lyutikova's analysis, when nouns have internal arguments in genitive case, the whole NP containing the head and its complement undergoes movement. In structure with movement then, we expect to see (i) if the head merges with the genitive argument first, which is indeed the order that is attested (79).

(i) $[_{XP}\ [_{NP}$ aspekt $[_{DP}$ ètoj gipotezy$]]$ X $[_{nP}\ n\ [_{NP}\ [_{NP}$ ~~aspekt~~ $[_{DP}$ ~~ètoj gipotezy~~$]]\ [_{CP}$...$]\ ]\ ]\ ]$

If the CP is the first constituent that merges with the head, we expect the linear order *Noun–CP–*DP_{GEN} irrespective of whether the noun phrase containing both CP and DP undergoes movement (ii), the nouns phrase containing just the CP undergoes movement (iii), or just the nominal head undergoes movement (iv).

(ii) $[_{XP}[_{NP}[_{N'}$aspekt$[_{CP}$...$]][_{DP}$ètoj gipotezy$]]$ X $[_{nP}n[_{NP}[_{N'}$~~aspekt~~$[_{CP}$~~...~~$]][_{DP}$ ~~ètoj gipotezy~~$]]]]$

(iii) $[_{XP}\ [_{NP}$ aspekt $[_{CP}$...$]]$ X $[_{nP}\ n\ [_{NP}\ [_{N'}$ ~~aspekt~~ $[_{CP}$~~...~~$]]\ [_{DP}$ ètoj gipotezy$]\ ]\ ]\ ]$

(iv) $[_{XP}$ aspekt+n+X $[_{nP}$ ~~n~~ $[_{NP}\ [_{N'}$ ~~aspekt~~ $[_{CP}$...$]]\ [_{DP}$ ètoj gipotezy$]\ ]\ ]\ ]$

The fact that such linear order is not attested (80) suggests that one cannot combine the nominal head with the CP first, before the genitive DP was merged.

[28]I tried to test this in Korean with the noun *ceom* 'aspect', and got the following results: both orders (GEN–CP–N, CP–GEN–N) are possible, but they differ in whether a demonstrative is required:

(i) na-nun [probe-un yele kay-uy goal-kwa agree-ha-l swu iss-ta-nun] [i kasel-uy] *(i) ceom-ul cohaha-n-ta.
I-TOP probe-TOP several CLASS-GEN goal-WITH agree-do-ADN ability exist-DECL-ADN this hypothesis-GEN this aspect-ACC like-PRS-DECL
'I like this aspect of this hypothesis that probes can agree with several goals.' (ambiguous between 2 readings: the clause describes the hypothesis or the aspect of the hypothesis)

(ii) na-nun [i kasel-uy] [probe-un yele kay-uy goal-kwa agree-ha-l swu iss-ta-nun] (*i) ceom-ul cohaha-n-ta.
I-TOP this hypothesis-GEN probe-TOP several CLASS-GEN goal-WITH agree-do-ADN ability exist-DECL-ADN this aspect-ACC like-PRS-DECL
'I like this aspect of this hypothesis that probes can agree with several goals.'
(unambiguous: the clause describes the aspect of the hypothesis)

We would need to know much more about the syntax of noun phrases in Korean to be able to draw any conclusions from these data. In particular, we would want to establish whether the genitive argument of the noun and the embedded clause in (i)–(ii) occur in their base-generated positions.

2.2.2.5 Other heuristics: obligatoriness, Late Merge & stacking

In this section I would like to briefly discuss some other heuristics that are often employed in the literature. One common heuristic is to appeal to the obligatoriness/optionality of the constituent: arguments tend to be obligatory, and modifiers tend to be optional, (81)-(82).

(81) a. John put the book [in the room].
b. *John put the book.
(Schütze 1995: p. 101)

(82) a. John saw the book [in the room].
b. John saw the book.
(Schütze 1995: p. 101)

By this heuristic, we would consider clauses that combine with nouns modifiers, as their are never obligatory:

(83) a. Lena raspustila ètot slux.
Lena spread this rumor
'Lena spread this rumor.'
b. Lena vspomnila zabavnyj slučaj.
Lena remembered funny event
'Lena remembered a funny event.'

(84) a. Mina-ka ku cwucang-ul kiekhay-ss-ta.
Mina-NOM that claim-ACC remember-PST-DECL
'Mina remembered that claim.'
b. Mina-ka ku sanghwang-ul kiekhay-ss-ta.
Mina-NOM that situation-ACC remember-PST-DECL
'Mina remembered that situation.'

However, the problem with this heuristic is that there exist both optional arguments and obligatory modifiers (Jackendoff 1977, Levin 1993):[29]

[29]The reason to think of *carefully* in (86) as a modifier is that it describes the manner of an event in this sentence, just as it does in its other uses where it's optional (*I wrote this letter* (*carefully*)). So it seems reasonable to think that its interpretation is independent of the verbal head, and it always combines by Predicate Modification, as other modifiers.

(85) *Optional argument*

a. Helen ate an apple.

b. Helen ate.

(86) *Obligatory modifier*

a. They worded the letter carefully.

b. *They worded the letter.

Thus, it is difficult to know whether the optionality of clauses with nouns could really be taken as an argument for them being modifiers.

Another heuristic that is often used is the ability of a constituent to undergo Late Merge (Lebeaux 1988, Takahashi & Hulsey 2009, a.m.o.). It has been observed that in cases when an NP undergoes movement, a relative clause that modifies it can contain an R-expression that would be bound if the relative clause was present in the lower copy within NP (87).

(87) [Which claim that offended John$_i$]$_1$ did he$_i$ repeat t$_1$?
(Safir 1999: p. 589)

Data like (87) led to the hypothesis that modifiers can merge counter-cyclically: the relative clause in (87) is in fact only present in the higher copy of the noun phrase, bleeding a Principle C violation.

Complement clauses have been claimed to disallow Late Merge (88), which is supposed to follow from their status as arguments: the noun needs to combine with its argument before it undergoes A-bar movement, and thus there is a clause present in the lower copy of the NP, leading to the Principle C violation.

Danny Fox (p.c.) notes that adding focus to the sentence makes the adverb optional in (86):

(i) A: We worded the letter carefully.
B: No, THEY worded the letter.

One hypothesis about (i) could be that focus triggers some kind of ellipsis that allows one to omit the adverb. For example, consider (ii)–(iii) from Russian: while the verb *postavit'* 'put' has obligatory DP and PP arguments, they can be omitted in a dialogue similar to (i).

(ii) Ja postavila *(pirog) *(na stol).
I put (pie) (on table)
I put the pie on the table.

(iii) A: Ja postavila pirog na stol.
I put pie on table
I put the pie on the table.
B: Net, èto JA postavila.
no this I put
No, it was I who put ~~the pie on the table~~.

(88) *[Which claim that Mary had offended John$_i$]$_1$ did he$_i$ repeat $_1$?
(Safir 1999: p. 589)

That there is a distinction between arguments and adjuncts with respect to Late Merge in English and German has been debated in the recent literature (Adger et al. 2017, Bruening & Al Khalaf 2019, Wierzba, Salzmann & Georgi 2021). Moreover, Moulton (2009) has argued that once we control for certain confounds in the data, we see that CPs that combine with nouns in English allow Late Merge, and thus they are complements that are modifiers.

My investigation of principle C effects with complement clauses to nouns in both Russian and Korean showed that there is no difference between relative clauses and embedded clauses that combine with nouns. The two languages, however, do differ in availability of bleeding of the condition C.[30]

In Russian, the speakers I consulted allowed Late Merge of both relative clauses (89) and embedded clauses that combine with Cont-NPs and Sit-NPs, (90)-(91).[31]

[30] I do not look at interaction of principle C effects with extraposition or ACD structures here (see Fox & Nissenbaum 1999, Fox 2002, a.o.), as doing that would require first a thorough investigation of these phenomena (whether they exist, whether they work in the same way as their English counterparts do, etc.) in the languages under consideration.

[31] A few people I consulted said that sentences with clauses late merged to Sit-NPs are slightly degraded compared to relative clauses and clauses that late merge to Cont-NPs. I do not have an explanation for why this would be the case. One hypothesis could be that the place of attachment of the clause to the noun is different within Cont-NPs and Sit-NPs. It has been observed that it is often problematic to late merge modifiers that need to attach more deeply in the structure of a noun phrase (Tada 1993, Sauerland 1998, Stepanov 2001,a.o.). For example, in (i) we see that if a noun attaches two relative clauses, it is not possible to late merge the "inner" one but not the "outer" one. (ii) shows that it might pose some difficulties to late merge the "inner" relative clause even when the "outer" one doesn't have to reconstruct.

(i) a. [Which computer [compatible with his$_j$] [that Mary$_i$ knew how to use]]$_k$ did she$_i$ tell [every boy]$_j$ to buy t$_k$?
b. *[Which computer [compatible with Mary's$_i$] [that he$_j$ knew how to use]]$_k$ did she$_i$ tell [every boy]$_j$ to buy t$_k$?
(Sauerland 1998: p. 52)

(ii) ??[Which computer [compatible with Mary's$_i$] [that I knew how to use]]$_k$ did she$_i$ tell Tom to buy t$_k$? (Sauerland 1998: p. 52)

Thus, if Sit-CPs attach more "deeply" within the noun phrase for some reason compared to Cont-CPs, we might expect some degradedness of late merging them. This issue needs further study.

(89) Pacienta$_2$, [$_{RC}$ kotorogo **Nadja**$_1$ lečila sama], **ona**$_1$ peredala t$_2$
patient which **Nadya** was.treating herself **sh**e transferred
našemu otdelu v subbotu.
our department.DAT on Saturday
'Nadya$_1$ transferred the patient that she treated herself$_1$ to our department on Saturday.'

(90) Slux$_2$, [$_{CP}$ čto **Nadja**$_1$ lečila pacienta, kotoryj otkazyvalsja prinimat'
rumor COMP **Nadya** treated patient which refused to.take
lekarstva], **ona**$_1$ vspominala t$_2$ včera.
medicine **she** remembered yesterday
'Nadya$_1$ remembered a rumor that she$_1$ treated the patient who refused to take medicine yesterday.'

(91) ?Slučaj$_2$, [$_{CP}$ čto **Nadja**$_1$ lečila pacienta, kotoryj otkazyvalsja
event COMP **Nadya** treated patient which refused
prinimat' lekarstva], **ona**$_1$ vspominala t$_2$ včera.
to.take medicine **she** remembered yesterday
'Nadya$_1$ remembered an event that she$_1$ treated the patient who refused to take medicine yesterday.'

In Korean, the speakers I consulted with disallowed Late Merge of both relative clauses (92) and embedded clauses that combine with nouns (93)-(94).

(92) [**Mina-ka**$_1$ ecey icepeli-n cwucang-ul]$_2$ **kunye-nun**$_{*1/\checkmark 3}$ t$_2$ icey
Mina-NOM yesterday forget-ADN claim-ACC she-TOP now
kiekha-n-ta.
remember-PRS-DECL
'The claim that **Mina**$_1$ forgot, **she**$_{*1/\checkmark 3}$ now remembers.'

(93) [**Mina-ka**$_1$ swuhak-ul ceyil cal ha-n-ta-nun cwucang-ul]$_2$
Mina-NOM Math-ACC most well do-PRS-DECL-ADN claim-ACC
kunye-nun$_{*1/\checkmark 3}$ t$_2$ kiekha-n-ta.
she-TOP remember-PRS-DECL
'The claim that **Mina**$_1$ is the best at Math, **she**$_{*1/\checkmark 3}$ remembers.'

(94) [**Mina-ka**$_1$ ceyil elyewun mwuncey-lul phul-un sanghwang-ul]$_2$
Mina-NOM most difficult problem-ACC solve-ADN situation-ACC
kunye-nun$_{*1/\checkmark 3}$ t_2 kiekha-n-ta.
she-TOP remember-PRS-DECL
'The situation that **Mina**$_1$ solved the most difficult problem,
she$_{*1/\checkmark 3}$ remembers.'

In all of the sentences above, the third person pronoun cannot refer to Mina and has to refer to some other person, which indicates that the clauses in these cases must be merged before the noun phrase undergoes scrambling.

Thus, while in both languages embedded clauses behave just like relative clauses, they show different patterns: embedded clauses in Russian can late merge, embedded clauses in Koren cannot. The fact that Korean relative clauses cannot late merge suggests that not all modifiers can be merged with the noun counter-cyclically. While the Russian data could in principle be viewed as an argument for the modifier status of embedded clauses that combine with nouns, this conclusion seems to be premature at this point: unless we have independent strong evidence for the argument/modifier distinction in reconstruction for Principle C, data like (90)-(91) do not seem to be very informative.

Finally, modifiers usually can iterate, whereas arguments cannot: e.g., see the "one case per simple sentence" principle in (Fillmore 1968), Biuniqueness condition in (Bresnan 1982) and the Subcategorization Principle in (Pollard & Sag 1987). The examples in (95a)-(95b) illustrate that only non-argument PPs can stack.

(95) a. *Chris rented the gazebo [to yuppies], [to libertarians].
b. Kim met Sandy [in Baltimore] [in the hotel lobby] [in a corner].
(Schütze 1995: p. 102)

This heuristic however comes with a caveat: two modifiers cannot stack if they are semantically incompatible with each other.[32] For example, while both PPs are modifiers in (96), stacking them is impossible.

(96) *I met a student [with blue eyes] [with green eyes].
(Schütze 1995: p. 103)

[32]Schütze (1995) writes about this in the following way: "In general, good cases seem to require modifiers that refer to slightly different properties or else to a different level of detail or "grain size"."

With both Cont-NPs and Sit-NPs, stacking two embedded clauses is impossible. This is illustrated in (97)-(98) for Russian and in (99)-(100) for Korean.

(97) *Cont-CPs in Russian cannot be stacked*

*Byl slux, [čto Mitja igral na pianino] [čto Nastja pela].
was rumor COMP Mitya played on piano COMP Nastya sang
'There was a rumor, according to which Mitya played the piano, according to which Nastya sang.'

(98) *Sit-CPs in Russian cannot be stacked*

*Byla situacija, [čto Mitja igral na pianino] [čto Nastja pela].
was situation COMP Mitya played on piano COMP Nastya sang
'There was a situation, in which M. played the piano, in which N. sang.'

(99) *Cont-CPs in Korean cannot be stacked*

*Mina-ka [Swuna-ka nolayha-ss-ta-nun] [Hani-ka
Mina-NOM Swuna-NOM sing-PST-DECL-ADN Hani-NOM
chwumchwu-ess-ta-nun] cwucang-ul kiekha-ss-ta.
dance-PST-DECL-ADN claim-ACC remember-PST-DECL
'Mina remembered the claim, according to which Swuna sang and according to which Hani danced.'

(100) *Sit-CPs in Korean cannot be stacked*

*Mina-ka [Swuna-ka nolayha-nun] [Hani-ka chwumchwu-nun]
Mina-NOM Swuna-NOM sing-ADN Hani-NOM dance-ADN
sanghwang-ul kiekha-ss-ta.
situation-ACC remember-PST-DECL
'Mina remembered the situation, in which Swuna sang and in which Hani danced.'

In this way embedded clauses differ from relative clauses in these languages, which can be stacked:[33]

[33]Some Korean speakers I consulted did not allow stacking the relative clauses in sentences like (102). The repair strategy one of the speakers suggested was to conjoin the the two relative clauses with the conjunction *kuliko*:

(101) Èto čelovek, [kotorogo xorošo znajut v Latvii], [kotoryj kuriruet v
this person REL well they.know in Latvia REL curates in
MIDe Rossii baltijskoe napravlenie], [kotoryj ješčë 27 fevralja byl
MFA Russia.GEN Baltic direction REL still 27 February was
zdes' i vstrečalsja s rukovodstvom MIDa Latvii]... <Link>
here and met with administration MFA Latvia
'This is a person [that is well known in Latvia], [that curates the Baltic direction in the Russan MFA], [that was still here on the 27th of February and met with the administration of the Latvian MFA]...'

(102) nay-ka [Swuna-ka ci-un], [Mina-ka cohaha-n] cip-ul
I-NOM Swuna-NOM build-ADN Mina-NOM like-ADN house-ACC
po-ass-ta.
see-PST-DECL
'I saw the house that Swuna built, that Mina liked.'

In section 2.4 I will follow Moulton (2009) in arguing that embedded clauses cannot be stacked not because they are arguments, but due to their semantics: attempts to modify a noun with two embedded clauses will produce a meaning that is semantically illicit and leads to ungrammaticality.

Let us summarize our discussion of the argument/modifier status of the embedded clauses that combine with Cont-NPs and Sit-NPs. We have seen that their morphosyntactic form, interpretation, distribution and ordering all suggest that these clauses are modifiers of nouns they combine with. Other heuristics that we considered either were inconclusive (obligatoriness, Late Merge) or will be addressed later on (iterativity). Thus, I will conclude that clauses that combine with nouns are their modifiers, and the denotations of these clauses should reflect that.

(i) nay-ka [Swuna-ka ci-un], kuliko [Mina-ka cohaha-n] cip-ul po-ass-ta.
I-NOM Swuna-NOM build-ADN CONJ2 Mina-NOM like-ADN house-ACC see-PST-DECL
'I saw the house that Swuna built, and that Mina liked.'

At the current moment I don't have any explanation for why stacking multiple relative clauses would be disallowed. Conjunction of embedded clauses will be further discussed in the chapter 3.

2.2.3 ⟦Cont-CP⟧ ≠ ⟦Sit-CP⟧

Let us now evaluate the possible meanings we entertained for the Cont-CPs and Sit-CPs (104) given that we would like to treat these clauses as modifiers. If Cont-CP is a modifier, it cannot denote a set of truth-supporting circumstances, no matter what size they are (104). Given that situations are a subdomain of the set of individuals, the composition rule that we could in principle try to use to combine a clause in (104a)—(104c) with a noun like *idea* (103) is Predicate Modification.[34]

(103) $[\![\text{idea}]\!]^{s,g,t} = \{x: x \text{ is an idea in } s\}$

(104) $[\![\text{that the squirrel ate the nuts}]\!]^{s,g,t}$ as a Cont-CP = ?

a. ~~{s : the squirrel ate the nuts in s}~~

b. ~~{w : the squirrel ate the nuts in w}~~

c. ~~{s : s is a minimal situation of the squirrel eating the nuts}~~

d. $\{x : \textsc{Content}(x) = \{s' : \text{the squirrel ate the nuts in } s'\}\}$

Our rule for Predicate Modification,(71), is repeated below in (105).

(105) *Predicate Modification* (*PM*)
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are, if there is some domain $D_{<\sigma,t>}$ such that both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are in it, and there is some item $x \in D_\sigma$ such that $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are both defined for it. In this case, $[\![\alpha]\!]^{s,g,t} = \lambda x$: x in D_σ and x is in the domain of both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$. $[\![\beta]\!]^{s,g,t}(x) = [\![\gamma]\!]^{s,g,t}(x) = 1$.

I assume that no entity that is an idea is a situation: i.e., individuals described by Cont-NPs are in the domain of individuals but not in the domain of situations:

(106) $[\![\text{idea}]\!]^{s,g,t} = \lambda x$: $x \in D_e \wedge x \notin D_s$. $\text{idea}(x)_{s,t}$

This means that we will find no individual in D_e such that both *idea* and an embedded clause that denotes a predicate of situations will be defined for it: e.g., no entity can be an idea and a situation of the squirrel eating the nuts at the same time. Since finding such an individual that the two sister nodes are defined for

[34]This is true as long as we do not insert silent material or operations that could lift the meaning of the embedded clause to a higher type with different meaning.

it is a pre-condition for the application of Predicate Modification, we will not be able to apply this principle. Thus, nouns like *idea* and a clause denoting a set of truth-supporting circumstances will never be able to combine.

If we view Cont-CPs as predicates of entities with propositional Content (Moltmann 1989, Kratzer 2006, Moulton 2009, Elliott 2020, a.o.), as in (104d), then we could combine the clause with a noun like *idea* by Predicate Modification and get a reasonable meaning: a set of ideas whose content is "The squirrels ate the nuts".

(107) $[\![\textit{idea that the squirrels ate the nuts}]\!]^{s,g,t} =$
$\lambda x \in D_e$. idea(x) $\wedge$ CONT(x) = {s': the squirrels ate the nuts in s'}

Could (104d) also be the meaning for Sit-CPs? I would like to argue for a negative answer to this question. If Sit-CPs described content and successfully combined with Sit-NPs, situation nouns would need to denote entities with propositional content—entities in the domain of the CONT function. A characteristic feature of contenful entities is their ability to combine with predicates like 'true', 'false', 'mistaken' (Moltmann 1989, Kratzer 2006, Moulton 2009, Elliott 2020, Moltmann 2020). However, Sit-NPs are incompatible with such predicates. This is illustrated in (108) for Russian and in (110) for Korean (cf. (109) with a Cont-NP).

(108) Ideja /*situacija [$_{CP}$ čto grjadut reformy] javljaetsja vernoj
idea /situation COMP are.coming reforms is true
/ošibočnoj.
/mistaken
'A(n) idea/situation that reforms are coming is true/mistaken.'

(109) [Swuna-ka mwuncey-lul phwul-ess-ta-nun] cwucang-i
Swuna-NOM problem-ACC solve-PST-DECL-ADN claim-NOM
kecis-i-ta /cham-i-ta.
falsehood-COP-DECL /truth-COP-DECL
'The claim that Swuna solved the problem is false/true.'

(110) *[Swuna-ka mwuncey-lul phwul-un] sanghwang-i kecis-i-ta
Swuna-NOM problem-ACC solve-ADN situation-NOM falsehood-COP-DECL
/cham-i-ta.
/truth-COP-DECL
'The situation that Swuna solved the problem is false/true.'

This is a reason to think that Sit-NPs do not denote individuals with propositional content, and Sit-CPs thus do not have the denotation in (104d).

Moreover, there are predicates that only Sit-NPs, but not Cont-NPs can combine with: e.g., *proizojti* 'happen' and *slučat'sja* 'occur' in Russian (111); *ilena* 'occur', (112)-(113), and *alachay* 'notice' in Korean, (114)-(115).[35,36]

(111) Včera proizošla /slučilas' *ideja /situacija
yesterday happened /occurred idea /situation
[$_{CP}$ čto moj zakaz zaderžali].
COMP my order delayed
'Yesterday a situation/idea that my order was delayed happened/occurred.'

(112) *[Swuna-ka mwuncey-lul phwul-ess-ta-nun] cwucang-i
Swuna-NOM problem-ACC solve-PST-DECL-ADN claim-NOM
ilena-ss-ta
occur-PST-DECL
'A claim that Swuna solved the problem occured.'

(113) [Swuna-ka mwuncey-lul phwul-un] sanghwang-i ilena-ss-ta
Swuna-NOM problem-ACC solve-ADN situation-NOM occur-PST-DECL
'A situation that Swuna solved the problem occured.'

(114) *Mina-ka [Swuna-ka mwuncey-lul phwul-ess-ta-nun] cwucang-ul
Mina-NOM Swuna-NOM problem-ACC solve-PST-DECL-ADN claim-ACC
alachay-ss-ta
notice-PST-DECL
'Mina noticed the claim that Swuna solved the problem.'

(115) Mina-ka [Swuna-ka mwuncey-lul phwul-un] sanghwang-ul
Mina-NOM Swuna-NOM problem-ACC solve-ADN situation-ACC
alachay-ss-ta
notice-PST-DECL
'Mina noticed the situation that Swuna solved the problem.'

[35] Another verb that can only combine with Sit-NPs is *pwul.kanungha* 'impossible'.

[36] A comment from one of the consultants about (114): "This verb [*alachay*] just does not sound good with 'claim'".

I assume that predicates that are only compatible with Sit-NPs require that their argument is a situation. If that is the case, we can exclude a set of worlds, (116b), in addition to the already excluded set of contentful entities, (116d), as the meaning of Sit-CPs. Nothing that we've discussed so far allows us to distinguish the options (116a) and (116c), but later we will see some reasons for favoring the latter one.

(116) ⟦*that the squirrel ate the nuts*⟧ as a Sit-CP = ?

a. {s : the squirrel ate the nuts in s}
b. ~~{w : the squirrel ate the nuts in w}~~
c. {s : s is a minimal situation of the squirrel eating the nuts}
d. ~~{x : CONTENT(x) = {s' : the squirrel ate the nuts in s'}}~~

While there are some predicates that place special restrictions on their arguments (e.g., require them to have content or describe a situation), there are many predicates that can combine with both Cont-NPs and Sit-NPs: e.g., in both languages under consideration these are predicates like 'be/exist' (Russian *byt'* (117), Korean *iss* (118)) and 'remember' (Russian *vspomnit'* (119), Korean *kiekhay* (120)).[37]

(117) a. Byl slux, [čto Mitja igral na pianino].
was rumor COMP Mitya played on piano
'There was a rumor that Mitya played the piano.'
b. Byla situacija, [čto Mitja igral na pianino].
was situation COMP Mitya played on piano
'There was a situation that Mitya played the piano.'

(118) a. [Swuna-ka mwuncey-lul phwul-ess-ta-nun] cwucang-i iss-ta
Swuna-NOM problem-ACC solve-PST-DECL-ADN claim-NOM exist-DECL
'There is a claim that Swuna solved the problem.'
b. [Swuna-ka mwuncey-lul phwul-nun] sanghwang-i iss-ta
Swuna-NOM problem-ACC solve-ADN situation-NOM exist-DECL
'There is a situation that Swuna solved the problem.'

(119) a. Lena vspomnila predpoloženie, [čto belki s"eli vse orexi].
Lena remembered hypothesis COMP squirrels ate all nuts
'Lena remembered a hypothesis that the squirrels ate all the nuts.'

[37] Other such verbs in Korean include *palkyenhay* 'discover' and *silh* 'be disliked'.

b. Lena vspomnila slučaj, [čto belki s"eli vse orexi].
Lena remembered event COMP squirrels ate all nuts
'Lena remembered an event of the squirrels eating all the nuts.'

(120) a. Mina-ka [Swuna-ka mwuncey-lul phwul-ess-ta-nun]
Mina-NOM Swuna-NOM problem-ACC solve-PST-DECL-ADN
cwucang-ul kiekhay-ss-ta.
claim-ACC remember-PST-DECL
'Mina remembered the claim that Swuna solved the problem.'

b. Mina-ka [Swuna-ka mwuncey-lul phwul-un] sanghwang-ul
Mina-NOM Swuna-NOM problem-ACC solve-ADN situation-ACC
kiekhay-ss-ta.
remember-PST-DECL
'Mina remembered the situation that Swuna solved the problem.'

To sum up, we compared the range of predicates that combine with Cont-NPs and Sit-NPs, and saw that they are not identical (though they do overlap). This led us to conclude that Cont-NPs describe individuals with propositional content, whereas Sit-NPs describe situations. This has a consequence for our analysis of embedded clauses that combine with them: embedded propositions should be related to the meanings of Cont-NPs and Sit-NPs in two different ways. With a Cont-NP, the embedded proposition describes the content associated with the individual denoted by NP. With a Sit-NP, the proposition describes the situation denoted by NP.

This difference correctly predicts another distinction that we observe: an intensional context is created within Cont-CPs, but not within Sit-CPs. We can see this because Cont-CPs constitute a referentially opaque domain, whereas Sit-CPs are referentially transparent (Barwise 1981, Higginbotham 1983):[38]

(121) Lena noticed/remembered Cont-NP $\underbrace{[_{CP}\ ..NP..\ ]}_{\textbf{opaque}}$

(122) Lena noticed/remembered Sit-NP $\underbrace{[_{CP}\ ..NP..\ ]}_{\textbf{transparent}}$

If we pick a verb like 'remember' or 'notice', which do not shift the evaluation

[38] Cf. also *the actuality condition* in (Moltmann 2021a).

situation of their internal argument NP, we can perceive a difference between possible interpretations of predicates within Cont-CPs and Sit-CPs.

One way to illustrate this difference is via the substitution test. Consider the Russian sentences in (123). If we take the version of these sentences with the Cont-NP *slux* 'rumor', then the premises (123a) and (123b) are not sufficient to justify the conclusion in (123c): one can truthfully assert (123a) and (123b) and negate (123c). This is so because we can interpret NPs inside of Cont-CPs as being evaluated not with respect to the actual world/situation, but with respect to the the worlds/situations in which things are according to the rumor.

(123) *Opacity with Cont-CPs:* from {(a), (b)} $\not\Rightarrow$ (c)
Transparency with Sit-CPs: from {(a), (b)} $\Rightarrow$ (c)

a. Lena zametila slux /slučaj [čto **èta ženščina** priexala na kone].
Lena noticed rumor /event COMP **this woman** arrived on horse
'Lena noticed a rumor /an event that this woman arrived on a horse.'

b. Èta ženščina — [koroleva Velikobritanii].
this woman queen Great.Britain
'This woman is the queen of Great Britain.'

c. Lena zametila slux /slučaj [čto [**koroleva Velikobritanii**]
Lena noticed rumor /event COMP **queen** **Great.Britain**
priexala na kone].
arrived on horse
'Lena noticed a rumor/an event that the queen of Great Britain arrived on a horse.'

Thus, it is possible to understand (123c) as saying that Lena noticed a rumor that a person who is *the queen of the Great Britain according to the rumor* arrived on a horse. And this indeed does not follow from the premises in (123a)-(123c).

If we consider the versions of sentences in (123) with the Sit-NP *slučaj* 'event', the premises in (123a) and (123b) necessitate the truth of the conclusion in (123c): if Lena noticed an event of this woman arriving on the horse and this woman is the queen of Great Britain, it follows that she noticed an event of the queen of Great Britain arriving on the horse (even if she's not aware of who the woman that she is observing is). This is so because we have to interpret all noun phrases inside of Sit-CPs with respect to the same world/situation that the matrix verb is evaluated at.

In other words, in (123c) the property of being the queen of the Great Britain can't be evaluated at some worlds/situations that are distinct from the world/situation of evaluation. And since by (123b) *this woman* and *the queen of the Great Britain* describe the same person in the world of evaluation, the truth of (123a) makes (123c) true.

The substitution test in Korean gives exactly the same results as in Russian:

(124) *Opacity with Cont-CPs:* from {(a), (b)} $\not\Rightarrow$ (c)

a. Mina-ka [**Swuna-ka** mwuncey-lul phwul-ess-ta-nun]
Mina-NOM **Swuna-NOM** problem-ACC solve-PST-DECL-ADN
cwucang-ul kiekhay-ss-ta.
claim-ACC remember-PST-DECL
'Mina remembers that Swuna solved the problem.'

b. Swuna-ka pan-eyse kacang khi-ga khu-ta.
Swuna-NOM class-LOC most height-NOM large-DECL
'Swuna is the tallest in the class.'

c. Mina-ka [**pan-eyse kacang khi-ga khun sonye-ka**
Mina-NOM **class-LOC most height-NOM large girl-NOM**
mwuncey-lul phwul-ess-ta-nun] cwucang-ul kiekhay-ss-ta.
problem-ACC solve-PST-DECL-ADN claim-ACC remember-PST-DECL
'Mina remembers that the tallest girl in the class solved the problem.'

(125) *Transparency with Sit-CPs:* from {(a), (b)} $\Rightarrow$ (c)

a. Mina-ka [**Swuna-ka** mwuncey-lul phwul-un] sanghwang-ul
Mina-NOM **Swuna-NOM** problem-ACC solve-ADN situation-ACC
kiekhay-ss-ta.
remember-PST-DECL
'Mina remembers that Swuna solved the problem.'

b. Swuna-ka pan-eyse kacang khi-ga khu-ta.
Swuna-NOM class-LOC most height-NOM large-DECL
'Swuna is the tallest girl in the class.'

c. Mina-ka [**pan-eyse kacang khi-ga khun sonye-ka**
Mina-NOM **class-LOC most height-NOM large girl-NOM**
mwuncey-lul phwul-un] sanghwang-ul kiekhay-ss-ta.
problem-ACC solve-ADN situation-ACC remember-PST-DECL
'Mina remembers that the tallest girl in the class solved the problem.'

In (124) we see that clauses that modify Cont-NPs are opaque: even if we know that in the actual world Swuna is the tallest girl in the class, Mina could remember a claim that Swuna solved the problem without remembering a claim that the tallest girl in the class solved the problem. This is so because DPs *Swuna* and *the tallest girl in the class* can be understood in (124a) and (124c) as *the girl who is Swuna according to the claim* and *the tallest girl in the class according to the claim* respectively. The fact that in the actual world *Swuna* and *the tallest girl in the class* pick out the same individual does not mean that in worlds/situations according to the claim these expressions would pick out the same referent.

In (125) we see that clauses that modify Sit-NPs are transparent: if Swuna is the tallest girl in the class, then Mina remembering a situation of Swuna solving the problem implies that Mina remembering a situation of the tallest girl in the class solving the problem took place. How exactly Mina identified the individual in the situation that she was remembering does not matter (e.g., Mina doesn't have to know who the tallest girl in the class is), because all the predicates in the description of the situation are evaluated with respect to the same world/situation that the verb 'remember' is evaluated at, none of them can be evaluated at some distinct set of worlds/situations, e.g. at the set of worlds compatible with Mina's beliefs.

Another way to observe the difference in referential opacity/transparency comes from sentences that force *de dicto* readings of predicates inside embedded clauses. Under the assumption that sheep and goats are two disjoint sets of individuals with no members in common, unembedded sentences like (126a) are semantically odd, as they can never be true.[39] However, once we embed sentences such as (126a) under attitude verbs, they become felicitous (126b).

(126) a. #These sheep$_s$ are goats$_s$.
b. Helen thinks$_s$ that these sheep$_s$ are goats$_{s'}$.

What is different about (126b) is that the predicate 'goats' does not have to be evaluated at the same world/situation anymore as the predicate 'sheep': while 'sheep' can be evaluated with respect to the matrix world/situation s (*de re*), 'goats'

[39]Such sentences can be made sense of if we assume that individuals that are sheep can *count as being goats* in some sense: e.g., they wear costumes of goats, or a magician gave them a goat-like appearance. I think in such contexts we either abandon the assumption that the sets of sheep and goats are really disjoint, or treat the predicate 'goats' as denoting something different than just a set of individuals who are goats.

can be evaluated with respect to the worlds/situations s' compatible with Helen's thoughts (*de dicto*). Note that embedding sentences like (126a) should only produce felicitous results if these propositions are inside of intensional contexts, i.e., if there is a situation that we could evaluate 'goats' with respect to that is not identical to the matrix situation. Thus, we can use sentences such as (126a) as a diagnostic for whether the embedded proposition occurs within an intensional context.

As we see in (127)-(128), propositions inside Cont-CPs are contained in intensional contexts in both Russian and Korean: predicates like 'goats' can be interpreted *de dicto* (with respect to *the worlds according to the opinion*) , which makes embedding sentences like (126a) in Cont-CPs felicitous.[40]

(127) Andreja pozabavilo (ošibočnoe) mnenie,
Andrej amused (mistaken) opinion
[čto [ovcy na ètoj gore] — ètо kozy].
COMP sheep on this mountain COP goats
'A (mistaken) opinion that the sheep on this mountain are goats amused Andrej.'

(128) Na-nun [san-uy yang-i yemso-la-nun] (calmottoy-n)
I-TOP mountain-GEN sheep-NOM goat-COP.DECL-ADN be.mistaken-ADN
uykyen-ul po-ass-ta
opinion-ACC see-PST-DECL
'I saw a (mistaken) opinion that the sheep on this mountain are goats.'

In contrast, propositions that require some predicates inside of them to be interpreted with respect to different situations cannot occur inside Sit-CPs:[41]

(129) #Andreja pozabavila situacija,
Andrej amused situation

[40] In Korean (128) we see the morpheme *-la* preceding the adnominal marker. This is a portmanteaux for the copula *i* together with the declarative marker *-ta*.

[41] For the sentence in (129), cf. the felicitous (i) with no *de dicto* predicate.

(i) Andreja pozabavila situacija, [čto ovcy na ètoj gore begajut po krugu].
Andrej amused situation COMP sheep on this mountain run by circle
'A situation that the sheep on this mountain run in a circle amused Andrej.'

[čto [ovcy na ètoj gore] — ètо kozy].
COMP sheep on this mountain COP goats
'A situation that the sheep on this mountain are goats amused Andrej.'

(130) Na-nun [san-uy yang-i #yemso-i-n /*yemso-la-nun]
I-TOP mountain-GEN sheep-NOM goat-COP-ADN /goat-COP.DECL-ADN
sanghwang-ul po-ass-ta
situation-ACC see-PST-DECL
'I saw a situation that the sheep on this mountain are goats.'

In Korean (130) the form containing the declarative morpheme is ungrammatical, since it cannot be included in the structure of Sit-CPs, and the form without it gives rise to the same infelicity as (126a): it can never be true if we assume that sheep and goats have no members in common.

The fact that propositions like (126a) cannot be embedded in Sit-CPs suggests that Sit-CPs do not create intensional contexts. In other words, all predicates in (129)-(130) are evaluated with respect to the same world/situation, and thus the infelicity cannot be avoided.

Summing up, we have seen that clauses that combine with Cont-NPs and Sit-NPs do not have identical meanings both in Russian (where the two look alike) and Korean (where the two look different). Cont-CPs describe propositional content associated with individuals like **rumors**, and in doing so they create intensional contexts, which allow predicates inside of the embedded proposition to be interpreted with respect to the situations/worlds according to the content of the contentful individual. Sit-CPs describe situations, and they do not create intensional contexts, which means that the predicates inside of the embedded proposition have to be interpreted with respect to the same situation/world as the matrix verb.

2.3 Proposal

This chapter attempts to answer the question of what kinds of meanings finite embedded can have. In 2.1 we entertained several possible candidates, (1), repeated here as (131). My proposal is that both (131c) and (131d) are possible meanings of embedded CPs. Clauses that combine with Sit-NPs like 'situation' have the meaning in (131c), they are predicates of minimal situations of the kind described by the

embedded proposition. Clauses that combine with Cont-NPs like 'idea' are sets of entities whose content equals the embedded proposition (131d).

(131) ⟦*that the squirrel ate the nuts*⟧ = ?

a. ~~{s : the squirrel ate the nuts in s}~~

b. ~~{w : the squirrel ate the nuts in w}~~

c. {s : s is a minimal situation of the squirrel eating the nuts} = **Sit-CP**

d. {x : CONTENT(x) = {s' : the squirrel ate the nuts in s'}} = **Cont-CP**

In this section I spell out the details of the proposal, elaborating on what I mean by "a minimal situation", and providing an account of how the proposed meanings are arrived at compositionally.

In Kratzer's situation semantics, a proposition is a set of situations that are not necessarily minimal or maximal, but come in different sizes, as shown in figure 2.5.

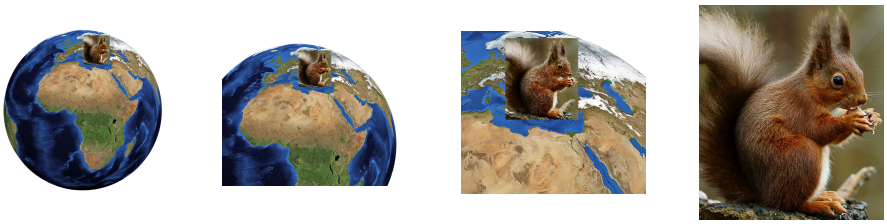


Figure 2.5: Sample situations in the set of situations in which the squirrel ate the nuts.

Recall the assumption introduced in section 1.2.3 that both *v*Ps and TPs denote truth values, (132)-(133).

(132) $[\![[_{vP}$ *the squirrel eat a brown peanut*$]]\!]^{s,g,t} = 1$ iff
$\exists x[\text{brown}(x)_{s,t} \wedge \text{peanut}(x)_{s,t} \wedge \exists s'[{}^{|\vdash e}\text{eating}_{s,t}(s') \wedge \text{THEME}(s')=x$
$\wedge \text{AGENT}(s')=\iota y(\text{squirrel}(y)_{s,t})]]$

(133) $[\![[_{TP}$ *the squirrel ate a brown peanut*$]]\!]^{s,g,t} = 1$ iff $\exists t' < t$
$[\exists x[\text{brown}(x)_{s,t'} \wedge \text{peanut}(x)_{s,t'} \wedge \exists s'[{}^{|\vdash e}\text{eating}_{s,t'}(s') \wedge \text{THEME}(s')=x$
$\wedge \text{AGENT}(s')=\iota y(\text{squirrel}(y)_{s,t'})]]]$

Thus, for a sentence like *The squirrel ate a brown peanut*, the intension of the *v*P will be a set of situations (of all sizes) which contain a situation exemplifying the squirrel eating a brown peanut at the time of evaluation. The intension of the TP will be a set of situations (of all sizes) which contain a situation exemplifying the squirrel

eating a brown peanut at some time preceding the evaluation time.

Now the first question I'd like to address is the structure of Cont-CPs and Sit-CPs. I would like to suggest that both Cont-CPs and Sit-CPs can in principle include as much structure as a TP, but they differ in the projections in their left periphery: Cont-CPs contain an additional projection, which I will call ContP, which Sit-CPs lack. Let us first address the question about the presence of the TP. For Cont-CPs, there is no doubt that TP must be included in the structure: e.g. as we have seen in (27) and (29), repeated below as (134) and (135), in Korean Cont-CPs it is not possible to omit the tense marker (whether we keep the declarative marker or not).

(134) *[Swuna-ka mwuncey-lul phwul-**un**] cwucang-i kecis-i-ta
Swuna-NOM problem-ACC solve-**ADN** claim-NOM falsehood-COP-DECL
Intended: 'The claim that Swuna solved the problem is false.'

(135) *[Swuna-ka mwuncey-lul phwul-**ta-nun**] cwucang-i
Swuna-NOM problem-ACC solve-**DECL-ADN** claim-NOM
kecis-i-ta
falsehood-COP-DECL
Intended: 'The claim that Swuna solved the problem is false.'

Whether Sit-CPs contain tense is less obvious. For example, recall that the past tense marker *-ess* cannot occur in Korean Sit-CPs: (35) repeated here as (136).

(136) *[Swuna-ka mwuncey-lul phwul-**ess-(n)un**] sanghwang-i
Swuna-NOM problem-ACC solve-**PST-ADN** situation-NOM
hungmilop-ta
interesting-DECL
'The situation that Swuna solved the problem is interesting.'

I would like to argue however that tense is present in Sit-CPs, though whether it is identical to the tense in Cont-CPs is an open issue. First, we can clearly see it present in Russian: Russian verbs in Sit-CPs can receive all the usual finite forms that we see in unembedded contexts.

(137) a. Tut u nas byla situacija, [čto belka s''ela vse orexi].
here by us was situation COMP squirrel eat.**PST** all nuts
'We had a situation here that the squirrel ate all the nuts.'

b. Tut u nas situacija, [čto belka est naši orexi].
here by us situation COMP squirrel eat.**PRS** our nuts
'We have a situation here that the squirrel is eating our nuts.'

c. Vozniknet situacija, [čto belka s"est vse orexi].
will.emerge situation COMP squirrel eat.**FUT** all nuts
'A situation will emerge that the squirrel will eat all the nuts.'

Furthermore, the tense inside Sit-CPs seems to be interpreted in the usual way. For example, (137a) talks about a situation that happened at some time preceding the evaluation time, (137b) talks about a situation going on at the evaluation time, and (137c) says that a situation of the squirrel eating all the nuts will happen at some time after the evaluation time. Thus, there seems to be no reason to think that Russian Sit-CPs are in some way temporally impoverished.

Now let us turn to Korean. Recall that the adnominal marker has several allomorphs, which we can see independently when it is used in relative clauses (25), repeated here as (138).

(138) a. [nay-ka mek-**un**] sakwa
I-NOM eat-**PST.ADN** apple
'the apple that I ate'

b. [nay-ka mek-**nun**] sakwa
I-NOM eat-**PRS.ADN** apple
'the apple that I'm eating'

c. [nay-ka mek-**ul**] sakwa
I-NOM eat-**FUT.ADN** apple
'the apple that I will eat'

While both Cont-CPs and Sit-CPs occur with adnominal markers, these markers differ in the range of allomorphs they can have and, crucially, in whether these allomorphs result in different interpretations. With Cont-CPs, the adnominal marker can have allomorphs *-nun* ("present") or -(*u*)*n* ("past"), but not -(*u*)*l* ("future"). The two allomorphs that are possible however never result in different meanings:

(139) Mina-ka [Swuna-ka mwuncey-lul phwul-**ess**-ta-**nun**
Mina-NOM Swuna-NOM problem-ACC solve-**PST**-DECL-**PRS.ADN**

/phwul-**ess**-ta-**n** /*phwul-**ess**-ta-**l**] cwucang-ul
/solve-**PST**-DECL-**PST.ADN** /solve-**PST**-DECL-**FUT.ADN** claim-ACC
kiekha-n-ta.
remember-PRS-DECL
'Mina remembers the claim that Swuna solved the problem.'
(***solve* < *remember***, **solve* ∼ *remember*, **remember* < *solve*)

(140) Mina-ka [Swuna-ka mwuncey-lul phwul-**n**-ta-**nun**
Mina-NOM Swuna-NOM problem-ACC solve-**PRS**-DECL-**PRS.ADN**
/phwul-**n**-ta-**n** /*phwul-**n**-ta-**l**] cwucang-ul
/solve-**PRS**-DECL-**PST.ADN** /solve-**PRS**-DECL-**FUT.ADN** claim-ACC
kiekha-n-ta.
remember-PRS-DECL
'Mina remembers the claim that Swuna solves the problem.'
(**solve* < *remember*, ***solve* ∼ *remember***, **remember* < *solve*)

It seems that the only tense that is interpreted is the tense inside the embedded clause, whereas the adnominal marker freely varies between two allomorphs, but doesn't bear any temporal meaning.[42]

[42] The free variation of the two allomorphs, as well as the ban on the future allomorph, should follow from how the Vocabulary Insertion proceeds. It seems that spanning (Svenonius 2012, 2016, Ramchand 2018) might help account for this pattern. For example, we could hypothesize that adnominal markers lexicalize the span ⟨Comp, T⟩, and they differ in the features of T:

(i) a. *-nun* ⇔ ⟨COMP, T_{PRS}⟩
b. -(*u*)*n* ⇔ ⟨COMP, T_{PST}⟩
c. -(*u*)*l* ⇔ ⟨COMP, $T_{PRS,FUT}$⟩

In Sit-CPs, (141)–(143), Comp and T are adjacent, and they are lexicalized as a span by the adnominal marker that has the relevant features of T. In Cont-CPs, Comp and T are not adjacent anymore (the head corresponding to the declarative marker intervenes). Since spans must be contiguous sequences of heads in the structure, adnominal markers won't be able to lexicalize Comp and T at the same time. T will have to be lexicalized by other lexical items (e.g., *-ess* ⇔ ⟨T_{PST}⟩). Since there is no lexical item that lexicalizes just ⟨Comp⟩, one of the adnominal markers will have to be used to expone Comp. This is possible because in this framework a morpheme can realize any contiguous subspan of heads of the span defined in its lexical entry. So the adnominal markers can lexicalize just Comp. We can hypothesize that the choice between them in this case is guided by a constraint that requires the lexical item to contain as few of irrelevant features as possible. Then if the future adnominal marker involves more features on T than the present and past adnominal markers, we expect the future adnominal marker to not be used when the morpheme lexicalizes just ⟨Comp⟩, and the past and present tense markers to be in free variation, which is what we see in (139)–(140).

With Sit-CPs on the other hand, all allomorphs of the adnominal marker are possible, and the tense on them is interpreted, just like in relative clauses:[43]

(141) Mina-ka [Swuna-ka mwuncey-lul phwul-**un**] sanghwang-ul
Mina-NOM Swuna-NOM problem-ACC solve-**PST.ADN** situation-ACC
kiekha-n-ta
remember-PRS-DECL
'Mina remembers the situation that Swuna solved the problem.'
(***solve < remember***, **solve* ∼ *remember*, **remember* < *solve*)

(142) Mina-ka [Swuna-ka mwuncey-lul phwul-**nun**] sanghwang-ul
Mina-NOM Swuna-NOM problem-ACC solve-**PRS.ADN** situation-ACC
kiekha-n-ta
remember-PRS-DECL
'Mina remembers the situation that Swuna solves the problem.'
(*?solve* < *remember*, ***solve*** ∼ ***remember***, **remember* < *solve*)

(143) Mina-ka [Swuna-ka mwuncey-lul phwul-**ul**] sanghwang-ul
Mina-NOM Swuna-NOM problem-ACC solve-**FUT.ADN** situation-ACC
kiekha-n-ta
remember-PRS-DECL
'Mina remembers the situation that Swuna will solve the problem.'
(**solve* < *remember*, **solve* ∼ *remember*, ***remember < solve***)

This suggests that tense, and hence the TP projection, is present in the structure of Sit-CPs. An additional piece of evidence for the presence of tense comes from coordinated structures (mentioned before in ft. 14): it is possible to have a conjunction inside the Sit-CP where the first conjunct bears the past tense *-ess* marker (144). Under the assumption that only constituents of the same category can be conjoined, this suggests that (144) involves conjunction of two TPs, and thus tense must be present even when we don't see *-ess*.

(144) Na-nun [Swuna-ka mwuncey-lul phul-**ess**]-**ko** [sensayngnim-kkeyse
I-TOP Swuna-NOM problem-ACC solve-**PST-AND** teacher-HON.NOM

[43]Some of my consultants were not sure whether (142) could receive the past tense interpretation, hence the question mark.

sungca-ka iss-ta-ko malssumha-si-ci.anh]-un sanghwang-i
winner-NOM exist-DECL-COMP say.HON-HON-NEG-PST.ADN situation-NOM
silh-ta.
dislike-DECL
'I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

Thus, I suggest that the morphemes *-nun*, -$(u)n$ and -$(u)l$ in Korean Sit-CPs are in fact portmanteaus that lexicalize both the syntactic head corresponding to the adnominal marker and T. Another way to think about this is that these morphemes lexicalize the span of these two heads (see ft. 42). I leave the issue of how the embedded tense is interpreted in Cont-CPs and Sit-CPs for future research.

Thus, both Cont-CPs and Sit-CPs contain in their structures a TP, which denotes a truth-value. I will abbreviate its intension as in (145).

(145) $\lambda s.[\![[_{TP}$ *the squirrel ate the peanut*$]]\!]^{s,g,t} =$
$\lambda s.\ \exists t' < t\ [\exists s'[^{|\vdash_e}\text{eating}_{s,t'}(s') \wedge \textsc{Theme}(s')=\iota x(x \sqsubseteq s \wedge \text{peanut}(x)_{s,t'})$
$\wedge \textsc{Agent}(s')=\iota y(\text{squirrel}(y)_{s,t'})]]$
$=_{abbr}$ {s: the squirrel ate the peanut in s}

While from now on I will be assuming that Sit-CPs contain TPs, the analysis that I will propose is in principle compatible with Sit-CPs containing only vPs, as both constituents within the adopted framework denote truth-values.

Now let us turn to the left periphery of these clauses. Recall our observations about the morphosyntax of clauses that combine with nouns in table 2.3, repeated below as 2.5. In languages that distinguish Cont-CPs and Sit-CPs, it is Cont-CPs that look more complex. I am not aware of any language where the reverse would be the case: where Sit-CPs would be more complex compared to Cont-CPs.

Morphosyntactic appearance	**Languages**
Cont-CPs and Sit-CPs look identical	English, Russian
Cont-CPs have additional structure	Buryat (gə), Korean (tense, *-ta*)
Sit-CPs have additional structure	—

Table 2.5: Morphosyntax of Cont-CPs and Sit-CPs

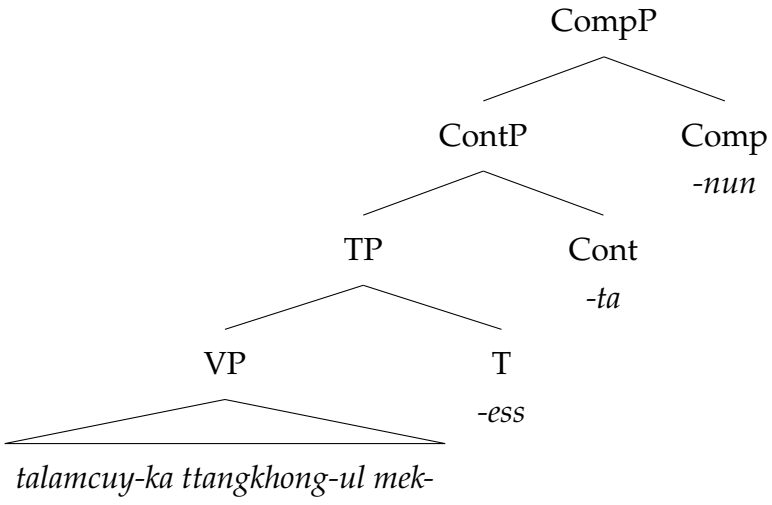
I propose that the structures of Cont-CPs and Sit-CPs do not differ across lan-

guages: the observed differences between languages are morphological in nature.[44] I suggest that while both Cont-CPs and Sit-CPs have CompP in their structure, the left periphery of Cont-CPs contains a projection that Sit-CPs lack, I will call this projection ContP. CPs in (146) and (147) will have LFs in (148) and (149) respectively.

(146) [talamcuy-ka ttangkhong-ul mek-ess-ta-nun] cwucang-i
squirrel-NOM peanut-ACC eat-PST-DECL-ADN claim-NOM
'the claim that the squirrel ate the peanut'

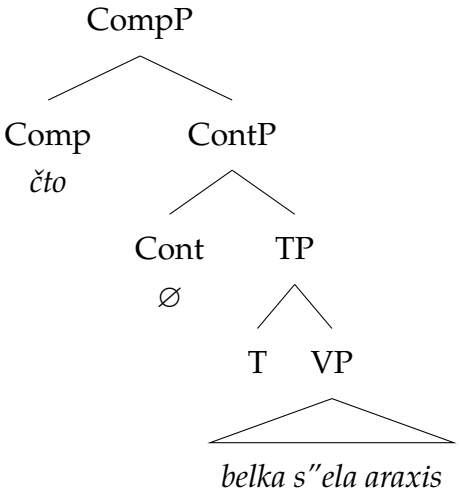
(147) utverždenie, [čto belka s''ela araxis]
claim COMP squirrel ate peanut
'the claim that the squirrel ate the peanut'

(148) The structure of the Korean embedded clause in (146)



[44] I am not committed to these structures being the same in all respects, but the ingredients discussed here should be part of their representation.

(149) The structure of the Russian embedded clause in (147)



Barring the fact that Korean is head final and Russian is head initial, these structures are the same. The difference lies in morphological realization. Korean has a morpheme that lexicalizes the Cont head: it is the declarative marker *-ta*. In Russian Cont has null exponence.[45] Both languages have morphemes that lexicalize Comp: in Korean it is the adnominal marker *-nun*, in Russian it is *čto*. English is like Russian: Cont is null, but *that* lexicalizes Comp. Buryat is like Korean: *gə* corresponds to the Cont head, Comp is exponed by participial markers.

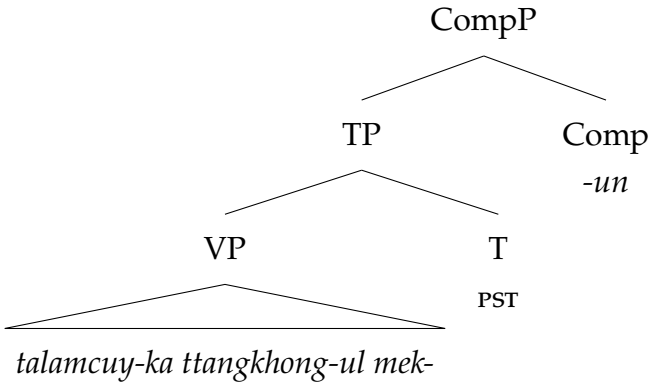
Turning to Sit-CPs, clauses like in (150) and (151) will have the structures in (152) and (153) respectively. I assume that morphological rules of Korean guarantee that it is not possible to spell out T as *-ess*: either allomorphy of Comp is followed by impoverishment on T, or the adnominal marker lexicalizes the span <Comp,T>.

(150) [talamcuy-ka ttangkhong-ul mek-un] sanghwang-i
squirrel-NOM peanut-ACC eat-PST.ADN situation-NOM
'the situation that the squirrel ate the peanut'

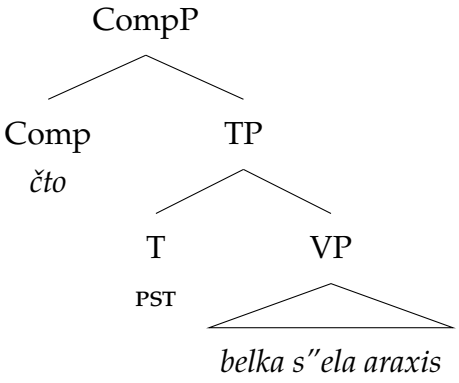
(151) situacija, [čto belka s"ela araxis]
situation COMP squirrel ate peanut
'the situation that the squirrel ate the peanut'

[45] Alternatively, one could hypothesize that *čto* lexicalizes a span <Comp,Cont>.

(152) The structure of the Korean embedded clause in (150)



(153) The structure of the Russian embedded clause in (151)



Now let us turn to the semantics of these heads. I propose that Cont and Comp have the denotations in (154) and (155) respectively. The exemplification relation $\Vdash_e$ used in the semantics of Comp is repeated below in (156). Note that the interpretation of Comp is situation dependent, as it requires that the individual x be part of the evaluation situation s. This condition will not be relevant in most of our discussions, so I will omit it unless it is consequential for the meaning that we derive.[46]

(154) $[\![\text{Cont}]\!]^{s,g,t} = \lambda p.\lambda x.\ \textsc{Cont}(x) = p$

(155) $[\![\text{Comp}]\!]^{s,g,t} = \lambda p.\lambda x.\ x \sqsubseteq s \wedge x \Vdash_e p$
$=_{abbr} \lambda p.\lambda x.\ x \Vdash_e p$

(156) **Exemplification** (based on Kratzer 1989, 2002, Deigan 2020)
For any individual $x \in D_e$ and predicate $p \in D_{et}$:

[46] Anchoring to the situation of evaluation will become important in chapter 5, when we will be looking at the scope of clauses as restrictors of existential quantifiers (see section 5.2.3).

x exemplifies $p =_{abbr} x \Vdash_e p =_{def}$
$x \in p \ \wedge \ (\forall x'[x' \sqsubset x \Rightarrow x' \in p] \ \vee \ \forall x'[x' \sqsubset x \Rightarrow x' \notin p])$

The Cont head takes a proposition and returns a set of individuals whose propositional content equals the embedded proposition. For example, in (157a) we get a set of individuals—entities like **claims**, **facts**, **mental states** etc.—whose propositional content equals the embedded proposition. Since the domain of situations is included in the domain of individuals, (157a) contains contentful situations too.

(157) a. $[\![$[Cont the squirrel ate the peanut]$]\!]^{s,g,t} =$
$\lambda x.$ $\textsc{Cont}(x) =$ {s': the squirrel ate the peanut in s'}

b. $[\![$[Comp Cont the squirrel ate the peanut]$]\!]^{s,g,t} =$
$\lambda x.$ $x \Vdash_e$ {x': $\textsc{Cont}(x') =$ {s': the squirrel ate the peanut in s'}}
$=_{abbr} \lambda x.$ $^{\Vdash_e}\textsc{Cont}(x) =$ {s': the squirrel ate the peanut in s'}

c. $[\![$claim [Comp Cont the squirrel ate the peanut]$]\!]^{s,g,t} = \lambda x.$ $\text{claim}(x)_{s,t}$
$\wedge$ $x \Vdash_e$ {x': $\textsc{Cont}(x') =$ {s': the squirrel ate the peanut in s'}} $=_{abbr}$
$\lambda x.$ $\text{claim}(x)_{s,t} \wedge$ $^{\Vdash_e}\textsc{Cont}(x) =$ {s': the squirrel ate the peanut in s'}.

After that, Comp composes with ContP (157b). Comp takes a property of individuals and returns the set of individuals that exemplify that property. In other words, it filters the set of individuals: gets rid of any individuals that contain something irrelevant to the truth of the predicate {x': $\textsc{Cont}(x') =$ {s': the squirrel ate the peanut in s'}}. Here is a brief illustration of when such filtering might be non-vacuous. Let us consider an individual x made of two parts: $x = y \sqcup z$. Imagine that while y has propositional content associated with it (158c), z does not (158d), and that the rules of calculating propositional content of complex individuals tell us that if some subparts of a complex individual do not have propositional content associated with them, we ignore them in calculating the propositional content of the complex individual.[47]

(158) *Example:* $\neg$($x \Vdash_e$ {x': $\textsc{Cont}(x') =$ {s' : the squirrel ate the peanut in s'}})

a. $x = y \sqcup z$

b. $\textsc{Cont}(x) =$ {s' : the squirrel ate the peanut in s'}

[47] This is just one possible hypothesis of how we could deal with content-less parts of contentful individuals. We need a general theory of how the content of individuals is related to the content of their parts, which is something that I won't be able to do in the scope of this thesis. See (Elliott 2020) for some ideas about how we might approach this question.

c. $\textsc{Cont}(y) = \{s' : \text{the squirrel ate the peanut in } s'\}$
d. $\textsc{Cont}(z) = \#$

In that case, the propositional content associated with x will be the same as the propositional content associated with y—the set of situations in which the squirrel ate the peanut. By the definition of exemplification in (156), x will not be an exemplifying individual for the predicate $\{x'$: $\textsc{Cont}(x') = \{s' : \text{the squirrel ate the nuts in } s'\}\}$, as it is not homogeneous: it has a proper part y in which the predicate is true, but also a proper part z in which the predicate is not true (it is undefined). Thus, x does not exemplify this predicate even though it is a member of the predicate. The requirement that we will consider only exemplifying individuals will get rid of such individuals as x.[48]

Thus, the meaning of a Cont-CP is a set of exemplifying individuals whose propositional content is the embedded proposition. This CP can then combine with content nouns like *claim* by Predicate Modification: e.g., in (157c) we get a set of claims whose content is the embedded proposition.

When there is no Cont in the structure, we can combine Comp directly with the embedded proposition (159a).

(159) a. $[\![[\text{Comp the squirrel ate the peanut}]]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{s'$: the squirrel ate the peanut in $s'\}$.
b. $[\![\text{situation } [\text{Comp the squirrel ate the peanut}]]\!]^{s,g,t} =$
$\lambda x.\ \text{situation}(x)_{s,t} \wedge x \Vdash_e \{s'$: the squirrel ate the peanut in $s'\}$

Note that it is possible to combine Comp with TP via the Intensional Functional Application (70), because the rule requires that Comp is a function whose domain contains the intension of the TP, and this is indeed the case, because $D_{st} \subset D_{et}$. Thus, the meaning of a Sit-CP is a set of individuals (which are situations) which exemplify the embedded proposition. This CP then combines with nouns like *situation* or *event* by Predicate Modification (159b).

Let us now summarize the key properties of the proposed account. I argued that there are two kinds of finite clauses that can combine with nouns—Cont-CPs and

[48]The main reason for introducing exemplification into the meaning of Cont-CPs is to provide a uniform treatment of Comp, which we see in both Cont-CPs and Sit-CPs. It is difficult to test empirically whether the exemplification with Cont-CPs is indeed needed. I have not been able to find any unambiguous evidence in its favor, but it also doesn't seem to do any harm.

Sit-CPs. These clauses could look morphologically the same (Russian, English) or different (Korean, Buryat), but I argue that they differ in their structure: only Cont-CPs have the ContP projection. The contribution of the Cont head is *displacement*: Cont shifts the evaluation of the embedded proposition from the situation of evaluation, as it equates the embedded proposition with the set of situations which are the propositional content of some contentful individual. Sit-CPs lack Cont, and hence displacement. They denote just a set of truth-supporting circumstances of a certain kind: these are circumstances that exemplify the embedded proposition.

Now I turn to the discussion of how this proposal accounts for the observed properties of Cont-CPs and Sit-CPs. First, in section 2.2.2 I argued that both Cont-CPs and Sit-CPs should be considered modifiers. The proposed analysis straightforwardly captures this fact: neither nouns like *claim* nor nouns like *situation* take embedded clauses as their semantic arguments. In both cases the clauses denote predicates of individuals, and compose with nouns by Predicate Modification.

The fact that there are two different meanings that embedded clauses can have explains the facts about co-occurence with different predicates that we observed in the section 2.2.3. DPs like *claim* denote individuals in the domain of the CONT function and not situations, which explains why they can combine with predicates like 'true' and 'false' and Cont-CPs, but not with predicates like 'occur' and Sit-CPs. DPs like *situation* denote situations that are not in the domain of the CONT function; thus, they can combine with predicates like 'occur' and Sit-CPs, but not with predicates like 'true'/'false' and Cont-CPs.

Differences between Cont-CPs and Sit-CPs in transparency/opacity that we observed in section 2.2.3 arise due to the fact that only the meanings of Cont-CPs involve displacement, as only they contain the Cont head.[49] Recall that Cont-CPs allow predicates inside of them to be interpreted *de dicto*, which means that sentences like (160)-(161), are possible, which would be infelicitous if we had to evaluate both 'sheep' and 'goats' with respect to the evaluation situation.

(160) Andreja pozabavilo (ošibočnoe) mnenie,
Andrej amused (mistaken) opinion

[49] One might wonder if content nouns themselves could be viewed as the source of displacement instead. I believe this view would require them to take CPs as arguments, which goes against our evidence from section 2.2.2 that CPs are modifiers of nouns. This view would also miss a cross-linguistic generalization that if in a language complements of Cont-NPs and Sit-NPs have different morphosyntax, it is clauses that combine with Cont-NPs that surface with additional morphology.

[čto [ovcy na ètoj gore] — ètо kozy].
COMP sheep on this mountain COP goats
'A (mistaken) opinion that the sheep on this mountain are goats amused Andrej.'

(161) Na-nun [san-uy yang–i yemso-la-nun] (calmottoy-n)
I-TOP mountain-GEN sheep-NOM goat-COP.DECL-ADN be.mistaken-ADN
uykyen-ul po-ass-ta
opinion-ACC see-PST-DECL
'I saw a (mistaken) opinion that the sheep on this mountain are goats.'

I hypothesize that, whatever the mechanism of achieving *de re* interpetations of 'sheep' in (160)-(161) is, it allows us to produce the truth-conditions in (162).[50]

(162) $[\![$*An opinion that the sheep are goats amused Andrej*$]\!]^{s,g} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{amuse}_s(s') \wedge \textsc{Theme}(s')=\text{Andrej} \wedge \exists x[\textsc{Causer}(s')=x \wedge \text{opinion}(x)_s$
$\wedge {}^{|\vdash_e}\textsc{Cont}(x) = \{s'\text{: } \iota y(\underline{\text{sheep}(y)_s}) \text{ is a } \underline{\text{goat in } s'}\}]]$

(162) is felicitous because the properties of being a sheep and being a goat do not have to be evaluated with respect to the same situation. This is because the CONT function introduces displacement: it gives us a set of situations that represent the content of an opinion, and the situations in this set could differ from the evaluation situation s in the properties that different individuals have: e.g., goats in these situations might not be goats in the evaluation situation. Thus, if some mechanism responsible for *de re* readings allows us to interpret the property of being sheep with respect to evaluation situation s, we will get a felicitous sentence according to which the individuals who are sheep in the evaluation situation are goats in the situations *according to the opinion*.

Now let us see what happens with Sit-CPs:

(163) *Infelicitous result with Sit-CPs:*
$[\![$*A situation that the sheep are goats amused Andrej*$]\!]^{s,g} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{amuse}_s(s') \wedge \textsc{Theme}(s')=\text{Andrej} \wedge \exists x[\textsc{Causer}(s')=x \wedge \text{situation}(x)_s$
$\wedge\, x \,{}^{|\vdash_e}\, \{s'\text{: } \iota y(\underline{\text{sheep}(y)_s}) \text{ is a } \underline{\text{goat in } s'}\}\ ]]$
$\Rightarrow$ # if sheep and goats are disjoint sets in s

[50] Here I disregard tense for simplification.

Imagine, as in the previous case, that there is a *de re* mechanism that allows us to evaluate 'sheep' with respect to the evaluation situation s. It turns out that this will not allow us to create a felicitous sentence, because the meaning involves no displacement, and the property of being a goat is forced to be interpreted with respect to s as well. Recall that by the definition of exemplification (156) if x exemplifies p, $x \in p$. This means that in (163) $x \in$ {s': ιy(sheep(y)$_s$) is a goat in s'}. I.e., for the sentence to be true it has to be that ιy(sheep(y)$_s$) is a goat in x. But we also know that $x \sqsubseteq s$: this is so because x is the CAUSER of the situation of being amusing within s, and also because x is a situation in s. Thus, if the sheep in s are goats in x, they must be goats in s, a bigger situation that contains x, as well. This results in a contradiction under the assumption that sheep and goats are disjoint sets of individuals, hence the infelicity in (129)-(130), repeated here as (164)-(165).[51]

(164) #Andreja pozabavila situacija,
Andrej amused situation
[čto [ovcy na ètoj gore] — èto kozy].
COMP sheep on this mountain COP goats
'A situation that the sheep on this mountain are goats amused Andrej.'

(165) Na-nun [san-uy yang–i #yemso-i-n /*yemso-la-nun]
I-TOP mountain-GEN sheep-NOM goat-COP-ADN /goat-COP.DECL-ADN
sanghwang-ul po-ass-ta
situation-ACC see-PST-DECL
'I saw a situation that the sheep on this mountain are goats.'

The same difference in presence/lack of displacement gives rise to different results to the substitution test with Cont-CPs and Sit-CPs that we observed in section 2.2.3, examples (123)-(125). Simplifying things a lot, imagine that proper names can be interpreted akin to definite descriptions, and thus sentences like *Swuna is*

[51] Note that the contradiction we are dealing with here is different from those that make a sentence L-analytic and thus ungrammatical. The contradiction in (163) arises due to the open-class items like *sheep* and *goat*, and there are possible substitutions of these items that would not give rise to a contradictory sentence (e.g., *A situation that the sheep are the most popular animals in the Zoo amused Andrej.*). It is our world knowledge that sheep and goats are disjoint sets that makes a sentence contradictory: it can never be true given our assumptions about the world, and so it is judged as infelicitous. If individuals could be sheep and goats at the same time, the truth of the sentence in (163) would depend on the circumstances of the world, and we would perceive no infelicity.

the tallest girl in the class can receive the truth-conditions in (166): when evaluated at s, it is true iff the person who is Swuna in s is the tallest girl in s.

(166) $[\![$*Swuna is the tallest girl in the class*$]\!]^{s,g} = 1$ iff
$\iota y(y \text{ is Swuna in } s)$ is the tallest girl in the class in s.

Since Cont-CPs involve displacement, the situation variable inside definite descriptions and proper names will not have to be equal to the evaluation situation. Consider the truth-conditions for sentences in (167).

(167) a. $[\![$*Mina remembers the claim that Swuna solved the problem*$]\!]^{s,g} = 1$ iff
$\exists s'[{}^{\Vdash_e}\text{remember}_s(s') \wedge \textsc{Exp}(s')=\text{Mina} \wedge \exists x[\textsc{Theme}(s')=x \wedge \text{claim}(x)_s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'': \iota y(y \text{ is Swuna in } s'') \text{ solved the problem in } s''\}]]$

b. $[\![$*Mina remembers the claim that the tallest girl in the class solved the problem*$]\!]^{s,g} = 1$ iff $\exists s'[{}^{\Vdash_e}\text{remember}_s(s') \wedge \textsc{Exp}(s')=\text{Mina} \wedge$
$\exists x[\textsc{Theme}(s')=x \wedge \text{claim}(x)_s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'': \iota y(y \text{ is the tallest girl in the class in } s'') \text{ solved the problem in } s''\}]]$

The Cont function gives us a set of situations which is the content of the claim, and *being Swuna* and *being the tallest girl in the class* can be evaluated according to the situations in this set. Thus, one could truthfully believe (166) and (167a) to be true of the actual world, but (167b) to be false. (167a) tells us that Mina remembered a claim that the individual who is *Swuna according to the claim* solved the problem. This is compatible with Mina not remembering a claim that the individual who is *the tallest girl in the class according to the claim* solved the problem. The fact that Swuna and the tallest girl in the class pick out the same individual in the actual world is irrelevant. It should be noted that the substitution test would go through if we interpreted both *Swuna* and *the tallest girl in the class de re*, i.e., if we evaluated these expressions with respect to the evaluation situation. The crucial point here though is that we don't have to interpret them *de re*: there is a reading on which (166) and (167a) can be true with (167b) being false, and for that reading to exist, the meaning of the sentence has to involve displacement.

Now consider the truth-conditions we get for Sit-CPs:

(168) a. $[\![$*Mina remembers the situation that Swuna solved the problem*$]\!]^{s,g} = 1$ iff
$\exists s'[{}^{\Vdash_e}\text{remember}_s(s') \wedge \textsc{Exp}(s')=\text{Mina} \wedge \exists x[\textsc{Theme}(s')=x \wedge \text{situation}(x)_s$

$\wedge$ x $\Vdash_e$ {s'': ιy(y is Swuna in s'') solved the problem in s''}]]

b. $[\![$*Mina remembers the situation that the tallest girl in the class solved the problem*$]\!]^{s,g} = 1$ iff $\exists$s'[$^{\Vdash_e}$remember$_s$(s') $\wedge$ Exp(s')=Mina $\wedge$ $\exists$x[Theme(s')=x $\wedge$ situation(x)$_s$ $\wedge$ x $\Vdash_e$ {s'': ιy(y is the tallest girl in the class in s'') solved the problem in s''}]]

Assume (166) and (168a) are both true when evaluated with respect to the actual world @. Then x is a situation which is part of the actual world @. By definition of exemplification, x is a situation of the individual who is Swuna in x solving the problem in x. That means, given that $x \sqsubseteq$ @, that x is a situation of the individual who is Swuna in @ solving the problem.[52] But because (166) is true, the individual who is Swuna in @ is the tallest girl in @. Thus, x is a situation of the individual who is the tallest girl in @ solving the problem, and thereby a situation of the individual who is the tallest girl in x solving the problem. We also know that Mina remembers the situation x. This means that (168b) must be true: it is the case that Mina remembers the situation of the tallest girl in the class solving the problem. Note that it does not matter what Mina's beliefs about the situation are, e.g., she might not know that Swuna is the tallest girl in the class. The description of the situation at hand is according to the evaluation situation. It can't be evaluated in any other way, as there is no displacement in the meaning.

The current proposal also captures an additional fact about Cont-NPs and Sit-NPs: these noun phrases cannot combine directly with TPs. This is illustrated in (169)-(170) for content nouns and in (171)-(172) for situation nouns.[53]

[52]This step of argumentation relies on the assumption that for any individual y, the proposition {s: y is Swuna in s} is persistent:

(i) *Persistence* (Kratzer 1989: p. 618)
A proposition p $\in \mathbb{P}(S)$ is persistent if and only if for all s and s' $\in$ S the following holds: Whenever s $\sqsubseteq$ s' and s $\in$ p, then s' $\in$ p.

This seems intuitively to be a welcome assumption: if someone is Swuna in a situation s, someone is still Swuna in bigger situations containing s. Here I do not commit myself to the hypothesis that all propositions are persistent (see discussion in Kratzer 1989), but assume that propositions like the one under consideration are persistent.

[53]Russian (170) might be possible to understand as a direct quote, but it is completely impossible as an actual embedding. This is illustrated in (i)-(ii): we see that without the complementizer first person pronoun has to refer to the person who uttered the claim, suggesting that the clause can only be interpreted as a quote.

(169) *[talamcuy-ka ttangkhong-ul mek-ess-(ta)] cwucang-i
squirrel-NOM peanut-ACC eat-PST-(DECL) claim-NOM
'the claim that the squirrel ate the peanut'

(170) *utverždenie, [belka s''ela araxis]
claim squirrel ate peanut
'the claim that the squirrel ate the peanut'

(171) *[talamcuy-ka ttangkhong-ul mek-(ess)] sanghwang-i
squirrel-NOM peanut-ACC eat-(PST) situation-NOM
'the situation that the squirrel ate the peanut'

(172) *situacija, [belka s''ela araxis]
situation squirrel ate peanut
'the situation that the squirrel ate the peanut'

The meaning of a TP under the present approach is a truth-value. If nouns like *claim* and *situation* took propositions as their semantic arguments, we could combine them with TPs by Intensional Functional Application. But since they do not take any propositional semantic arguments, combining them with TPs is not possible—there isn't a principle of semantic composition that would successfully combine them with TPs.

Thus, the fact that on our approach the left periphery of clauses is not semantically vacuous—it turns the embedded proposition into a set of individuals, which can serve as a modifier of nominal predicates—allows us to explain why TPs are not possible complements of Cont-NPs and Sit-NPs.

(i) Prozvučalo utverždenie "Ja s''ela araxis"
sounded claim I ate peanut
'A claim "I ate peanuts" was expressed.'
✓I = person who uttered the claim, ✗I = the speaker of the sentence

(ii) Prozvučalo utverždenie, [čto ja s''ela araxis].
sounded claim COMP I ate peanut
'A claim that I ate peanuts was expressed.'
✗I = person who uttered the claim, ✓I = the speaker of the sentence

2.4 Evidence for equality & exemplification

In this section I discuss two properties of my proposal: the equality semantics in the meaning of Cont-CPs, and the exemplification introduced by complementizers.

Let us start with the nature of displacement in Cont-CPs. According to my proposal, displacement involves equality semantics (173): Cont-CPs denote sets of individuals whose propositional content *equals* the embedded proposition.

(173) *Equality semantics*

a. $[\![\text{Cont}]\!]^{s,g,t} = \lambda p.\lambda x.\ \textsc{Cont}(x) = p$

b. $[\![[\text{Comp Cont } \textit{the squirrel ate the peanut}]]\!]^{s,g,t} =$
$\lambda x.\ {}^{\Vdash_e}\textsc{Cont}(x) = \{s'\text{: the squirrel ate the peanut in } s'\}$.

A common alternative to this is the *subset semantics*: we could hypothesize that Cont-CPs denote sets of individuals whose propositional content is the subset of the embedded proposition (174).

(174) *Subset semantics*

a. $[\![\text{Cont}]\!]^{s,g,t} = \lambda p.\lambda x.\ \forall s'[s' \in \textsc{Cont}(x) \Rightarrow p(s')=1]$

b. $[\![[\text{Comp Cont } \textit{the squirrel ate the peanut}]]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{x'\text{: } \forall s'[s' \in \textsc{Cont}(x') \Rightarrow \text{the squirrel ate the peanut in } s']\}$.

There have been at least two arguments in favor of the equality semantics discussed in the literature. The first argument comes from Moulton (2009), and it relies on the assumption that embedded clauses are modifiers.[54] Moulton (2009) notes that while relative clauses can stack, embedded clauses cannot:

(175) a. *The rumor that Fred was happy, that he was in Paris, that he could see ghosts.

b. The rumor that Fred made, that Jill believed, that Bill spread to his friends...
(Moulton 2009: p. 29)

In section 2.2.2.5 we observed that the same is true for Cont-CPs in Russian and Korean as well, (97)-(99), repeated below as (176)-(177).

[54] If embedded clauses are arguments, we do not expect them to stack independently of their semantics, so the contrast in (175) would be accounted for.

(176) *Cont-CPs in Russian cannot be stacked*

*Byl slux, [čto Mitja igral na pianino] [čto Nastja pela].
was rumor COMP Mitya played on piano COMP Nastya sang
'There was a rumor, according to which Mitya played the piano, according to which Nastya sang.'

(177) *Cont-CPs in Korean cannot be stacked*

*Mina-ka [Swuna-ka nolayha-ss-ta-nun] [Hani-ka
Mina-NOM Swuna-NOM sing-PST-DECL-ADN Hani-NOM
chwumchwu-ess-ta-nun] cwucang-ul kiekha-ss-ta.
dance-PST-DECL-ADN claim-ACC remember-PST-DECL
'Mina remembered the claim, according to which Swuna sang and according to which Hani danced.'

If clauses are modifiers, and displacement involves the subset relation, it is not clear why we should not be able to stack them. For example, we should be able to combine Cont-CPs *that the squirrel ate the peanut* and *that the squirrel was happy* by Predicate Modification:

(178) $[\![$[Comp Cont *the squirrel ate the peanut*]
[Comp Cont *the squirrel was happy*]$]\!]^{s,g,t}$ =
$\lambda x.\ x \Vdash_e \{x'\colon \forall s'[s' \in \textsc{Cont}(x') \Rightarrow$ the squirrel ate the peanut in $s']\}$
$\wedge\ x \Vdash_e \{x'\colon \forall s'[s' \in \textsc{Cont}(x') \Rightarrow$ the squirrel was happy in $s']\}$.

We should get a set of individuals such that according to their propositional content, the squirrel ate the peanut, and according to their propositional content, the squirrel was happy. In other words, this would be a set of individuals such that in all situations compatible with their propositional content, the squirrel ate the peanut and was happy. This is a reasonable meaning.

On the other hand if clauses are modifiers, but displacement involves the equality relation, we predict that stacking any two Cont-CPs will result in an empty set:

(179) $[\![$[Comp Cont *the squirrel ate the peanut*]
[Comp Cont *the squirrel was happy*]$]\!]^{s,g,t}$ =
$\lambda x.\ x \Vdash_e \{x'\colon \textsc{Cont}(x') = \{s'\colon$ the squirrel ate the peanut in $s'\}\}$
$\wedge\ x \Vdash_e \{x'\colon \textsc{Cont}(x') = \{s'\colon$ the squirrel was happy in $s'\}\} = \varnothing$.

This is because CONT is a function: when applied to an individual, it returns the unique proposition that is the content of this individual. Since the propositions {s′: the squirrel ate the peanut in s′} and {s′: the squirrel was happy in s′} are not identical, no individual will satisfy the description, resulting in the combination of the two stacked clauses denoting an empty set.[55] Now consider what happens when such stacked CPs occur in a sentence:

(180) $[\![$*_Mina remembers a claim_[Comp Cont _the squirrel ate the peanut_]
[Comp Cont _the squirrel was happy_]$]\!]^{s,g,t}$ =
$\exists s'[^{\Vdash_e}\text{remember}_{s,t}(s') \wedge \text{EXP}(s')=\text{Mina} \wedge \exists x[\text{THEME}(s')=x \wedge \text{claim}(x)_{s,t}$
$\wedge\ x \Vdash_e \{x'\text{: CONT}(x') = \{s'\text{: the squirrel ate the peanut in } s'\}\}$
$\wedge\ x \Vdash_e \{x'\text{: CONT}(x') = \{s'\text{: the squirrel was happy in } s'\}\}]$

The sentence in (180) will always be false, no matter what the facts of the world are, because there will never exist an individual that is a member of the empty set. I assume that sentences that are L-analytic—trivially false due to the meanings of the logical elements that they contain (here: due to Cont)—are ungrammatical (Gajewski 2002, a.o.). This is why stacking is not possible. Thus, under the assumption that clauses are modifiers, equality semantics for Cont-CPs has the advantage of banning stacking. In chapter 3, we will also see that equality semantics correctly predicts that Cont-CPs cannot be intersectively conjoined.

The second argument for the equality semantics comes from (Elliott 2020). Elliott notes that the noun *fact* differs from nouns like *rumor* in that when it attaches an embedded clause, it requires the definite article:

(181) a. Darcy mentioned a fact (*that it's raining).
b. Darcy mentioned the fact (that it's raining).
c. Darcy mentioned two facts (*that it's raining).
(Elliott 2020: 146, ex. (275))

(182) a. Darcy mentioned a rumour (that it's raining).
b. Darcy mentioned the rumour (that it's raining).
c. Darcy mentioned two rumours (that it's raining).
(Elliott 2020: 146, ex. (276))

[55] This account does not rule out stacking of two CPs which denote identical propositions, something additional will need to be said (e.g., some principle banning redundancies) to rule that out.

He suggests that this is due to *Maximize Presupposition!* (Heim 1991). The explanation relies on the assumptions about facts in (183).

(183) *Assumptions about facts* (Elliott 2020: 148, ex. (282))

a. Two facts are distinct iff they have distinct content.

b. In w, every proposition p s.t. $p(w) = 1$ is the content of a unique fact in w, and every fact in w has as its content a unique proposition p s.t. $p(w)$=1.

The definite article introduces a presupposition that there is a unique individual of the kind described by the noun phrase. *Maximize Pressupposition!* requires that whenever the presupposition of a certain lexical item is met, we have to chose that item over an item with the same meaning without the presupposition. Now consider the meaning we will get for the sentence in (181b):[56]

(184) $[\![$*Darcy mentioned the fact that it's raining*$]\!]^{s,g,t}$ =
defined iff $\exists!x[\text{fact}(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'\text{: it is raining in } s'\}]$
when defined, true iff
$\exists s'[{}^{\Vdash_e}\text{mention}_{s,t}(s') \wedge \textsc{Agent}(s')=\text{Darcy} \wedge \textsc{Theme}(s')=\iota x(\text{fact}(x)_{s,t}$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'\text{: it is raining in } s'\})]$.

It will be defined if there is a unique individual which is a fact with the propositional content *"It is raining"*. Whenever defined, it will be true if there is a situation of Darcy mentioning this fact. Imagine that the embedded proposition is true in the situation of evaluation s. By (183b) (switching from worlds to situations), it would imply that this embedded proposition is the content of a unique fact in s. Thus, if it is raining in s, the presupposition introduced by the definite article will be met, and this will mean that *Maximize Presupposition!* will require us to use the definite article instead of the indefinite one.

Now consider what would happen if we had the subset semantics instead:

(185) $[\![$*Darcy mentioned the fact that it's raining*$]\!]^{s,g,t}$ = defined iff
$\exists!x[\text{fact}(x)_{s,t} \forall s'[s' \in {}^{\Vdash_e}\textsc{Cont}(x) \Rightarrow \text{it is raining in } s']]$
when defined, true iff

[56] The meaning I provide here is in line with the assumptions of the framework assumed in this thesis and not exactly the meaning that Elliott would assume. The differences are however negligible to the point being made.

$\exists s'[^{\Vdash_e}\text{mention}_{s,t}(s') \wedge \textsc{Agent}(s')=\text{Darcy} \wedge \textsc{Theme}(s')=$
$\iota x(\text{fact}(x)_{s,t} \wedge \forall s'[s' \in {}^{\Vdash_e}\textsc{Cont}(x) \Rightarrow \text{it is raining in } s']]$.

The presupposition introduced by the definite article will never be met. Imagine that it is true in the evaluation situation s that it is raining, and furthermore that it's raining heavily and it is Tuesday. Then, by our assumption in (183b), at least the following facts will be facts in s:

(186) a. $\mathbf{fact}_1$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{fact}_1) = \{s'$: it is raining in $s'\}$
b. $\mathbf{fact}_2$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{fact}_2) = \{s'$: it is raining heavily in $s'\}$
c. $\mathbf{fact}_3$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{fact}_3) = \{s'$: it is raining and it is Tuesday in $s'\}$
d. $\mathbf{fact}_4$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{fact}_4) = \{s'$: it is raining heavily and it is Tuesday in $s'\}$

This means that we will not be able to find the *unique* fact such that in all situations of its propositional content it is raining. The facts $\mathbf{fact}_1$, $\mathbf{fact}_2$, $\mathbf{fact}_3$ and $\mathbf{fact}_4$ all fit the description—all situations in their content are situations in which it rains. Thus, the subset semantics predicts the reverse pattern of the one we see, i.e., predicts that we should have to use the indefinite article when *fact* takes an embedded clause.

Now, rumors are different from facts in that two distinct rumors could have the same propositional content: to individuate two rumors it seems sufficient, for example, for their creators to be distinct (see discussion in Elliott 2020: pp. 149–150). Thus, the equality semantics correctly predicts that both definite and indefinite articles should be possible: definite will be used if there is a unique rumor with the given content, and the use of the indefinite article will imply that there exists more than one rumor with the given content.

Let me try to construct one more argument in favor of the equality semantics. Imagine that a complex claim, $\mathbf{claim}_3$, has been made: this claim consists of two subclaims: "Swuna won an award" and "Swuna didn't thank anyone" (187).

(187) a. $\mathbf{claim}_1$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{claim}_1) = \{s'$: Swuna won an award in $s'\}$
b. $\mathbf{claim}_2$: ${}^{\Vdash_e}\textsc{Cont}(\mathbf{claim}_2) = \{s'$: Swuna didn't thank anyone in $s'\}$[57]
c. $\mathbf{claim}_3 = \mathbf{claim}_1 \sqcup \mathbf{claim}_2$, ${}^{\Vdash_e}\textsc{Cont}(\mathbf{claim}_3) = \{s'$: Swuna won the award and didn't thank anyone in $s'\}$

[57] One might wonder what kinds of situations will be in the set $\{s'$: Swuna didn't thank anyone in $s'\}$. We could hypothesize that this set contains negative situations: we could think of them being similar to negative events (Bernard & Champollion 2018, a.o.) or falsifiers (Fine 2017a,b,c).

We can think of the propositional content of this complex claim **claim**$_3$ as the conjunction of the propositional contents of the subclaims that it contains.

Now in the context provided in (188), the sentences like (188a) and (188b) are judged false by native speakers of Korean and Russian.

(188) **Context:** Someone claimed that Swuna won an award and that she didn't thank anyone (= **claim**$_3$). Mina is not surprised by the claim that Swuna won an award (**claim**$_1$), but she is surprised by the claim (**claim**$_2$) that Swuna didn't thank anyone when receiving it (Mina suspects the second statement is a lie).

a. [FALSE] [Swuni-ka sang-ul pat-ess-ta-nun] cwucang-i
Swuni-NOM award-ACC win-PST-DECL-ADN claim-NOM
Mina-lul nollakey ha-yess-ta
Mina-ACC be.surprise do-PST-DECL
'A claim that Swuna won the award surprised Mina. '

b. [FALSE] Zajavlenie, [čto Svuna polučila nagradu],
claim COMP Swuna got award
udivilo Minu.
surprised Mina
'A claim that Swuna got the award surprised Mina.'

The equality semantics predicts this:

(189) **Truth-conditions under the equality semantics**
$[\![$*A claim that Swuna won the award surprised Mina*$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{\Vdash_e}\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')=\text{Mina} \wedge \exists x[\textsc{Causer}(s')=x \wedge \text{claim}(x)_{s,t}$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'\text{: Swuna got an award in } s'\}\ ]\ ]$

In the provided context, there is no claim with the content "Swuna got an award" that surprised Mina. Under the truth-conditions that we get from the subset semantics, however, the predictions are different (190).

(190) **Truth-conditions under the subset semantics**
$[\![$*A claim that Swuna won the award surprised Mina*$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{\Vdash_e}\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')=\text{Mina} \wedge \exists x[\textsc{Causer}(s')=x \wedge \text{claim}(x)_{s,t}$
$\wedge \forall s'[s' \in {}^{\Vdash_e}\textsc{Cont}(x) \Rightarrow \text{Swuna got an award in } s'\ ]\ ]$

All that (190) requires to be true is that there be a claim that surprised Mina such that in all situations in its content Swuna got an award. Under the assumption that individuals whose parts are surprising are surprising themselves, **claim**$_3$ will count as a claim that surprised Mina, because it contains **claim**$_1$ that Mina found surprising. Then, the existence of **claim**$_3$ predicts to make (190) true: it is a claim that Mina is surprised by, and all situations in its content are such that Swuna got an award in them, due to our assumption that the content of complex claims is the conjunction of the contents of its subparts. Thus, the sentence in (188) should be true according to the subset semantics in the provided context.

One possible objection to the argument sketched above is that it could be that (190) is the correct meaning, but it cannot be asserted in the context provided above because it would be uncooperative or uninformative to utter it. For example, maybe something should force us to speak about **claim**$_1$ instead of **claim**$_3$, as it is the **claim**$_1$ part of **claim**$_3$ that makes it surprising for Mina.

I would like to suggest that uninformativeness of (190) cannot be the sole reason responsible for it being judged false. Imagine that we are in fact dealing with an uncooperative speaker: the one that is still committed to saying only things that are true, but who doesn't want others to know the real reason for Mina's surprise. For example, they are trying to conceal the fact that Swuna didn't thank anyone. So when they're asked about why Mina is surprised, they want to respond with something that is factually true but that wouldn't directly mention the cause of Mina's surprise. The sentence with the embedded clause cannot be used by such a sneaky-but-truthful speaker (191).

(191) **Context:** Everything is as in (188), but in addition imagine that the speaker is trying to conceal the real cause of Mina's surprise—e.g., they don't want others to know about Swuna's lack of gratitude—without saying anything that is actually false.

a. [FALSE] Zajavlenie, [čto Svuna polučila nagradu],
claim COMP Swuna got award
udivilo Minu.
surprised Mina
'A claim that Swuna got the award surprised Mina.'

b. [TRUE] Zajavlenie, [soglasno kotoromu Svuna polučila nagradu],
claim according which Swuna got award
udivilo Minu.
surprised Mina
'A claim according to which Swuna got the award surprised Mina.'

In Russian, there is a contrast here between the embedded clause and a relative clause: whereas (191a) is false, (191b) is, while misleading, true and thus can be uttered by the sneaky-but-truthful speaker. The intuition is that (191b) could be talking about $\mathbf{claim}_3$, but (191a) cannot: it has to refer to $\mathbf{claim}_1$. Thus, I conclude that while the subset semantics might be appropriate for other constructions, e.g. Russian preposition *soglasno* 'according' could involve it, it is not a good candidate for meanings of embedded clauses. In chapter 3 I will provide additional evidence for the equality semantics from conjunction and disjunction.

If the equality semantics is on the right track, much more has to be said about it. We need to explore what logical properties it predicts, and what additional assumptions about the mereology of contentful entities we need to make for the equality semantics to make reasonable predictions. See (Elliott 2020) for discussion of how we might want to model a mereology of belief states. To just briefly uncover the set of issues, note that the subset semantics predicts closure under entailment, whereas the equality semantics, in the absence of any additional assumptions, does not guarantee such a result, (192)-(193).

(192) *The subset semantics: closure under entailment*

a. $\exists x[{}^{|\vdash}{}_{e}\textsc{Cont}(x) \subseteq p]$
b. $p \subseteq q$
c. $\Rightarrow \exists x[{}^{|\vdash}{}_{e}\textsc{Cont}(x) \subseteq q]$

(193) *The equality semantics: no closure under entailment*

a. $\exists x[{}^{|\vdash}{}_{e}\textsc{Cont}(x) = p]$
b. $p \subseteq q$
c. $\not\Rightarrow \exists x[{}^{|\vdash}{}_{e}\textsc{Cont}(x) = q]$

If there exists some individual whose propositional content is a subset of p, then if p is a subset of q, then there is an individual whose content is a subset of q, just by the

nature of the subset relation (192). Existence of an individual whose content *equals* p doesn't allow us to conlude that there is an individual whose content equals q for any q that is superset of p (193).

Is this a good prediction? The answer to this question seems to depend on the noun and also the matrix verb that are involved in the sentence. There seem to be clear cases where such entailment is absent. For example, consider (194):

(194) **Context:** Hani made a claim that someone got an award. Then Mina made a claim that Swuna got an award. I'm not surprised by the former claim, but I am surprised by the latter one.
Ja ne udivilas' zajavleniju, čto kto-to polučil nagradu, no ja
I NEG surprised claim COMP someone got award but I
udivilas' zajavleniju, čto Svuna polučila nagradu.
surprised claim COMP Swuna got award
'I'm not surprised by a claim that someone got an award, but I am surprised by a claim that Swuna got an award.'

The sentence in (194) is not contradictory: the speaker can be surprised by the claim that Swuna got an award without being surprised by the claim that someone got an award. To make the judgement clearer, in the provided context these are two different claims made by Hani and Mina respectively. The speaker found only Mina's claim surprising. The subset semantics incorrectly predicts (194) to be infelicitous:

(195) *Subset semantics predicts entailment*

a. $[\![$*I'm surprised by a claim that Swuna got an award*$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{\Vdash_e}\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')$=the speaker $\wedge\ \exists x[\textsc{Causer}(s')$=x
$\wedge\ \text{claim}(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) \subseteq$ {s': Swuna got an award in s'}]

b. {s': Swuna got an award in s'} $\subseteq$ {s': someone got an award in s'}

c. $\exists s'[{}^{\Vdash_e}\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')$=the speaker $\wedge\ \exists x[\textsc{Causer}(s')$=x
$\wedge\ \text{claim}(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) \subseteq$ {s': someone got an award in s'}]

As we see, (195a) and (195b) together entail that (195c) is true. Thus, the speaker has to be surprised by the claim that someone got an award. The equality semantics makes no such prediction due to absence of closure under entailment.

On the other hand, with some content nouns, there does seem to be entailment. One of such nouns is 'belief'. For example, it is infelicitous to assert that one has a

belief *p* but doesn't have a belief that is entailed by *p*:

(196) #U menja net ubeždenija, čto kto-libo polučil nagradu, no u menja
by me no belief COMP who-LIBO got award but by me
est' ubeždenie, čto Svuna polučila nagradu.
exists belief COMP Swuna got award
'I don't have a belief that someone got an award, but I have a belief that Swuna got an award.'

The equality semantics does not guarantee such entailment: without something additional being said, there is no entailment between (197a) and (197b).

(197) *Equality semantics doesn't predict entailment*

a. $[\![$*I have a belief that Swuna got an award*$]\!]^{s,g,t} = 1$ iff
$\exists s'[^{\Vdash_e}\text{have}_{s,t}(s') \wedge \textsc{Holder}(s')$=the speaker $\wedge \exists x[\textsc{Theme}(s')$=x
$\wedge \text{claim}(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'$: Swuna got an award in $s'\}$]

b. $[\![$*I have a belief that someone got an award*$]\!]^{s,g,t} = 1$ iff
$\exists s'[^{\Vdash_e}\text{have}_{s,t}(s') \wedge \textsc{Holder}(s')$=the speaker $\wedge \exists x[\textsc{Theme}(s')$=x
$\wedge \text{claim}(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'$: someone got an award in $s'\}]$

Elliott (2020) proposes that entailment between sentences like in (197) is not due to the presence of a subset relation, but due to the properies of how pluralities of beliefs are structured. Such a view has a ready answer for why presence of closure under entailment seems to be dependent on the predicate that the clause combines with: while attitude holders hold pluralities of beliefs at any given time that are structured in a certain way, the same is not true of things like claims. In other words, mereologies of entities with content depend on what kinds of entities they are. In the remainder of the thesis I will be assuming the equality semantics, while acknowledging that there are many issues that this semantics still needs to address to be a viable hypothesis about displacement in attitude reports.

Now let us turn to the exemplification relation that in the proposed semantics is introduced by the complementizer:

(198) $[\![\text{Comp}]\!]^{s,g,t} = \lambda p.\lambda x.\ x \Vdash_e p$

The motivation for exemplification comes from Sit-CPs. The complementizer in (198) results in minimal semantics for Sit-CPs (199), where only situations that

exemplify the squirrel eating the peanut are in the denotation of the clause.

(199) *Minimal semantics for Sit-CPs:*
$[\![$[Comp *the squirrel ate the peanut*]$]\!]^{s,g,t}$ =
λx. x $\Vdash_e$ {s′: the squirrel ate the peanut in s′}.

An alternative we could consider is non-minimal semantics in (200), which says that Sit-CPs denote situations *in which* the squirrel ate the peanut. These situations are not minimal: they can range from exemplifying situations to whole worlds.

(200) *Non-minimal semantics for Sit-CPs:*
$[\![$[Comp *the squirrel ate the peanut*]$]\!]^{s,g,t}$ =
λx. x $\in$ {s′: the squirrel ate the peanut in s′}

The first argument for exemplification comes from Sit-NPs occuring as Causers of emotive states. Consider (201).

(201) **Context:** Swuni won an award and didn't thank anyone when receiving it. Mina was expecting Swuni to win the award, but was surprised that she didn't thank anyone.

[false] [Swuni-ka sang-ul pat-un] sanghwang-i Mina-lul
Swuni-nom award-acc win-adn situation-nom Mina-acc
nollakey ha-yess-ta.
be.surprise do-pst-decl
'A situation that Swuni won an award surprised Mina.'

We can individuate at least three situations in the context in (201): there is a situation of Swuni winning an award, a situation of Swuni not thanking anyone, and a situation that is made up of these two situations (202).

(202) a. **situation**$_1$: **situation**$_1$ $\Vdash_e$ {s′: Swuni won an award in s′}
b. **situation**$_2$: **situation**$_2$ $\Vdash_e$ {s′: Swuni didn't thank anyone in s′}
c. **situation**$_3$ = **situation**$_1$ $\sqcup$ **situation**$_2$, **situation**$_3$ $\Vdash_e$ {s′: Swuni won an award and didn't thank anyone in s′}

I assume that Swuni is surprised by **situation**$_2$, and thus by **situation**$_3$, but not by **situation**$_1$. In this context the sentence in (201) is judged false. The sentence in (203) must be uttered to truthfully report what surprised Swuni.

(203) **Same context as in (201)**

[TRUE] [Swuni-ka sang-ul pat-ko amwu-eykey-to kamsa-lul
Swuni-NOM award-ACC win-CONJ no.one-DAT-to thanks-ACC
phyoha-ci.anh-un] sanghwang-i Mina-lul nollakey ha-yess-ta.
express-NEG-ADN situation-NOM Mina-ACC be.surprise do-PST-DECL
'A situation that Swuni won an award and didn't thank anyone surprised Mina.'

Let us now consider the predictions made by the minimal and non-minimal semantics for the sentence in (201):

(204) ***(201) according to minimal semantics***
$[\![$*A situation that Swuni won an award surprised Mina*$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash}{}_e\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')=\text{Mina} \wedge \exists x[\textsc{Causer}(s')=x$
$\wedge\ \text{situation}(x)_{s,t} \wedge x\ {}^{|\vdash}{}_e\ \{s'\text{: Swuna got an award in } s'\}]$

(205) ***(201) according to non-minimal semantics***
$[\![$*A situation that Swuni won an award surprised Mina*$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash}{}_e\text{surprise}_{s,t}(s') \wedge \textsc{Theme}(s')=\text{Mina} \wedge \exists x[\textsc{Causer}(s')=x$
$\wedge\ \text{situation}(x)_{s,t} \wedge x \in \{s'\text{: Swuna got an award in } s'\}]$

On the non-minimal semantics (205), the sentence in (201) should be judged true in the provided context. All it requires is that there is a situation *in which* Swuna got an award that Mina finds surprising. And there indeed is such a situation: it is **situation**$_3$, the situation of Swuni winning an award and not thanking anyone. Thus, non-minimal semantics makes here an incorrect prediction.

On the minimal semantics however (204), the sentence is predicted to be false in the given context. This is because **situation**$_3$, the situation of Swuni winning an award and not thanking anyone, does not exemplify {s': Swuna got an award in s'}. Recall that by the definition of exemplification, *s* exemplifies *p* only if all proper parts of *s* are homogeneous with respect to *p*: either in all of them *p* is true, or in all of them *p* is false. **situation**$_3$ is not homogeneous with respect to {s': Swuna got an award in s'}: it has a part—**situation**$_1$—in which this proposition is true, but also another part—**situation**$_2$—in which this proposition is false. The only situation which exemplifiers {s': Swuna got an award in s'} is **situation**$_1$, but Mina doesn't find it surprising, and thus (201) is correctly predicted to be true.

Russian Sit-CPs show exactly the same behavior as Korean Sit-CPs: as we see in (206), the clause that modifies the noun *situacija* 'situation' cannot be interpreted as describing a situation *in which* Sveta won the award, it has to describe a situation containing Sveta winning the award and nothing else.

(206) **Context:** Sveta won an award and didn't thank anyone when receiving it. Lena was expecting Sveta to win the award, but was surprised that she didn't thank anyone.

[FALSE] Situacija, čto Sveta vyigrala premiju, udivila Lenu.
situation COMP Sveta won award surprised Lena
'A situation that Sveta won the award surprised Lena.'

Note that changing an embedded clause to a relative clause allows us to make a true statement verified by **situation**$_3$:[58]

(207) **Same context as in (206)**

[TRUE] Situacija, [v xode kotoroj Sveta vyigrala premiju],
situation in duration of.which Sveta won award
udivila Lenu.
surprised Lena
'A situation during which Sveta won the award surprised Lena.'

This is because the relative clause does not describe what this situation *is*, but only tells us that Sveta won an award *within* this situation. The embedded clause on the other hand requires that the situation exemplifies the embedded proposition, which renders sentences like (206) false.

The second argument for exemplification comes from the lack of stacking. Recall that the lack of stacking with Cont-CPs can be explained by the equality semantics of displacement (Moulton 2009). Sit-CPs in Russian and Korean cannot be stacked either, (98)-(100), repeated below as (208)-(209), but the same explanation cannot apply as these clauses lack displacement.

[58]The sentence in (207) sounds a bit odd to some speakers due to the fact that *v xode kotoroj* usually is used with something eventive, and *situacija* usually describes a state. But to the extent that this combination is possible, it can refer to **situation**$_3$ in this context.

(208) *Sit-CPs in Russian cannot be stacked*

*Byla situacija, [čto Mitja igral na pianino] [čto Nastja pela].
was situation COMP Mitya played on piano COMP Nastya sang
'There was a situation, in which M. played the piano, in which N. sang.'

(209) *Sit-CPs in Korean cannot be stacked*

*Mina-ka [Swuna-ka nolayha-nun] [Hani-ka chwumchwu-nun]
Mina-NOM Swuna-NOM sing-ADN Hani-NOM dance-ADN
sanghwang-ul kiekha-ss-ta.
situation-ACC remember-PST-DECL
'M. remembered the situation, in which S. sang and in which H. danced.'

I propose that Sit-CPs cannot be stacked due to the exemplification semantics of the complementizer. Consider the predictions of the minimal and non-minimal semantics in (210) and (211) respectively.

(210) ***Minimal semantics: no stacking***

$[\![$*Mina remembered a situation that Swuna sang that Hani danced*$]\!]^{s,g,t} = 1$ iff
$\exists s'[^{|\vdash_e}\text{remember}_{s,t}(s') \wedge \text{Exp}(s')=\text{Mina} \wedge \exists x[\text{Theme}(s')=x$
$\wedge\ \text{situation}(x)_{s,t} \wedge x \,|\vdash_e \{s'\text{: Swuna sang in } s'\}$
$\wedge\ x \,|\vdash_e \{s'\text{: Hani danced in } s'\}]$ **always false**

(211) ***Non-minimal semantics: should allow stacking***

$[\![$*Mina remembered a situation that Swuna sang that Hani danced*$]\!]^{s,g,t} = 1$ iff
$\exists s'[^{|\vdash_e}\text{remember}_{s,t}(s') \wedge \text{Exp}(s')=\text{Mina} \wedge \exists x[\text{Theme}(s')=x$
$\wedge\ \text{situation}(x)_{s,t} \wedge x \in \{s'\text{: Swuna sang in } s'\}$
$\wedge\ x \in \{s'\text{: Hani danced in } s'\}\ ]$

The semantics in (210) predicts that sentences like in (208)-(209) should be always false, which I assume renders them ungrammatical. This is because there cannot exist a situation that both exemplifies {s': Swuna sang in s'} and exemplifies {s': Hani danced in s'} at the same time: a minimal unit of Swuna's singing will not contain any dancing by Hani and vice versa.[59]

[59] One might wonder whether we could find distinct propositions that are exemplified by the same situation. For example, Roger Schwarzschild (p.c.) raised the question of whether some situation could exemplify both {s: the coffee is black in s} and {s: the coffee is hot in s} at the same time. This issue is addressed by (Kratzer 1989), and her answer is negative. The idea discussed by Kratzer

The semantics in (211) however does not ban stacking of several Sit-CPs. The meaning in (211) is completely reasonable: Mina remembers a situation in which Swuna sang and in which Hani danced. Thus, non-minimal semantics does not allow us to attribute the lack of stacking to the meanings of embedded clauses.

Another support for the need of exemplification comes from the inability of embedded clauses to modify deverbal nouns which describe situations (212).

(212) * kormlenie životnyx [**čto** belki s"eli orexi]
feeding of.animals **COMP** squirrels ate nuts
'feeding of the animals in which the squirrels ate the nuts'

If we assume that the deverbal noun in (212) denotes a predicate of individuals that exemplify feeding of the animals (213), then the ungrammaticality of (212) can be attributed the same cause as the ban on stacking under the current proposal.

(213) $[\![\textit{feeding of animals}]\!]^{s,g,t} = \lambda x.^{\Vdash_e} \text{feed}_{s,t}(x) \wedge \textsc{Theme}(x) = \iota y(\text{animals}(y)_{s,t})$

In (214) when we combine *feeding of animals* with the embedded clause by Predicate Modification, we get a set of individuals that both exemplify feeding of the animals and exemplify the squirrels eating the nuts. But any situation that exemplifies the squirrels eating the nuts does not include any feeding, and feeding is included in all situations exemplifying feeding of animals. Thus, (214) denotes an empty set, and the meanings of the sentences that contain it will be trivially false.

(214) ***Deverbal noun + CP on minimal semantics***
$[\![\textit{feeding of animals that the squirrels ate the nuts}]\!]^{s,g,t} =$
$\lambda x.^{\Vdash_e} \text{feed}_{s,t}(x) \wedge \textsc{Theme}(x) = \iota y(\text{animals}(y)_{s,t})$
$\wedge\, x \Vdash_e \{s'\text{: the squirrels ate the nuts in } s'\} = \varnothing$

Under the non-minimal semantics however we predict a fine meaning (215): a

relies on the distinction between *thin* and *thick particulars* (Armstrong 1978): an individual with all its properties "stripped off" and an individual together with all of its properties respectively. If a situation s exemplifies {s: the coffee is black in s}, it will contain the thin particular of the coffee and its blackness, but no other properties of the coffee. If a situation s' exemplifies {s: the coffee is hot in s}, it will contain the thin particular of the coffee and its hotness, but no other properties. If this is the case, s and s' could never be the same situation, as s has to contain the blackness of the coffee, but lack its hotness, whereas s' has to contain the coffee's hotness but lack its blackness.

While no situation can exemplify both {s: the coffee is black in s} and {s: the coffee is hot in s}, we will discuss a particular kind of case in which the same situation can exemplify two distinct propositions in chapter 4, at the end of section 4.2 and at the end of section 4.3.3.

set of entities that exemplify feeding of animals *in which* the squirrels ate the nuts.

(215) ***Deverbal noun + CP on non-minimal semantics***
$[\![$*feeding of animals that the squirrels ate the nuts*$]\!]^{s,g,t} = \lambda x.^{\Vdash_e} \text{feed}_{s,t}(x)$
$\wedge$ $\textsc{Theme}(x)=\iota y(\text{animals}(y)_{s,t}) \wedge x \in \{s'$: the squirrels ate the nuts in $s'\}$

While (215) seems to be a wrong meaning for deverbal nouns combining with embedded clauses, it is a plausible meaning for the cases where deverbal nouns combine with relative clauses:

(216) kormlenie životnyx [**pri kotorom** belki s"eli orexi]
feeding of.animals **by** **REL** squirrels ate nuts
'feeding of the animals in which the squirrels ate the nuts'

In (216) it is not required that the feeding of the animals would *exemplify* the squirrels eating the nuts. The only condition that (216) imposes is that the event of feeding should *contain* some squirrels eating the nuts.

Thus, we have seen several pieces of evidence that suggest that the meanings of Sit-CPs should not be equated with propositions, but should contain only exemplifying situations of the embedded proposition.

Under the current proposal, the exemplification relation is introduced by the complementizer,[60] and thus it is present in Cont-CPs as well. The question that arises then is whether there is any actual need for it in Cont-CPs. Consider again what exemplification does to the meaning of Cont-CPs:

(217) $[\![$[Comp Cont *the squirrel ate the peanut*]$]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{x'$: $\textsc{Cont}(x') = \{s'$: the squirrel ate the peanut in $s'\}\}$

It requires the set of individuals whose content is the embedded proposition to not contain any parts irrelevant to this content. For example, *x* can be a claim with the content *"The squirrel ate the peanut"*, and it will be a minimal individual with this content—if we take parts of this claim, their content will not be *"The squirrel ate the peanut"*. On the other hand, *x* can be a process of thinking over and over *"The squirrel ate the peanut"*, a situation such that whichever proper part of this thinking

[60] This raises an interesting question about sentences in which the complementizer is dropped (I thank Sabine Iatridou for raising this issue): do they contain the exemplification relation too? I have to leave this question open. See also discussion in chapter 3 on TP vs. CP conjunction.

activity we take, its content will be *"The squirrel ate the peanut"*. But the definition in (217) would ban contenful individuals whose proper parts are not homogeneous, e.g. individuals some proper parts of which have content "The squirrel ate the peanut", and other proper parts of which don't have that content. So, for example, an individual $x = y \sqcup z$, where y is an idea with the content *"The squirrel ate the peanut"* and z is a contentless entity like **a chair**, will not be in the set in (217). This is the restriction that exemplification imposes.

I have not been able to find unambiguous evidence in favor of this restriction for Cont-CPs, because data like the ban on stacking, or interpretations in sentences with emotive verbs, (188)-(191), can be explained by the equality semantics. The restriction that exemplification imposes however seems reasonable and unharmful, and given that we see the same morphology in Cont-CPs as in Sit-CPs (Russian *čto*, Korean adnominal marker), I will assume that it has the same contribution across all of its uses, and exemplification is present in Cont-CPs as well.

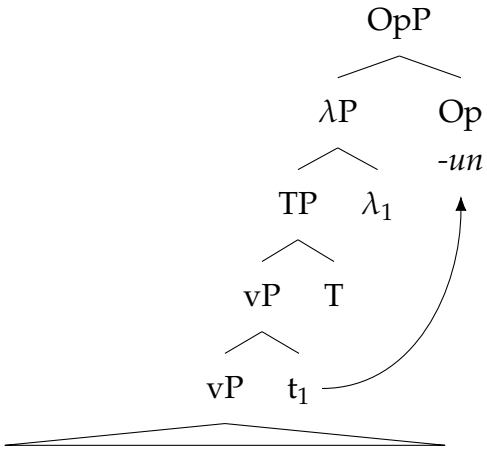
In conclusion of this section, I would like to present an alternative analysis of how exemplification arises. Given the similarities between embedded and relative clauses, we could entertain a hypothesis that clausal embedding involves relativization (Aboh 2005, Arsenijević 2009, a.o.). For example, it could be that both relative clauses and embedded clauses are structures with a semantically vacuous operator movement, and complementizers or adnominal markers are exponents of such operators. Consider again a Sit-CP like in (218).

(218) [talamcuy-ka ttangkhong-ul mek-un] sanghwang-i
squirrel-NOM peanut-ACC eat-PST.ADN situation-NOM
'the situation that the squirrel ate the peanut'

Now imagine that instead of the existential closure that would normally happen at the level of vP, the verbal phrase (219) combines with a trace of an operator that undergoes movement, as is illustrated in (220).

(219) $[\![[_{vP}$ *the squirrel eat the peanut*$]]\!]^{s,g,t} = \lambda s'.^{\Vdash_e}\text{eating}_{s,t}(s')$
$\wedge$ AGENT$(s')=\iota y(\text{squirrel}(y)_{s,t}) \wedge$ THEME$(s')=\iota x(\text{peanut}(x)_{s,t})$

(220) LF for (219)



Then after T combines with this *v*P (221), the lambda abstraction triggered by the vacuous operator will happen, giving rise to the interpretation in (222).

(221) $[\![[_{TP}$ *the squirrel eat the peanut*$]]\!]^{s,g,t} = \exists t' < t\ [^{\Vdash_e}\text{eating}_{s,t'}(g(1))$
$\wedge\ \textsc{Agent}(g(1))=\iota y(\text{squirrel}(y)_{s,t'}) \wedge \textsc{Theme}(g(1))=\iota x(\text{peanut}(x)_{s,t'})]$

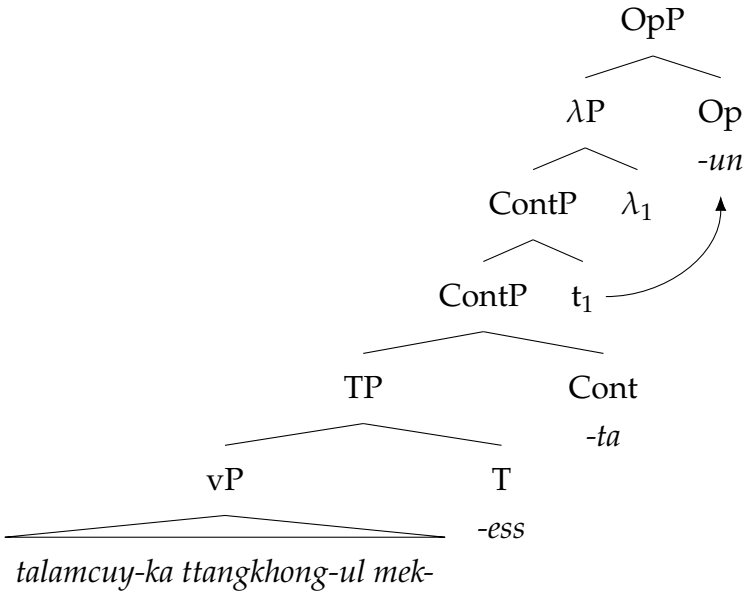
(222) $[\![\ \lambda_1\ [_{TP}$ *the squirrel eat the peanut*$]]\!]^{s,g,t} = [\![\text{OpP}]\!]^{s,g,t} =$
$\lambda s'.\ \exists t' < t\ [^{\Vdash_e}\text{eating}_{s,t'}(s') \wedge \textsc{Agent}(s')=\iota y(\text{squirrel}(y)_{s,t'}) \wedge$
$\textsc{Theme}(s')=\iota x(\text{peanut}(x)_{s,t'})]$
$\equiv \lambda s'.\ s' \Vdash_e \{s: \text{the squirrel ate the peanut in s}\}$

If the trace that the operator left was of type e, we will get a set of individuals that are exemplifying situations of eating in *s* at some *t'* preceding *t* with the squirrel being their Agent and the peanut being their Theme. In other words, we seem to get the same meaning that I have proposed for Sit-CPs: the set of things that are minimal situations of the squirrel eating the peanut. The exemplification in this case comes directly from the meaning of the predicate *eat*.

Associating the complementizer/adnominal marker with a vacuous operator would mean that we will need to postulate operator movement in Cont-CPs as well. So the clause like in (223) will need to have a structure like in (224).

(223) [talamcuy-ka ttangkhong-ul mek-ess-ta-nun] cwucang-i
squirrel-NOM peanut-ACC eat-PST-DECL-ADN claim-NOM
'the claim that the squirrel ate the peanut'

(224) The structure of the Korean embedded clause in (223)



Under this account, the Cont head itself will need to encode the exemplification relation (225).

(225) $[\![\text{Cont}]\!]^{s,g,t} = \lambda p.\lambda x.\ x \Vdash_e \{x' \text{: } \textsc{Cont}(x') = p\}$

ContP will combine with a trace of the operator (226), and then lambda abstraction will result in the meaning of the Cont-CP clause in (227).

(226) $[\![\text{ContP}]\!]^{s,g,t} = 1$ iff
$g(1) \Vdash_e \{x' \text{: } \textsc{Cont}(x') = \{s' \text{: the squirrel ate the peanut in } s'\}$

(227) $[\![\lambda P]\!]^{s,g,t} = [\![\text{OpP}]\!]^{s,g,t} = 1$ iff
$\lambda x.\ x \Vdash_e \{x' \text{: } \textsc{Cont}(x') = \{s' \text{: the squirrel ate the peanut in } s'\}\}$

In this way, we will again arrive at the same meaning for Cont-CPs that we had before: they will be predicates of individuals exemplifying the property of having propositional content *"The squirrel ate the peanut"*.

Should we adopt such a proposal to embedded clauses? One thing that might be troubling is that the operator movement in Cont-CPs seems to be completely unnecessary: ContP and OpP have exactly the same meaning, and there are no meaningful intervening projections between them (unlike with Sit-CPs, where Tense intervenes). So why do such a movement? We might have expected ContPs to be

able to combine with nominals directly, contra to the fact.

Under this proposal, any differences between relative clauses and complement clauses should stem from the difference in the site of relativization, and perhaps also from potential differences in the attachment of the clause in the structure of the nominal phrase. Whether these are good predictions and the observed syntactic differences are indeed limited to effects of these parameters, requires further study.

2.5 Sit-CPs and Cont-CPs as complements to verbs

We have seen that clauses that combine with nouns come in at least two types: Cont-CPs, whose meanings involve displacement, and Sit-CPs, whose meanings do not involve displacement. This section argues that the same two kinds of meanings can be present among CPs that combine with verbs. The discussion here will neglect the issues of how CPs are integrated with matrix verbs (see chapter 4, which is devoted to this question), focusing merely on the presence vs. absence of displacement.

Many clauses that combine with verbs clearly involve displacement and thus can be regarded Cont-CPs (for approaches analyzing CPs that combine with verbs as predicates of contentful entities, see Kratzer 2006, Moulton 2009, Kratzer 2013, Moulton 2015, Bogal-Allbritten 2016, 2017, Elliott 2020, a.o.). Such clauses are illustrated for Russian in (228) and in (229) for Korean.

(228) Maša dumaet /somnevaetsja /predpolagaet čto ovcy ètо kozy.
Masha thinks /doubts /assumes COMP sheep COP goats
'Masha thinks/doubts/assumes that the sheep are goats.'

(229) Mina-nun [i san-uy yang–i yemso-la-ko]
Mina-TOP this mountain-GEN sheep-NOM goat-COP.DECL-COMP
sayngkakha-n-ta.
think-PRS-DECL
'Mina thinks that the sheep on this mountain are goats.'

We see that predicates inside these clauses can be interpreted *de dicto* while the subjects are interpreted *de re*, making such sentences felicitous. Recall also that *la* in Korean is a portmanteau of the copula *i* and the declarative marker *-ta*. Thus, we can clearly see that the Cont head is present in Korean clauses that combine with

'think' and allow displacement.

But there are also verbs which combine with Sit-CPs, and in particular there are verbs that exclusively combine with Sit-CPs. In Russian these are verbs like *byvat'* 'happen', *slučat'sja* 'occur', *proisxodit'* 'take place'. When clauses combine with these verbs, they describe situations that happen, occur, take place in the evaluation situation. Thus, these CPs are referentially transparent: e.g., in (230) the sentence is infelicitous under the assumption that goats and sheep are disjoint sets, because the two predicates are forced to be interpreted with respect to the same situation.

(230) # Byvaet /slučilos' /proizošlo (takoe) čto ovcy èto kozy.
happens /occured /took.place (such) COMP sheep COP goats
lit. 'It happens/occurred/took place that sheep are goats.'

The substitution test confirms this result: if the premises in (231a) and (231b) are true, it is judged that the conclusion in (231c) is valid.

(231) a. Byvaet (takoe) čto **èta ženščina** ezdit na kone.
happens (such) COMP **this woman** rides on horse
'It happens that this woman rides a horse.'

b. èta ženščina — [koroleva Velikobritanii].
this woman queen Great.Britain
'This woman is the queen of Great Britain.'

c. Byvaet (takoe) čto **koroleva Velikobritanii** ezdit na kone.
happens (such) COMP **queen** **Great.Britain** rides on horse
'It happens that the queen of Great Britain rides a horse.'

If situations of this woman riding a horse happen in the evaluation situation *s*, then provided this woman is the queen of Great Britain in *s*, it follows that situations of the queen of Great Britain riding a horse happen in *s*.

In Korean, the verb *-ilena* 'occur' is a verb that combines exclusively with Sit-CPs. These clauses have to be nominalized with the abstract noun *kes* 'thing' or occur as complements to the noun *il* 'event' to combine with 'occur'.

(232) [talamcuy-ka ttangkhong-ul mek-nun] kes-i /il-i
squirrel-NOM peanut-ACC eat-ADN thing-NOM event-NOM

ilena-ess-ta
occur-PST-DECL
'It occured so that the squirrel ate peanuts.'

What is important is that the declarative marker *-ta*, which is associated with displacement, cannot be part of the clause that combines with *-ilena* 'occur', regardless of whether the clause has the adnominal marker (233) or occurs with the complementizer *-ko* that we see on complements of verbs like 'think' (234).

(233) *[talamcuy-ka ttangkhong-ul mek-ess-ta-nun] kes-i /il-i
squirrel-NOM peanut-ACC eat-PST-DECL-ADN thing-NOM /event-NOM
ilena-ess-ta
occur-PST-DECL
'It occured so that the squirrel ate peanuts.'

(234) *[talamcuy-ka ttangkhong-ul mek-ess-ta-ko] ilena-ess-ta
squirrel-NOM peanut-ACC eat-PST-DECL-COMP occur-PST-DECL
'It occured so that the squirrel ate peanuts.'

This suggests that 'occur' cannot combine with Cont-CPs. This conclusion is corroborated by the fact that sentences like (235) are contradictory: the embedded predicate has to be evaluated with respect to the same situation as the subject, suggesting that there is no displacement introduced in the meaning of the clause.

(235) #[cikakha-ci.anh-un sonye-ka cikakha-nun kes-i /il-i]
be.late-NEG-ADN girl-NOM be.late-ADN thing-NOM /event-NOM
ilena-ss-ta.
occur-PST-DECL
'It occured so that the girl who wasn't late was late.'

Are there verbs that not only are able to combine with Cont-CPs, but have to combine with Cont-CPs? It seems so. Testing this in Korean is relatively easy: we need to examine if there are verbs whose clauses must contain *-ta*. The verb *saynggakha* 'think' is such a verb:[61]

[61] There is a potential way for a clause to occur with *saynggakha* 'think' without *-ta*: to become an adnominal clause occuring with the abstract noun *kes* 'think'. Such sentences are however degraded, and differ in their interpretation: the clauses (i) describe not what Mina thought, but what her

(236) a. Mina-nun [talamcuy-ka ttangkhong-ul mek-ess-ta-ko]
Mina-TOP squirrel-NOM peanut-ACC eat-PST-DECL-COMP
sayngkakha-n-ta.
think-PRS-DECL
'Mina thinks that the squirrel ate the peanuts.'

b. *Mina-nun [talamcuy-ka ttangkhong-ul mek-(ess)-ko]
Mina-TOP squirrel-NOM peanut-ACC eat-(PST)-COMP
sayngkakha-n-ta.
think-PRS-DECL
'Mina thinks that the squirrel ate the peanuts.'

In Russian, there seems to be a modifier that can attach exclusively to Sit-CPs: *takoe* 'such'. It is possible on clauses that combine with verbs like *slučat'sja* 'occur' or *proisxodit'* 'happen, take place', but not on clauses that combine with verbs like *dumat'* 'think' or *somnevat'sja* 'doubt'.

(237) Slučilos' /proizošlo **takoe** čto belki s"eli vse orexi.
occured /happened **such** COMP squirrels ate all nuts
lit. 'That the squirrels ate all the nuts occurred/happened.'

(238) * Maša dumaet /somnevaetsja **takoe** čto belki s"eli vse orexi.
Masha thinks /doubts **such** COMP squirrels ate all nuts
'Masha thinks/doubts that the squirrels ate all the nuts.'

Perhaps this modifier requires a predicate of situations which are not in the domain of the Cont function, and hence cannot occur on top of Cont-CPs.

Thus, we have seen that there are verbs which are picky about whether the clause that they combine with has displacement in its meaning. How would such selection be achieved? I suggest that verbs place restrictions on what their ar-

thinking was about. There will be more discussion of how clauses can incorporate into the argument structure in chapter 4.

(i) ?Mina-nun [talamcuy-ka ttangkhong-ul mek-ess-ta-nun /mek-un kes-ul]
Mina-TOP squirrel-NOM peanut-ACC eat-PST-DECL-ADN /eat-ADN thing-ACC
sayngkakha-n-ta
think-PRS-DECL
'Mina thinks about the fact that the squirrel ate the peanuts.'

guments (internal arguments, event arguments) can be, including restrictions on whether their arguments have some propositional content associated with them. Clauses modify verbal arguments (more on this in chapter 4), and thus become subject to these restrictions.

Some verbs however do not introduce such restrictions, and thus can combine with both Sit-CPs and Cont-CPs. In Russian, verbs like *pomnit'* 'remember', *zamečat'* 'notice', *videt'* 'see' are for example such verbs. These verbs can combine with the modifier *takoe* 'such', and when they do, direct perception reports are created, just as with a designated direct perception complementizer *kak*.

(239) Lena pomnit {takoe čto} /{kak} Mitja kuril.
Lena remembers such COMP /COMP.DIR Mitya smoked
'Lena remembers M.'s smoking.' ⇒ Lena directly perceived M. smoking.

I propose that in (239) 'remember' is combining with a Sit-CP. This Sit-CP describes a situation that exemplifies {s': Mitya smokes in s'}, and this situation is remembered by Lena. Without *takoe*, there is no direct perception requirement:

(240) Lena pomnit (to) čto Mitja kuril, xot' ona i ne
Lena remembers (DEM.DEM) COMP Mitya smoked though she CONJ NEG
videla ego ni razu kurjaščim.
saw him not once smoking
'Lena remembers the fact that Mitya smoked, despite not seeing him smoke even once.' ⇏ Lena directly perceived Mitya smoking.

The clause in (240) is a Cont-CP: it describes a fact or claim with the content {s': Mitya smokes in s'}, and it is this fact or claim that is the object of Lena's memory. In this case there is no direct relation between Lena and a situation of Mitya smoking.

Similar observations hold in Korean. For example, if we take the verb *palkyenhay* 'discover', presence of *-ta* implies that Mina discovered the fact without any perceptual relation to the situation that caused it (Cont-CP), (241a), but the absence of the declarative marker creates a perception report where Mina is perceiving a situation of Swuna solving the problem (Sit-CP), (241b).

(241) a. Mina-ka [Swuna-ka mwuncey-lul phwul-ess-**ta**-nun] kes-ul
Mina-NOM Swuna-NOM problem-ACC solve-PST-**DECL**-ADN thing-ACC

palkyenhay-ss-ta.
discover-PST-DECL
✗'Mina directly perceived a situation of Swuna solving a problem.'
✓ 'Mina discovered the fact that Swuna solved a problem.'

b. Mina-ka [Swuna-ka mwuncey-lul phwul-un] kes-ul
Mina-NOM Swuna-NOM problem-ACC solve-ADN thing-ACC
palkyenhay-ss-ta.
discover-PST-DECL
✓'Mina directly perceived a situation of Swuna solving a problem.'
✗ 'Mina (indirectly) discovered the fact that S. solved a problem.'

When verbs permit both Cont-CPs and Sit-CPs, the former are referentially opaque, and the latter are referentially transparent. This is illustrated below in (242)-(243) with the verb *haysekha* 'interpret' in Korean.

(242) *Opacity with Cont-CPs:* from {(a), (b)} $\not\Rightarrow$ (c)

a. Swuna-ka [**hoysa-ka** hyepsang-ul ha-l
Swuna-NOM **company-NOM** negotiation-ACC do-FUT.ADN
cwunpi-ka toy-ess-**ta**-nun kes-ul] kuncengcek-ulo
preparation-NOM become-PST-**DECL**-ADN thing-ACC positive-as
haysekha-yess-ta.
interpret-PST-DECL
'S. interpreted that the company is ready for negotiations as good.'

b. I hoysa-ka kacang khun sekyuhoysa-i-ta.
this company-NOM most large oil.company-COP-DECL
'This company is the biggest oil company.'

c. Swuna-ka [**kacang khun**
Swuna-NOM **most large**
sekyuhoysa-ka hyepsang-ul ha-l cwunpi-ka
oil.company-NOM negotiation-ACC do-FUT.ADN preparation-NOM
toy-ess-**ta**-nun kes-ul] kuncengcek-ulo haysekha-yess-ta.
become-PST-**DECL**-ADN thing-ACC positive-as interpret-PST-DECL
'Swuna interpreted that the largest oil company is ready for negotiations as good.'

(243) *Transparency with Cont-CPs:* from {(a), (b)} ⇒ (c)

a. Swuna-ka [**hoysa-ka** hyepsang-ul ha-l
Swuna-NOM **company-NOM** negotiation-ACC do-FUT.ADN
cwunpi-ka toy-nun kes-ul] kuncengcek-ulo
preparation-NOM become-ADN thing-ACC positive-as
haysekha-yess-ta.
interpret-PST-DECL
'Swuna interpreted that the company is ready for negotiations as a good thing.'

b. I hoysa-ka kacang khun sekyuhoysa-i-ta.
this company-NOM most large oil.company-COP-DECL
'This company is the biggest oil company.'

c. Swuna-ka [**kacang khun sekyuhoysa-ka** hyepsang-ul
Swuna-NOM **most large oil.company-NOM** negotiation-ACC
ha-l cwunpi-ka toy-nun kes-ul]
do-FUT.ADN preparation-NOM become-ADN thing-ACC
kuncengcek-ulo haysekha-yess-ta.
positive-as interpret-PST-DECL
'Swuna interpreted that the largest oil company is ready for negotiations as a good thing.'

In (242) the nominalized clause could be describing some statement that someone made and Swuna is interpreting. While this company might be the biggest oil company in the evaluation situation, the company under consideration does not have to be the biggest oil company according to that statement. This is because clauses with *-ta* involve displacement, and we are able to interpret predicates within them with respect to situations that are not equal to the evaluation situation. In (243) the clauses are Sit-CPs that lack displacement, and the substitution test goest through: if Swuna is providing an interpretation of some actual situation of the company being ready for negotiations, then if this company is the biggest oil company, it must be the case that she is providing an interpretation of an actual situation of the biggest oil company being ready for negotiations.

Predicates like 'remember', 'discover', 'interpret' provide an additional argument in favor of the decompositional approach to attitude reports. What we have

seen is that the presence of displacement in the meanings of these reports correlates with the structure of the embedded clause, e.g. with the presence of the declarative marker *-ta* in Korean clauses. This is expected if the source of displacement is within the embedded clause. If however the source of displacement is the attitude verb, we will need to postulate ambiguity for all such verbs to account for the variability in the presence of displacement in sentences with them.

To sum up, in this section we have seen that the distinction between Cont-CPs and Sit-CPs is relevant not only for nouns, but also for verbs. Some verbs are picky in what kinds of clauses they combine with, allowing only Cont-CP or Sit-CP complements, whereas others do not place such restrictions.

2.6 Concluding remarks

In this chapter I argued that finite embedded clauses can have at least two kinds of meanings: they can be predicates of entities whose content equals the embedded proposition (Cont-CPs), and they can be predicates of situations that exemplify the embedded proposition (Sit-CPs). These two kinds of meanings can involve different morphosyntactic appearance, as is the case in Korean, but they don't have to: we saw that Russian has the same distinction without marking it overtly.

Cont-CPs introduce displacement, and thus are referentially opaque. Sit-CPs lack displacement, and thus are referentially transparent. I have proposed that the meanings of Cont-CPs involve equality semantics: the content of a contentful entity is equated with the embedded proposition. I also proposed that the complementizers (Russian *čto* and Korean adnominal markers) introduce the exemplification relation into clausal meanings. I argued that both types of clauses are modifiers when they combine with nouns, and also that we see clauses with meanings of Cont-CPs and Sit-CPs with verbs as well.

Chapter 3

Clausal conjunction & disjunction

This chapter outlines the predictions that the theory argued for in chapter 2 makes about conjunction and disjunction of clauses, compares it to predictions of other theories (section 3.1) and then tests these predictions, with the data coming primarily from Russian and Korean, but also from English, Hebrew and Italian. The main ideas developed in this chapter grew out of a joint project with Itai Bassi (Bassi & Bondarenko 2021). This chapter adds discussion of the distinction between Sit-CPs and Cont-CPs to those ideas, as well as presents new arguments from Korean.

The main claim advocated for here is that embedded clauses can never be conjoined by the garden-variety intersective conjunction due to their meanings: such conjunctions always denote an empty set, which would make sentences containing them trivially false. Sometimes the result of this restriction is just ungrammaticality of strings like *CP* CONJ *CP* (section 3.2). Other times strings like *CP* CONJ *CP* are possible, but result from conjunction of bigger constituents than just two clauses, as evidenced by the wide scope of conjunction in such sentences (section 3.4). Finally, there are some speakers who in certain cases allow the low scope of conjunction in strings like *CP* CONJ *CP*. I argue that such cases arise from the use of a non-Boolean conjunction that is independently needed (section 3.5).

3.1 Predictions about conjunction and disjunction

Let us consider four approaches to the meanings of embedded clauses and the predictions that they make about clausal conjunction and disjunction. Under the first approach (1) I will in fact subsume several proposals: the idea that the semantic

value of embedded clauses is a truth-value (1a), and the hypotheses that embedded clauses denote sets of situations (1b) and sets of worlds (1c).[1]

(1) **Approach#1:** *truth value or set of worlds/situations*

a. $[\![\text{that Mary sang}]\!]^s$ = 1 iff Mary sang in s

b. $[\![\text{that Mary sang}]\!]^s$ = {s': Mary sang in s'}

c. $[\![\text{that Mary sang}]\!]^s$ = {w: Mary sang in w}

What unites the proposals in (1a)-(1c) is that the meaning of the CP in them is equivalent to the meaning of the TP, and the complementizer (and any other syntactic projections in the left periphery) are thus semantically vacuous.[2]

The second approach (2) represents the group of proposals according to which embedded clauses are predicates of minimal truth-supporting circumstances—things like exemplifying situations, or events, or truthmakers (the differences between these, if they exist, will not be relevant for the issues discussed).

(2) **Approach#2:** *set of minimal situations/events/truthmakers*
$[\![\text{that Mary sang}]\!]^s$ = {s: s $\Vdash_e$ {s': Mary sang in s'}}

Approach#2 can be supplemented by different assumptions about what the meaning of a proposition (= TP) is, and thus versions of this approach will differ on whether meanings of CPs and TPs are identical. For example, in truthmaker semantics (Fine 2017b, Moltmann 2020) the meaning in (2) will be the meaning of both CPs and TPs. But according to the view presented in the chapter 2, Sit-CPs have the meaning in (2), but TPs do not (they are sets of non-minimal situations).

According to the third and fourth approaches, (3)-(4), the meanings of embedded CPs are not equivalent to the meanings of embedded TPs: CPs are sets of entities with propositional content. What these two approaches differ on is the nature of the relation established between the set of worlds that represent the propositional content and the embedded proposition. In the approach#3, the relation

[1] I omit the assignment function and the evaluation time from the parameters of the interpretation function in this chapter, as they are not relevant for the issues being discussed.

[2] This is true under the assumption that TPs also denote truth values or propositions, with propositions being construed as sets of situations or worlds. We could imagine an alternative where TPs would denote sets of minimal situations/events/thruthmakers, and CPs would denote sets of non-minimal situations/worlds. I am not aware of such proposals, so I will leave this alternative aside. One thing to note is that this alternative would predict intersective conjunction to be impossible with TPs but fine with CPs. As we will see, this is the opposite of what we observe.

between the two is equality (3), but in the approach#4 it is the subset relation (4).

(3) **Approach#3:** *set of contentful entities, equality semantics*
$[\![\text{that Mary sang}]\!]^s = \{x\text{: } \textsc{Cont}(x) = \{s'\text{: Mary sang in } s'\}\}$

(4) **Approach#4:** *set of contentful entities, subset semantics*
$[\![\text{that Mary sang}]\!]^s = \{x\text{: } \textsc{Cont}(x) \subseteq \{s'\text{: Mary sang in } s'\}\}$

Now let us first consider the predictions that these four approaches make for intersective conjunction of clauses (table 3.1), where by intersective conjunction I mean generalized conjunction (Gazdar 1980, Partee & Rooth 1983):[3]

(5) **Definition: conjoinable type** (Partee & Rooth 1983)
   a. t is a conjoinable type
   b. if b is a conjoinable type, then for all a, <a,b> is a conjoinable type

(6) **Generalized Conjunction** ($\sqcap$) (Partee & Rooth 1983)
   a. $X \sqcap Y = X \wedge Y$ if Z and Y are truth-values
   b. $X \sqcap Y = \{<z,x \sqcap y>: <z,x> \in X \text{ and } <z,y> \in Y\}$ if X and Y are functions (which are represented as sets of ordered pairs)

Meaning of CPs	**Conjunction of CPs**
(1) truth value or set of worlds/situations	yes, $[\![CP]\!] \sqcap [\![CP]\!] = [\![TP]\!] \sqcap [\![TP]\!]$
(2) set of minimal situations/events/truthmakers	no
(3) set of contentful entities, equality semantics	no
(4) set of contentful entities, subset semantics	yes, $[\![CP]\!] \sqcap [\![CP]\!] = [\![TP]\!] \sqcap [\![TP]\!]$

Table 3.1: Predictions of different theories for intersective conjunction of clauses

Approach#1 predicts that conjunction of CPs should be possible, and, furthermore, it should be equivalent to the conjunction of TPs:

(7) **Approach#1: conjunction**
   a. $[\![\text{that Mary sang and that Dina danced}]\!]^s = 1$ iff
   Mary sang in *s* and Dina sang in *s*

[3]Here I am talking about functions and characteristic sets of those functions interchangeably, so in the table 3.1 we could have written for example "truth value or function from worlds/situations to truth values" instead of "truth value or set of worlds/situations".

b. ⟦that Mary sang and that Dina danced⟧^{s} =
{s': Mary sang in s' and Dina sang in s'}

c. ⟦that Mary sang and that Dina danced⟧^{s} =
{w: Mary sang in w and Dina sang in w}
= ⟦that [$_{TP}$ Mary sang] and [$_{TP}$ Dina danced]⟧^{s}

Approach#2 predicts intersective conjunction of CPs to be technically possible (the two CPs are of conjoinable types), but semantically illicit: intersecting two sets of minimal situations will always result in an empty set, (8).

(8) **Approach#2: conjunction**
⟦that Mary sang and that Dina danced⟧^{s} =
{s: s $\Vdash_e$ {s': Mary sang in s'} $\wedge$ s $\Vdash_e$ {s': Dina danced in s'}} = $\varnothing$

There cannot be a situation that is both a minimal situation of Mary singing and a minimal situation of Dina dancing. Thus, (8) denotes an empty set, and when such a meaning is part of a sentence, that sentence is always false. Consider (9):

(9) ⟦Helen remembered that Mary sang and that Dina danced⟧^{s} =
$\exists$s'[$^{\Vdash_e}$remember$_s$(s') $\wedge$ EXP(s')=Helen $\wedge$ $\exists$x[THEME(s')=x $\wedge$ x $\Vdash_e$ {s': Mary sang in s'} $\wedge$ x $\Vdash_e$ {s': Dina danced in s'}]] **always false**

Since there is no x that satisfies the conjunction, there will be no x that satisfies the conjunction and Helen remembered it. Thus, under the approach#2 CP conjunction should be ungrammatical for the same reason as CP stacking is.[4]

[4]The same issue of whether there can be distinct propositions that are exemplified by the same situation arises in this case, just as with CP stacking (see ft. 59 in chapter 2; I'm grateful to Roger Schwarzschild for making me think about this issue). For example, if Jocasta was Oedipus's wife and also his mother, we could wonder if a situation that exemplifies *Oedipus apologized to his mother* also exemplifies *Oedipus apologized to his wife*. If we could find such situations that exemplify distinct propositions, then we should be able to conjoin two sets of exemplifying situations in some cases: e.g., [$_{CP}$ *that Oedipus apologized to his mother*] *and* [$_{CP}$ *that Oedipus apologized to his wife*] would have a non-empty intersection. However, as discussed before in ft. 59, according to Kratzer (1989), situations that exemplify two different propositions contain "thin particulars" together with different properties of the corresponding "thick particulars", and thus no single situation can exemplify two distinct propositions at the same time. For example, consider (i)–(ii).

(i) a. $s_1 \Vdash_e$ {s': Oedipus apologized to his mother in s'}
b. **s_1 contains:**
- the "thin particular" of Oedipus;
- the "thin particular" of the Jocasta;

Of course, we can define a different conjunction, which would allow us to conjoin CPs under the approach#2. Here is how it would need to look:

(10) $[\![\text{and}_{\text{NON-BOOL}}]\!]^s = \lambda P.\lambda Q.\lambda z.\ \exists x,y,\ [x \sqcup y = z \wedge P(x) = 1 \wedge Q(y) = 1]$

The conjunction in (10) takes two predicates of individuals, and returns a predicate of individuals z such that z are composed of a pair, x and y, such that the first argument of conjunction is true of x and the second argument of conjunction is true of y. Here is what we get when we combine two CPs by (10):

(11) $[\![\text{that Mary sang and}_{\text{NON-BOOL}}\ \text{that Dina danced}]\!]^s =$
$\lambda z.\ \exists x,y,\ [x \sqcup y = z \wedge x \Vdash_e \{s'\text{: M. sang in } s'\} \wedge y \Vdash_e \{s'\text{: D. danced in } s'\}]$

After non-intersectively conjoining two CPs that are predicates of minimal situations in (11), we will get a set of individuals consisting of two minimal situations: a situation of Mary singing and a situation of Dina dancing.

Approach#3 predicts that while two CPs are conjoinable type-wise, the resulting meaning is deviant—always an empty set—due to the equality semantics, (12).

•apologizing;
•Jocasta's property of being Oedipus's mother.

(ii) a. $s_2 \Vdash_e \{s'\text{: Oedipus apologized to his wife in } s'\}$
b. **s_2 contains:**
•the "thin particular" of Oedipus;
•the "thin particular" of the Jocasta;
•apologizing;
•Jocasta's property of being Oedipus's wife.

Imagine that we have a situation s_1 exemplifying *Oedipus apologized to his mother*. This situation will contain the "thin particular" of Oedipus (Oedipus "stripped off" of his properties), the "thin particular" of Jocasta (Jocasta "stripped off" of her properties), apologizing, and Jocasta's property of being Oedipus's mothers. If these are the parts that constitute s_1, then s_1 will not exemplify the proposition {s': Oedipus apologized to his wife in s'}, because Jocasta's "wifeness" is not part of s_1, but the superfluous "motherness" is. On the other hand s_2, which exemplifies {s': Oedipus apologized to his wife in s'}, will not exemplify {s': Oedipus apologized to his mother in s'}, as it lacks Jocasta's "motherness" and has superfluous "wifeness". In other words, any situation that is a minimal situation of Oedipus apologizing to his mother will not qualify as a minimal situation of Oedipus apologizing to his wife and vice versa, and so we do not expect CP conjunctions like [$_{CP}$ *that Oedipus apologized to his mother*] *and* [$_{CP}$ *that Oedipus apologized to his wife*] to be any different from conjunctions like in (8)—they should also always denote an empty set under the approach#2.

(12) **Approach#3: conjunction**
$[\![$that Mary sang and that Dina danced$]\!]^s$ = {x: $\textsc{Cont}$(x) =
{s′: Mary sang in s′} ∧ $\textsc{Cont}$(x)={s′: Dina danced in s′}} = ∅

The reason is again the same as with stacking in chapter 2: there can be no individual such that the $\textsc{Cont}$ function would return two different propositions when applied to it. Thus the sentences containing such conjunction will be trivially false:

(13) $[\![$Helen remembered that Mary sang and that Dina danced$]\!]^s$ =
$\exists s'[^{\Vdash_e}\text{remember}_s(s') \wedge \textsc{Exp}(s')$=Helen ∧ $\exists x[\textsc{Theme}(s')$=x ∧ $\textsc{Cont}$(x) =
{s′: Mary sang in s′} ∧ $\textsc{Cont}$(x)={s′: Dina danced in s′}]] **always false**

As in the previous approach, these CPs can be conjoined by a non-Boolean AND:

(14) $[\![$that Mary sang and$_{\text{NON-BOOL}}$ that Dina danced$]\!]^s$ = λz. ∃x,y, [x ⊔ y = z ∧
$\textsc{Cont}$(x) = {s′: Mary sang in s′} ∧ $\textsc{Cont}$(y)={s′: Dina danced in s′}]

In (14) we get a set of individuals z that are made up of two individuals, x and y, such that the propositional content of x is *"Mary sang"*, and the propositional content of y is *"Dina danced"*. No infelicity arises.

Finally, approach#4 allows intersective conjunction of embedded clauses, and furthermore predicts that the resuling meaning should be equivalent to TP conjunction. This is illustrated in (15).

(15) **Approach#4: conjunction**
$[\![$that Mary sang and that Dina danced$]\!]^s$ =
{x: $\textsc{Cont}$(x) ⊆ {s′: Mary sang in s′} ∧ $\textsc{Cont}$(x) ⊆ {s′: Dina danced in s′}}
≡ {x: $\textsc{Cont}$(x) ⊆ {s′: Mary sang in s′ and Dina danced in s′}}
= $[\![$that $[_{TP}$ Mary sang] and $[_{TP}$ Dina danced]$]\!]^s$

Under the approach#4, CP conjunction in (15) results in a predicate of individuals whose content is a subset of the proposition {s′: Mary sang in s′} and also a subset of the proposition {s′: Dina danced in s′}, which is equivalent to saying that their content is a subset of the proposition {s′: Mary sang in s′ and Dina danced in s′}. Thus, CP conjunction ends up being equivalent to TP conjunction, even though the meanings of CPs and TPs are not equivalent under this approach.

Now let us consider predictions for disjunction, (16), table 3.2:

(16) **Generalized Disjunction** ($\sqcup$) (Partee & Rooth 1983)

a. $X \sqcup Y = X \vee Y$ if Z and Y are truth-values

b. $X \sqcup Y = \{<z,x \sqcup y>: <z,x> \in X \text{ and } <z,y> \in Y\}$ if X and Y are functions

Meaning of CPs	**Disjunction of CPs**
(1) truth value or set of worlds/situations	yes, $[\![CP]\!] \sqcup [\![CP]\!] = [\![TP]\!] \sqcup [\![TP]\!]$
(2) set of minimal situations/events/truthmakers	yes
(3) set of contentful entities, equality semantics	yes, higher scope of $\sqcup$
(4) set of contentful entities, subset semantics	yes, higher scope of $\sqcup$

Table 3.2: Predictions of different theories for intersective disjunction of clauses

Under all of the approaches, disjunction of CPs is possible. The meanings that we will get for CP disjunction however are different.

Approach#1 predicts that CP disjunction should be equivalent to TP disjunction:

(17) **Approach#1: disjunction**

a. $[\![\text{that Mary sang or that Dina danced}]\!]^s = 1$ iff
Mary sang in s or Dina sang in s

b. $[\![\text{that Mary sang or that Dina danced}]\!]^s =$
{s': Mary sang in s' or Dina sang in s'}

c. $[\![\text{that Mary sang or that Dina danced}]\!]^s =$
{w: Mary sang in w or Dina sang in w}
$= [\![\text{that } [_{TP} \text{ Mary sang}] \text{ or } [_{TP} \text{ Dina danced}]]\!]^s$

For example, in (17b)-(17c) we will get a set of situations/worlds such that in them either Mary sang, or Dina danced, or both of these things occured.

Approach#2 predicts the meaning for CP disjunction in (18).

(18) **Approach#2: disjunction**
$[\![\text{that Mary sang or that Dina danced}]\!]^s =$
$\{s: s \Vdash_e \{s': \text{Mary sang in } s'\} \vee s \Vdash_e \{s': \text{Dina danced in } s'\}\}$

In (18) we get a set of situations such that they are either minimal situations of Mary singing or minimal situations of Dina dancing. This is a coherent meaning.

Whether or not CP disjunction will be equivalent to TP disjunction under approach#2 depends on our assumptions about the meanings of TPs. If we think that TPs are also sets of minimal situations/events/truthmakers, just like CPs, then CP disjunction will be equivalent to TP disjunction. If, like in discussion of Sit-CPs in chapter 2, we assume that TPs denote sets of non-minimal situations, then the meanings of CP disjunctions and TP disjunctions will be different: in the latter case we will have a set of situations of different sizes (from minimal to whole worlds) such that in them either Mary sang or Dina danced.

Approach#3 predicts that while CP disjunction is possible (19), its meaning is different from TP disjunction (20):

(19) **Approach#3: disjunction**
$[\![$that Mary sang or that Dina danced$]\!]^s$ =
{x: $\textsc{Cont}(x)$ = {s': Mary sang in s'} $\vee$ $\textsc{Cont}(x)$={s': Dina danced in s'}}

(20) $[\![$that [Mary sang] or [Dina danced]$]\!]^s$ =
{x: $\textsc{Cont}(x)$ = {s': Mary sang in s' or Dina danced in s'}}

The meaning of CP disjunction in (19) is a set of individuals such that their content is *"Mary sang"* or their content is *"Dina danced"*. The meaning of TP disjunction in (20) is a set of individuals whose propositional content is the disjunctive proposition. The two are not the same. Consider (21)-(22).

(21) $[\![$Helen remembered [that Mary sang] or [that Dina danced]$]\!]^s$ =
$\exists s'[^{|}\vdash_e \text{remember}_s(s') \wedge \textsc{Exp}(s')$=Helen $\wedge \exists x[\textsc{Theme}(s')=x$
$\wedge$ $\textsc{Cont}(x)$ = {s': Mary sang in s'} $\vee$ $\textsc{Cont}(x)$={s': Dina danced in s'}]]

(22) $[\![$Helen remembered that [Mary sang] or [Dina danced]$]\!]^s$ =
$\exists s'[^{|}\vdash_e \text{remember}_s(s') \wedge \textsc{Exp}(s')$=Helen $\wedge \exists x[\textsc{Theme}(s')=x$
$\wedge$ $\textsc{Cont}(x)$ = {s': Mary sang in s' or Dina danced in s'}]]

In (21), where two CPs are disjoined, Helen remembered some entity, e.g. a claim made by Susi. The exact propositional content of this claim is not reported, however: it is either *"Mary sang"* or *"Dina danced"*. In (22) on the other hand, where two TPs are disjoined, there is no uncertainty about what the propositional content of some entity, e.g., of Susi's claim, that Helen remembered was. But the entity had a disjunctive proposition as its content: *"Mary sang or Dina danced"*.

Finally, under the approach#4 disjunction of CPs is also possible and it's also not equivalent to disjunction of TPs. Like in the approach#3, CP disjunction "scopes higher" compared to TP disjunction (23).

(23) **Approach#4: disjunction**
$[\![$that Mary sang or that Dina danced$]\!]^s$ =
{x: $\textsc{Cont}(x) \subseteq$ {s': Mary sang in s'} $\vee$ $\textsc{Cont}(x) \subseteq$ {s': Dina danced in s'}}
$\neq$ {x: $\textsc{Cont}(x) \subseteq$ {s': Mary sang in s' or Dina danced in s'}}

CP disjunction in (23) is a set of entities such that either their content is a subset of {s': Mary sang in s'} or their content is a subset of {s': Dina danced in s'}. This is not identical to TP disjunction, which requires propositional content of entities in its denotation to be a subset of {s': Mary sang in s' or Dina danced in s'}. For example, imagine a content set in which situations fall into two categories: the ones in which Mary sang but Dina didn't dance, and the ones in which Mary didn't sing and Dina danced. Such a content set will be a subset of {s': Mary sang in s' or Dina danced in s'}, but the CP disjunction in (23) will not be true of it.

Now that we formulated predictions of several approaches and went through why these predictions arise, it should be easy to see what the predictions of the proposal that I made in chapter 2 are. The prediction about conjunction is that only *v*Ps and TPs within Cont-CPs and Sit-CPs should be able to be conjoined by the intersective conjunction (tables 3.3 and 3.4).

Constituents within Cont-CPs	**Possibility of conjunction**
*v*P	yes
TP	yes
ContP	no (unless non-Boolean)
CompP	no (unless non-Boolean)

Table 3.3: Predictions of the theory in chapter 2 about conjunction in Cont-CPs

Constituents within Sit-CPs	**Possibility of conjunction**
*v*P	yes
TP	yes
CompP	no (unless non-Boolean)

Table 3.4: Predictions of the theory in chapter 2 about conjunction in Sit-CPs

*v*Ps and TPs can be conjoined intersectively, (24) and (25) respectively, because their semantic values are truth values:

(24) $[\![[_{vP}$ Mary sang] and $[_{vP}$ Dina danced$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{sing}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Mary}] \wedge \exists s'[{}^{|\vdash_e}\text{dance}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Dina}]$

(25) $[\![[_{TP}$ Mary sang] and $[_{TP}$ Dina danced$]\!]^{s,g,t} = 1$ iff $\exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{sing}_{s,t'}(s')$
$\wedge\ \textsc{Agent}(s')\text{=Mary}]] \wedge \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]$

ContPs shouldn't be able to be conjoined intersectively due to the equality semantics for displacement that the Cont function introduces (cf. approach#3 above):

(26) $[\![[_{ContP}$ Mary sang] and $[_{ContP}$ Dina danced$]\!]^{s,g,t} =$
$\lambda x.\ \textsc{Cont}(x) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}$
$\wedge\ \textsc{Cont}(x) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\} = \varnothing$

CompPs shouldn't be conjoinable intersectively due to the complementizers introducing the exemplification relation: two predicates of exemplifying situations/individuals cannot be intersected (cf. approach#2 above):

(27) $[\![[_{CompP}$ Cont Mary sang] and $[_{CompP}$ Cont Dina danced$]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{y\text{: } \textsc{Cont}(y) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}\}$
$\wedge\ x \Vdash_e \{y\text{: } \textsc{Cont}(y) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\}\}$
$= \varnothing$

(28) $[\![[_{CompP}\ [_{TP}$ Mary sang]] and $[_{CompP}\ [_{TP}$ Dina danced]]$]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}$
$\wedge\ x \Vdash_e \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\} = \varnothing$

Note that the conjunction in (27) ends up ungrammatical for two reasons. The first reason has to do with the equality semantics introduced by Cont: for (27) to be true of some *x*, it has to be the case that *x*'s content is both *"Mary sang"* and *"Dina danced"*, which is impossible. The second reason has to do with the exemplification relation introduced by Comp: there can be no *x* that exemplifies both the set of entities with the content *"Mary sang"* and the set of entities with the content *"Dina danced"*. Thus, (27) will always be an empty set (due to the two aforementioned reasons), and the sentences containing the predicate in (27) will be trivially false.

The predictions about clausal disjunction that my proposal makes are summa-

rized below in tables 3.5 and 3.6.

Constituents within Cont-CPs	**Possibility of disjunction**
*v*P	yes
TP	yes
ContP	yes, higher scope of $\sqcup$
CompP	yes, higher scope of $\sqcup$

Table 3.5: Predictions of the theory in chapter 2 about disjunction in Cont-CPs

Constituents within Sit-CPs	**Possibility of disjunction**
*v*P	yes
TP	yes
CompP	yes, higher scope of $\sqcup$

Table 3.6: Predictions of the theory in chapter 2 about disjunction in Sit-CPs

Disjunctions of *v*Ps and TPs are, expectedly, disjunctive propositions:

(29) $[\![[_{vP}$ Mary sang] or $[_{vP}$ Dina danced$]]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash}e\text{sing}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Mary}] \vee \exists s'[{}^{|\vdash}e\text{dance}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Dina}]$

(30) $[\![[_{TP}$ Mary sang] or $[_{TP}$ Dina danced$]]\!]^{s,g,t} = 1$ iff $\exists t' < t\ [\exists s'[{}^{|\vdash}e\text{sing}_{s,t'}(s')$
$\wedge \textsc{Agent}(s')\text{=Mary}]] \vee \exists t' < t\ [\exists s'[{}^{|\vdash}e\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]$

Disjunction of ContPs is not equivalent to TP disjunction: it is a set of individuals such that either their content is *"Mary sang"* or they content is *"Dina danced"* (31).

(31) $[\![[_{ContP}$ Mary sang] or $[_{ContP}$ Dina danced$]]\!]^{s,g,t} =$
$\lambda x.\ \textsc{Cont}(x) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash}e\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}$
$\vee\ \textsc{Cont}(x) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash}e\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\}$

Disjunction of CompPs that contain ContPs is a set of entities that either exemplify the property of having content *"Mary sang"*, or exemplify the property of having content *"Dina danced"*. Again, this is not equivalent to disjunction of TPs.

(32) $[\![[_{CompP}$ Cont Mary sang] or $[_{CompP}$ Cont Dina danced$]]\!]^{s,g,t} =$
$\lambda x.\ x\ {}^{|\vdash}e\ \{y\text{: } \textsc{Cont}(y) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash}e\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}\}$
$\vee\ x\ {}^{|\vdash}e\ \{y\text{: } \textsc{Cont}(y) = \{s\text{: } \exists t' < t\ [\exists s'[{}^{|\vdash}e\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\}\}$

Finally, disjunction of two Sit-CPs, which contain Comp but not Cont, results in a set of situations such that they either exemplify the proposition {s: Mary sang in s} or they exemplify the proposition {s: Dina danced in s}.

(33) $[\![[_{CompP}\ [_{TP}$ Mary sang$]]$ or $[_{CompP}\ [_{TP}$ Dina danced$]]]\!]^{s,g,t} =$
$\lambda x.\ x \Vdash_e \{s\colon \exists t' < t\ [\exists s'[^{\Vdash_e}\text{sing}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Mary}]]\}$
$\vee\ x \Vdash_e \{s\colon \exists t' < t\ [\exists s'[^{\Vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]\}$

Note that this is not the same as TP's intension: TP's intension would contain situations of *different sizes* such that in them either Mary sang or Dina danced.

Before starting to evaluate these predictions, I would like to mention yet another proposal about the meanings of clauses. Szabolcsi (1997, 2016) argues that complementizers denote type-shifters: their contribution is the reversal of the argument-function relationship between the matrix verb and the embedded proposition. Here I sketch out a version of her proposal that assumes that verbs have event arguments:

(34) $[\![\text{Mary sang}]\!]^{s,g,t} = 1$ iff Mary sang in s

(35) $[\![\text{Comp}]\!]^{s,g,t} = \lambda p.\lambda f.\lambda e.\ f(p)(e)$

The meaning of the TP in (34) is "true" iff Mary sang in the evaluation situation s. The complementizer (35) takes this proposition as its first argument, and returns a function f from verbal meanings to predicates of events.

Now consider how TP conjunction (36) and CP conjunction (37) are different:

(36) a. $[\![[_{TP}$ Mary sang$]$ and $[_{TP}$ Dina danced$]]\!]^{s,g,t} = 1$ iff
Mary sang in s and Dina danced in s
b. $[\![[_{TP}$ Mary sang$]$ or $[_{TP}$ Dina danced$]]\!]^{s,g,t} = 1$ iff
Mary sang in s or Dina danced in s

(37) a. $[\![[_{CP}$ Mary sang$]$ and $[_{CP}$ Dina danced$]]\!]^{s,g,t} =$
$\lambda f.\lambda e.\ f(\lambda s'.\text{Mary sang in } s')(e) \wedge f(\lambda s'.\text{Dina danced in } s')(e)$
b. $[\![[_{CP}$ Mary sang$]$ or $[_{CP}$ Dina danced$]]\!]^{s,g,t} =$
$\lambda f.\lambda e.\ f(\lambda s'.\text{Mary sang in } s')(e) \vee f(\lambda s'.\text{Dina danced in } s')(e)$

Conjunction/disjunction of TPs amounts to conjunctive/disjunctive propositions, but conjunction/disjunction of CPs does not: because the complementizer reverses the function/argument relation, applying generalized conjunction to two CPs re-

sults in conjunction/disjunction of the verbal meaning applied to the first proposition and an event *e* and the verbal meaning applied to the second propositions and *e*. In other words, conjunction/disjunction takes wide scope over the verb.

When a verb combines with a clause containing TP conjunction/disjunction and CP conjunction /disjunction, we get (38) and (39) respectively.

(38) a. $[\![\text{know that } [_{TP} \text{ Mary sang}] \text{ and } [_{TP} \text{ Dina danced}]]\!]^{s,g,t} =$
$\lambda e.\ \text{know}(\lambda s'.\ \text{Mary sang in } s' \wedge \text{Dina danced in } s')(e)$

b. $[\![\text{know that } [_{TP} \text{ Mary sang}] \text{ or } [_{TP} \text{ Dina danced}]]\!]^{s,g,t} =$
$\lambda e.\ \text{know}(\lambda s'.\ \text{Mary sang in } s' \vee \text{Dina danced in } s')(e)$

(39) a. $[\![\text{know } [_{CP} \text{ Mary sang}] \text{ and } [_{CP} \text{ Dina danced}]]\!]^{s,g,t} =$
$\lambda e.\ \text{know}(\lambda s'.\ \text{Mary sang in } s')(e) \wedge \text{know}(\lambda s'.\ \text{Dina danced in } s')(e)$

b. $[\![\text{know } [_{CP} \text{ Mary sang}] \text{ or } [_{CP} \text{ Dina danced}]]\!]^{s,g,t} =$
$\lambda e.\ \text{know}(\lambda s'.\ \text{Mary sang in } s')(e) \vee \text{know}(\lambda s'.\ \text{Dina danced in } s')(e)$

Thus, Szabolcsi's proposal predicts differences in scope of CP conjunction /disjunction and TP conjunction/disjunction with respect to the meaning of the verb, as is summarized in table 3.7.

Constituents	**Meaning**
TP	lower scope: $p \wedge/\vee q$
CP	higher scope: $V(p) \wedge/\vee V(q)$

Table 3.7: Predictions of Szabolcsi's proposal that complementizers are type-shifters

Note that while there are some similarities between the predictions that Szabolcsi's proposal and my proposal make, they differ at least in one crucial respect: I predict some clausal meaning to not be intersectively conjoinable (leading to ungrammaticality), while for Szabolcsi intersective conjunction should be always available. In the next section I argue that Korean intersective conjunction *-ko* argues in favor of my proposal.

3.2 Impossibility of conjunction: Korean *-ko*

Korean conjunction *-ko*[5] shows exactly the behavior predicted by my proposal (see tables 3.3-3.4). First, it can conjoin *v*Ps, as is shown in (40)-(41).

(40) *vP conjunction with Sit-CP*

Mina-ka [$_{vP}$ Swuna-ka nolayha]-**ko** [$_{vP}$ Hani-ka chwumchwu]-n
Mina-NOM Swuna-NOM sing-**CONJ** Hani-NOM dance-PST.ADN
sanghwang-ul kiekha-n-ta
situation-ACC remember-PRS-DECL

'Mina remembers the situation that Swuna sang and Hani danced.'

(41) *vP conjunction with Cont-CP*

Mina-ka [$_{vP}$ Swuna-ka nolayha]-**ko** [$_{vP}$ Hani-ka
Mina-NOM Swuna-NOM sing-**CONJ** Hani-NOM
chwumchwu]-ess-ta-nun cwucang-ul kiekha-n-ta
dance-PST-DECL-ADN claim-ACC remember-PRS-DECL

'Mina remembers the claim that Swuna sang and Hani danced.'

In (40) and (41) we see tense outside of the conjoined constituents, hence the hypothesis that this is *v*P conjunction.[6]

Second, it can conjoin two TPs, as is illustrated with Sit-CPs in (42) (repeated from ft. 14) and with Cont-CPs in (43).

(42) *TP conjunction with Sit-CP*

Na-nun [$_{TP}$ Swuna-ka mwuncey-lul phul-**ess**]-**ko**
I-TOP Swuna-NOM problem-ACC solve-**PST-CONJ**
[$_{TP}$ sensayngnim-kkeyse sungca-ka iss-ta-ko
teacher-HON.NOM winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-$\varnothing_{\textbf{PST}}$]-un sanghwang-i silh-ta.
say.HON-HON-NEG-**PST**-ADN situation-NOM dislike-DECL

'I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

[5]Korean also has a complementizer *-ko*, which is homophonous with the conjunction. We will see *ko* as a complementizer in some later examples.

[6]It could also be that we're conjoining phrases bigger than *v*P but smaller than TP: e.g., AspPs.

(43) *TP conjunction with Cont-CP*

Mina-ka [$_{TP}$ Swuna-ka nolayha-**ess**]-**ko** [$_{TP}$ Hani-ka
Mina-NOM Swuna-NOM sing-**PST-CONJ** Hani-NOM
chwumchwu-**ss**]-ta-nun cwucang-ul kiekha-n-ta
dance-**PST**-DECL-ADN claim-ACC remember-PRS-DECL
'Mina remembers the claim that Swuna sang and Hani danced.'

In (42) I am assuming that the second conjunct contains a TP projection, but the past tense and the adnominal marker are pronounced together as *-un* (e.g., via fusion or double allomorphy). See section 2.3 for discussion.

Higher-level constituents in the structures of clauses however cannot be conjoined by *-ko*. (44) shows that two ContPs cannot be conjoined by *-ko.*

(44) *ContP conjunction with Cont-CP*

*Mina-ka [Swuna-ka nolayha-ss-**ta**]-**ko** [Hani-ka
Mina-NOM Swuna-NOM sing-PST-**DECL-CONJ** Hani-NOM
chwumchwu-ess-**ta**]-nun cwucang-ul kiekha-n-ta
dance-PST-**DECL**-ADN claim-ACC remember-PRS-DECL
'Mina remembers the claim that Swuna sang and that Hani danced.'

Two adnominal clauses (CompPs) also cannot be conjoined by *-ko*, independently of whether these are Sit-CPs (45) or Cont-CPs (46).

(45) *CompP conjunction with Sit-CP*

*Mina-ka [Swuna-ka nolayha-**nun**]-**ko** [Hani-ka chwumchwu-**n**(**un**)]
Mina-NOM Swuna-NOM sing-**ADN-CONJ** Hani-NOM dance-**ADN**
sanghwang-ul kiekha-ss-ta
situation-ACC remember-PST-DECL
'Mina remembered the situation that Swuna sang and that Hani danced.'

(46) *CompP conjunction with Cont-CP*

*Mina-ka [Swuna-ka nolayha-ess-ta-**nun**]-**ko** [Hani-ka
Mina-NOM Swuna-NOM sing-PST-DECL-**ADN-CONJ** Hani-NOM
chwumchwu-ess-ta-**nun**] cwucang-ul kiekha-n-ta
dance-PST-DECL-**ADN** claim-ACC remember-PRS-DECL
'Mina remembers the claim that Swuna sang and that Hani danced.'

Thus, conjunction with *-ko* behaves just like the tables in 3.3-3.4 suggest:

Constituents in Cont-CPs	**Predictions**	**Conjunction with *-ko***
*v*P	✓	✓
TP	✓	✓
ContP	✗ (unless non-Boolean)	✗
CompP	✗ (unless non-Boolean)	✗

Table 3.8: Comparison of conjunction *-ko* in Cont-CPs against predictions

Constituents in Sit-CPs	**Predictions**	**Conjunction with *-ko***
*v*P	✓	✓
TP	✓	✓
CompP	✗ (unless non-Boolean)	✗

Table 3.9: Comparison of conjunction *-ko* in Sit-CPs against predictions

Moreover, the interpretations of the grammatical *-ko* conjunctions that we get are what we expect them to be: *-ko* is felicitous under the readings where the conjunction takes narrow scope with respect to the verb, and it is degraded with wide scope readings. I will illustrate this using the emotive verb *silh* 'dislike'. This verb is of use to us because it is not distributive (47): it is possible to dislike a combination of things without disliking all the parts that make them up individually.

(47) **'dislike' is not distributive:**
For any x and y: $\mathit{dislike}(x \sqcup y) \not\Rightarrow \mathit{dislike}(x) \wedge \mathit{dislike}(y)$

This means that with the help of *silh* 'dislike' we can distinguish whether we are conjoining two propositions or some bigger constituents, e.g., verbal phrases.

Let us start with contexts that support the narrow scope of conjunction. These will be contexts where for some x and y, the speaker is claiming that they don't dislike x ($\neg\mathit{dislike}(x)$), but dislike the combination of x and y ($\mathit{dislike}(x \sqcup y)$). For Sit-CPs this is the context in (48). As we see in (49)-(50), the sentence in (48) in the provided context can be continued both by *v*P and TP conjunction within a Sit-CP.

(48) **Narrow scope context for Sit-CPs:** There is a competition: the first student in class to solve the problem wins. Swuna was the first student to solve the problem, but the teacher didn't tell the students right away that there

already was a winner, and they kept trying to solve it for a while. The speaker likes it that Swuna was the first to solve the problem, but doesn't like that the teacher concealed the fact that there was a winner.
Na-nun Swuna-ka mwuncey-lul phul-un sanghwang-i
I-TOP Swuna-NOM problem-ACC solve-ADN situation-NOM
silh-ci.anh-ta...
dislike-NEG-DECL
'I don't dislike the situation that Swuna solved the problem...'

(49) *vP conjunction with Sit-CPs, narrow scope context in (48)*
...Na-nun [Swuna-ka mwuncey-lul phul]-**ko** [sensayngnim-kkeyse
I-TOP Swuna-NOM problem-ACC solve-**CONJ** teacher-HON.NOM
sungca-ka iss-ta-ko malssumha-si-ci.anh]-un sanghwang-i
winner-NOM exist-DECL-COMP say.HON-HON-NEG-ADN situation-NOM
silh-ta.
dislike-DECL
'...I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

(50) *TP conjunction with Sit-CPs, narrow scope context in (48)*
...Na-nun [Swuna-ka mwuncey-lul phul-**ess**]-**ko**
I-TOP Swuna-NOM problem-ACC solve-**PST-CONJ**
[sensayngnim-kkeyse sungca-ka iss-ta-ko
teacher-HON.NOM winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-$\varnothing_{\textbf{PST}}$]-un sanghwang-i silh-ta.
say.HON-HON-NEG-**PST**-ADN situation-NOM dislike-DECL
'...I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

The narrow scope context for Cont-CPs is presented in (51).

(51) **Narrow scope context for Cont-CPs:** There are elections held between two parties. The party that is opposing ours made some statements about our candidate in attempt to draw voters away from her. The speaker thinks that having experience owning a big company would be considered a virtue for a candidate, but laundering money wouldn't be.

Na-nun wuli-uy hwupo-ka khun hoysa-lul soyuha-yess-ta-nun
I-TOP we-GEN candidate-NOM big company-ACC own-PST-DECL-ADN
cwucang-i silh-ci.anh-ta...
claim-NOM dislike-NEG-DECL

'I don't dislike the claim that our candidate owned a big company...'

Again, the sentence in (51) can be continued both by *v*P conjunction (52) and TP conjunction (53) within a Cont-CP.

(52) *vP conjunction with Cont-CPs, narrow scope context in* (*51*)

...Na-nun [wuli-uy hwupo-ka khun hoysa-lul soyuha]-**ko**
I-TOP we-GEN candidate-NOM big company-ACC own-**CONJ**
[ton.seythak-ul ha]-yess-ta-nun cwucang-i silh-ta..
money.laundring-ACC do-PST-DECL-ADN claim-NOM dislike-DECL

'...I dislike the claim that our candidate owned a big company and she did money laundering.'

(53) *TP conjunction with Cont-CPs, narrow scope context in* (*51*)

...Na-nun [wuli-uy hwupo-ka khun hoysa-lul soyuha-**yess**]-**ko**
I-TOP we-GEN candidate-NOM big company-ACC own-**PST-CONJ**
[ton.seythak-ul ha-**yess**]-ta-nun cwucang-i silh-ta..
money.laundring-ACC do-**PST**-DECL-ADN claim-NOM dislike-DECL

'...I dislike the claim that our candidate owned a big company and she did money laundering.'

Thus, with both Sit-CPs and Cont-CPs *-ko* conjunction has a felicitous interpretation according to which two embedded propositions are conjoined. With Sit-CPs, the situation that is being disliked exemplifies a conjunctive proposition. With Cont-CPs, the content of the claim is a conjunctive proposition.[7]

The wide scope contexts will be contexts where for some x and y, the speaker claims that they not only dislike x (and thus the conjunction $dislike(x \sqcup y)$), but that they also dislike y ($dislike(y)$). For Sit-CPs this is the context in (54).

[7] I leave distinctions between *v*P conjunction and TP conjunction for future research. The prediction that the current proposal makes is that the eventualities of the conjoined *v*P-level propositions should be co-temporaneous, but the eventualities of the conjoined TP-level propositions need not.

(54) **Wide scope context for Sit-CPs:** There is a competition: the first student in class to solve the problem wins. Swuna was the first student to solve the problem, but the teacher didn't tell the students right away that there already was a winner, and they kept trying to solve it for a while. In addition to that, Mina and Swuna don't get along well, and really didn't want each other to win. Mina is annoyed:

Na-nun [sensayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-NOM winner-NOM be.exist-DECL-COMP
malssumha-si-ci.anh-un] sanghwang-man silh-un kes-i
say.hon-HON-NEG-ADN situation-ONLY dislike-ADN thing-NOM
ani-ta...
be.NEG-DECL

'I don't only dislike that the teacher didn't say that there is a winner...' (lit. 'It's not the case that I dislike only the situation of the teacher not saying that there's a winner'.)

A natural continuation of (54) suggested by my consultants involves conjunction of two NPs with the help of a different conjunction *kuliko* (which we will discuss in more detail in the sections to come):

(55) *Natural continuation of (54): NP conjunction*

...Na-nun [sengsayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM be.exist-DECL-COMP
malssumha-si-ci.anh-un] **sanghwang** kuliko [Swuna-ka mwuncey-lul
say.HON-HON-NEG-ADN **situation** CONJ swuna-NOM problem-ACC
phwul-un **sanghwang**]-i motwu silh-ta.
solve-ADN **situation**-NOM both dislike-DECL

'...I dislike both the situation that the teacher didn't say that there is a winner and the situation that Swuna solved the problem. '

Using in this context a Sit-CP with *v*P conjunction or TP conjunction within the embedded clause is infelicitous:[8]

[8]Both (56)-(57) and *-ko* conjunctions within Cont-CPs with wide scope context, (60)-(61), received felicity judgments of between 2 and 3 on a 5-point scale from my consultants, compared to

(56) *vP conjunction with Sit-CPs, wide scope context in* (54)

#...Na-nun [sengsayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM be.exist-DECL-COMP
malssumha-si-ci.anh]-**ko** [Swuna-ka mwuncey-lul phwul]-un
say.HON-HON-NEG-**CONJ** SWUNA-NOM problem-ACC solve-ADN
sanghwang-i (*motwu) silh-ta.
situation-NOM (both) dislike-DECL

'...I dislike the situation that the teacher didn't say that there is a winner and that Swuna solved the problem. '

(57) *TP conjunction with Sit-CPs, wide scope context in* (54)

#...Na-nun [sengsayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM be.exist-DECL-COMP
malssumha-si-ci.anh-**ess**]-**ko** [Swuna-ka mwuncey-lul phwul-$\varnothing_{\textbf{PST}}$]-un
say.HON-HON-NEG-**PST-CONJ** SWUNA-NOM problem-ACC solve-**PST**-ADN
sanghwang-i (*motwu) silh-ta.
situation-NOM (both) dislike-DECL

'...I dislike the situation that the teacher didn't say that there is a winner and that Swuna solved the problem. '

Note also that the modifier *motwu* 'both' that we've seen in (55) is ungrammatical with *v*P and TP conjunctions in (56)-(57).

In the wide scope context for Cont-CPs, which is shown in (58), conjunction of two Cont-NPs is the most natural way to express that the speaker disliked both claims about the candidate that were made (59).

(58) **Wide scope context for Cont-CPs:** There are elections held between two parties. The party that is opposing our party made some statements about our candidate in attempt to draw voters away from her. The speaker thinks that both owning a big company and laundering money are things that, if believed about our candidate, would disadvantage them.

5 out 5 that sentences in (49)-(50) and (52)-(53) get. I attribute the fact that *-ko* conjunction is not judged as completely infelicitous in the wide scope context to the fact that these sentences are actually true in the provided contexts, they are just not that informative—they already convey the information that is part of the common ground when these sentences are uttered.

Na-nun [wuli-uy hwupo-ka ton.seythak-ul ha-yess-ta-nun]
I-TOP we-GEN candidate-NOM money.laundry-ACC do-PST-DECL-ADN
cwucang-man silh-un kes-i ani-ta...
claim-ONLY dislike-ADN kes-NOM be.neg-DECL

'I don't only dislike the claim that our candidate did money laundering...' (lit. 'It's not the case that I dislike only the claim that our candidate did money laundering')

(59) *Natural continuation of (58): NP conjunction*

...Na-nun [wuli-uy hwupo-ka ton.seythak-ul ha-yess-ta-nun]
I-TOP we-GEN candidate-NOM money.laundry-ACC do-PST-DECL-ADN
cwucang-(i) kuliko [khun hoysa-lul soyuha-yess-ta-nun]
claim-(NOM) CONJ big company-ACC own-PST-DECL-ADN
cwucang-i motwu silh-ta.
claim-NOM both dislike-DECL

'...I dislike both the claim that our candidate did money laundering and the claim that she owned a big company. '

Using *v*P or TP conjunction within Cont-CPs instead of conjunction of two noun phrases is again degraded:

(60) *vP conjunction with Cont-CPs, wide scope context in (58)*

#...Na-nun [wuli-uy hwupo-ka ton.seythak-ul ha]-**ko** [khun
I-TOP we-GEN candidate-NOM money.laundry-ACC do-**CONJ** big
hoysa-lul soyuha]-yess-ta-nun **cwucang-i** silh-ta.
company-ACC own-PST-DECL-ADN **claim-NOM** dislike-DECL

'...I dislike the claim that our candidate did money laundering and she owned a big company. '

(61) *TP conjunction with Cont-CPs, wide scope context in (58)*

#...Na-nun [wuli-uy hwupo-ka ton.seythak-ul ha-**yess**]-**ko**
I-TOP we-GEN candidate-NOM money.laundry-ACC do-**PST-CONJ**
[khun hoysa-lul soyuha-**yess**]-ta-nun **cwucang-i** silh-ta.
big company-ACC own-**PST**-DECL-ADN **claim-NOM** dislike-DECL

'...I dislike the claim that our candidate did money laundering and she owned a big company. '

Thus, the predictions of my proposal about the distribution and meaning of embedded conjunction are borne out for Korean *-ko*. The meaning of *-ko* could be equated with generalized conjunction (62), and then it will produce conjunctive propositions when it conjoins two *v*Ps (63) or TPs (64), but will not conjoin ContPs and CompPs due to equality semantics and exemplification relation respectively.[9]

(62) $[\![ko]\!]^{s,g,t} = \sqcap$

(63) $[\![[_{vP}$ Mary sang] and $[_{vP}$ Dina danced$]\!]^{s,g,t} = 1$ iff
$\exists s'[^{|\vdash_e}\text{sing}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Mary}] \wedge \exists s'[^{|\vdash_e}\text{dance}_{s,t}(s') \wedge \textsc{Agent}(s')\text{=Dina}]$

(64) $[\![[_{TP}$ Mary sang] and $[_{TP}$ Dina danced$]\!]^{s,g,t} = 1$ iff $\exists t' < t\ [\exists s'[^{|\vdash_e}\text{sing}_{s,t'}(s')$
$\wedge \textsc{Agent}(s')\text{=Mary}]] \wedge \exists t' < t\ [\exists s'[^{|\vdash_e}\text{dance}_{s,t'}(s') \wedge \textsc{Agent}(s')\text{=Dina}]]$

Now let us return to the approaches discussed in the previous section. Approaches according to which embedded clauses are sets of minimal situations or events or truthmakers (approach#2, e.g. Moltmann 2020) and approaches according to which CPs are entities whose content equals the embedded proposition (approach#3, e.g. Moulton 2009, Elliott 2020) also make the correct prediction that CPs, unlike TPs, cannot be intersectively conjoined. This is not surprising, as they contain the same ingredients that make ContP conjunction and CompP conjunction unavailable under my account: exemplification semantics in the former case, equality semantics for displacement in the latter case.

Approaches according to which CPs denote sets of possible situations or worlds (approach#1, e.g. Hintikka 1969) make a wrong prediction: they would expect Korean *-ko* to be able to conjoin CPs, giving rise to the same interpretations as with

[9] *-ko* could be in principle attributed a simpler, non-crosscategorial meaning:

(i) $[\![ko]\!]^{s,g,t} = \lambda p.\lambda q.\ p = 1 \wedge q = 1.$

I remain uncommitted as to whether crosscategorial conjunction is in general available, though see (Hirsch 2017) for arguments that conjunction is always sentential. If it turns out to be true that conjunction always involves conjoining two truth values, the current proposal can provide a reason for why at least some types of other constituents (i.e., ContPs and CompPs) cannot be intersectively conjoined. The remaining question would be whether other definable kinds of intersective conjunction that are not attested could be also ruled out due to giving rise to trivial meanings.

TP conjunction. The approach according to which CPs are sets of entities whose propositional content is a subset of the embedded proposition (approach#4, e.g. Kratzer 2006, 2013, Bogal-Allbritten 2016) also makes wrong predictions about CP conjunction, as it predicts it to be equivalent to TP conjunction due to conjunction of two universals being equivalent to one universal scoping over the conjunction. Finally, note that proposals which treat complementizers as type-shifters (Szabolcsi 1997, 2016) also fail to predict the judgements about the Korean *-ko*: they predict that conjunction of CPs should be grammatical and have wide scope with respect to the meaning of the verb. But what we in fact observe is ungrammaticality. I take this as an advantage of the proposal pursued here over the higher-type complementizers approach.

Above we have seen different kinds of conjunctions inside clauses that combine with nouns. This might elicit the question of whether clauses that are not embedded in any nominal structure can be directly conjoined with *-ko*. Korean non-nominalized clauses contain tense, declarative marker, and a marker *-ko*, which is usually considered a complementizer homophonous with the *-ko* conjunction. All such non-nominalized clauses are Cont-CPs, a point that will be discussed in more detail in the chapter 4: it is not possible to "skip" tense and/or declarative markers in a clause with the complementizer *-ko*. This is illustrated in (65)-(66) with bare clauses that combines with the verb *haysekha* 'interpret'.

(65) Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-FUT.ADN preparation-NOM
toy-**ess-ta-ko**] [ku palphyomwun-ul] haysekha-yess-ta.
become-**PST-DECL-COMP** DEM statement-ACC interpret-PST-DECL
'Swuna interpreted that statement, (and her interpretation was) that the company is ready for negotiations.'

(66) *Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-FUT.ADN preparation-NOM
toy-**(ess)-ko**] [ku palphyomwun-ul] haysekha-yess-ta.
become-**(PST)-COMP** DEM statement-ACC interpret-PST-DECL
'Swuna interpreted that statement, (and her interpretation was) that the company is ready for negotiations.'

Clauses with the complementizer *-ko* can be neither stacked, nor conjoined with the *-ko* conjunction:

(67) *Mina-nun [Swuna-ka nolayha-ss-ta-**ko**] [Hani-ka
Mina-TOP Swuna-NOM sing-PST-DECL-**COMP** Hani-NOM
chwumchwu-ss-ta-**ko**] nollaweha-n-ta.
dance-PST-DECL-**COMP** be.surprised-PRS-DECL
'Mina is surprised that Swuna sang and that Hani danced.'

(68) *Mina-nun [Swuna-ka nolayha-ss-ta-**ko**]-**ko** [Hani-ka
Mina-TOP Swuna-NOM sing-PST-DECL-**COMP-CONJ** Hani-NOM
chwumchwu-ss-ta-**ko**] nollaweha-n-ta.
dance-PST-DECL-**COMP** be.surprised-PRS-DECL
'Mina is surprised that Swuna sang and that Hani danced.'

This result is expected under my proposal: recall that ContPs can't be conjoined:

(69) $[\![[_{ContP}$ Swuna sang] and $[_{ContP}$ Hani danced$]]\!]^{s,g,t}$ =
$\lambda x.\ \text{Cont}(x) = \{s: \text{Swuna sang in } s\} \wedge \text{Cont}(x) = \{s: \text{Hani danced in } s\}$
$= \varnothing$

Thus, if non-nominalized embedded clauses with the complementizer *-ko* are properties of situations with propositional content predicated of the situation described by the matrix predicate (see chapter 4 for a detailed discussion), they will also not be able to be stacked or intersectively conjoined (70).

(70) $[\![[_{ContP}$ Swuna sang] and $[_{ContP}$ Hani danced] be surprised$]\!]^{s,g,t}$ =
$\lambda s'.\ {}^{\Vdash_e}\text{be-surprised}_s(s') \wedge \text{Cont}(s') = \{s: \text{Swuna sang in } s\}$
$\wedge\ \text{Cont}(s') = \{s: \text{Hani danced in } s\} = \varnothing$

We have seen that Korean conjunction *-ko* fits with the predictions made by my proposal very well. However, this is not the only type of a lexical item meaning 'and' in natural languages. Other languages have lexical items that can occur in strings of the form *CP AND CP*. One such language is English:

(71) *CP AND CP*
a. Mina is surprised [**that** Swuna sang] and [**that** Hani danced].

b. Mina heard a claim [**that** Swuna sang] and [**that** Hani danced].
c. Mina doesn't recall a situation [**that** Swuna sang] and [**that** Hani danced].

Furthermore, in section 3.4 we will see that a conjunction that can occur in strings of the form *CP* AND *CP* exists even within Korean. To preview very briefly, Korean conjunction *kuliko* seems to be able to conjoin CompPs. For example, in (72) we see what looks like conjunction of two Sit-CPs.

(72) *CompP conjunction with Sit-CP*

Mina-ka [Swuna-ka norayha-**nun**] **kuliko** [Hani-ka
Mina-NOM Swuna-NOM sing-**ADN** **CONJ** Hani-NOM
chwumchwu-**nun**] sanghwang-ul kiekha-ss-ta
dance-**ADN** situation-ACC remember-PST-DECL

'Mina remembered a situation that Swuna sang and that Hani danced.'

So what is the difference between Korean *-ko* on the one hand, and English *and* and Korean *kuliko* on the other hand? And how does that affect the argumentation presented above? I would like to propose that what sets *-ko* apart from other conjunctions is that it cannot occur in structures involving ellipsis. Consider (73)-(74):

(73) *Mary-ka [motun sakwa-lul]-**ko** [motun panana-lul] mek-ess-ta.
Mary-NOM every apple-ACC-**CONJ** every banana-ACC eat-PST-DECL
'Mary ate every apple and every banana.'

(74) Mary-ka [motun sakwa-lul] **kuliko** [motun panana-lul] mek-ess-ta.
Mary-NOM every apple-ACC **CONJ** every banana-ACC eat-PST-DECL
'Mary ate every apple and every banana.'

The translation of (73)=(74) is a grammatical English sentence, and (74) in Korean is a fine sentence too. (73) however is not: when the verb is gapped, *-ko* can't occur. There is some evidence to suggest that (74) can involve actual gapping, and not just a cross-categorical coordinator conjoining two DPs. *Kuliko* can coordinate strings that do not form constituents (75), suggesting ellipsis is involved:

(75) [Swuni-ka Mary-eykey ~~kulim-ul cwu~~], kuliko [Mini-ka Juni-eykey
Swuni-NOM Mary-DAT CONJ Mini-NOM Juni-DAT

kulim-ul cwu]-ess-ta.
picture-ACC give-PST-DECL
'Swuni gave Mary a picture (*some other object ≠ picture), and Mini gave Juni a picture.'

In (75) the omitted object DP has to receive the same interpretation as the DP in the second conjunct, which is an expected identity restriction on ellipsis. To sum up, (75) cannot be just a result of a cross-categorical conjunction of two constituents.

Thus, I propose that the semantic constraints on conjunction of CPs that follow from my semantics for embedded clauses—i.e., the ban on ContP and CompP conjunctions—are fully general constraints. What differs both across and within languages is whether lexical items with the meaning of conjunction can occur in structures involving ellipsis (section 3.4) and also whether some lexical items like 'and' could, at least for some speakers, have non-Boolean interpretations in addition to the regular intersective meanings (section 3.5).

3.3 Disjoining clauses

Before discussing how strings *CP AND CP* can arise, let us evaluate predictions about clausal disjunction. Here I do not have data from Korean at my disposal, and thus testing disjunction of ContPs will be outside of my reach. I will discuss mainly data from Russian, with some examples from other languages for disjunction of clauses with verbs (taken from my joint work with Itai Bassi, Bassi & Bondarenko 2021).

Let us start with Cont-CPs that combine with nouns. If we compare sentences like (76) and (77), we see that they have different inferences.[10]

(76) *CP disjunction: ignorance about the opinion*
Mašu razdražaet mnenie, (ili) [čto Lena rešit vse
Masha.ACC annoys opinion.NOM (or) COMP Lena will.solve all
problemy], ili [čto problemy rešit' nevozmožno].
problems or COMP problems solve.INF impossible
'An opinion (either) that Lena will solve all problems or that problems are impossible to solve annoys Masha.'

[10]Russian disjunction can contain an element homophonous with *ili* 'or' which is similar to English *either* and seems to mark the scope of disjunction. It can optionally appear in (76)-(77).

✓ The speaker is not certain about which opinion annoys Masha.
✗ The opinion that annoys Maša contains uncertainty about which proposition is true (*Lena will solve problems* ∨ *Problems are unsolvable*).

(77) *TP disjunction: content of opinion is disjunctive*

Mašu razdražaet mnenie, čto (ili) [Lena rešit vse
Masha.ACC annoys opinion.NOM COMP (or) Lena will.solve all
problemy], ili [problemy rešit' nevozmožno].
problems or problems solve.INF impossible

'An opinion that (either) Lena will solve all problems or problems are impossible to solve annoys Masha.'
✗ The speaker is not certain about which opinion annoys Masha.
✓ The opinion that annoys Maša contains uncertainty about which proposition is true (*Lena will solve problems* ∨ *Problems are unsolvable*).

In (76) the disjunction signals the ignorance of the speaker about what the opinion that annoys Masha exactly is. They think the opinion is either "Lena will solve all the problems", or it is "The problems are impossible to solve", but they are not sure which one it is. In (77) there is no question about identifying the opinion that annoys Masha. The opinion is known, and its content is disjunctive: "Either Lena will solve all the problems or the problems are impossible to solve". Perhaps such an opinion annoys Masha because it allows its holder to not take themselves any action towards solving the problems.

The ignorance inference that we get with Cont-CP disjunction is further corroborated by the infelicity of using the 1st person experiencer, (78), cf. (79).

(78) *1st person subject infelicity with CP disjunction*

#Menja razdražaet mnenie, (ili) [čto Lena rešit vse
I.ACC annoys opinion.NOM (or) COMP Lena will.solve all
problemy], ili [čto problemy rešit' nevozmožno].
problems or COMP problems solve.INF impossible

'An opinion (either) that Lena will solve all problems or that problems are impossible to solve annoys me.'

(79) *1st person subject is fine with TP disjunction*
Menja razdražaet mnenie, čto (ili) [Lena rešit vse
I.ACC is.annoyed opinion.NOM COMP (or) Lena will.solve all
problemy], ili [problemy rešit' nevozmožno].
problems or problems solve.INF impossible
'An opinion that (either) Lena will solve all problems or problems are impossible to solve annoys me.'

The sentence in (78) is odd, because it implies that the speaker is ignorant about the content of the opinion that annoys them. (79) on the other hand is totally fine: the speaker is annoyed by the opinion whose content is disjunctive.

This difference in inferences between Cont-CP disjunction and TP disjunction is predicted under my proposal, because according to it disjunction will scope over the Cont function introduced by the complementizer:

(80) $[\![$opinion $[[_{CompP}$ Lena will solve all the problems] or $[_{CompP}$ the problems are impossible to solve$]]]\!]^{s,g,t}$ =
λx. opinion$(x)_{s,t} \wedge [^{\Vdash_e}\textsc{Cont}(x) = \{s'$: Lena will solve all the problems in $s'\} \vee {}^{\Vdash_e}\textsc{Cont}(x) = \{s'$: the problems are impossible to solve in $s'\}]$

On the other hand, TP disjunction is predicted to take narrow scope with respect to the Cont function introduced in the left periphery of the clause, (81), which correctly results in an opinion whose content is disjunctive.

(81) $[\![$opinion [Comp Cont$[[_{TP}$ Lena will solve all the problems] or $[_{TP}$ the problems are impossible to solve$]]]]\!]^{s,g,t}$ =
λx. opinion$(x)_{s,t} \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s'$: Lena will solve all the problems in s'
$\vee$ the problems are impossible to solve in $s'\}$

Disjunction of Cont-CPs that combine with verbs also scopes high compared to embedded TP disjunction in the same clauses. In Russian verbs *znat'* 'know' and *rasstraivat'sja* 'get upset' cannot combine with Sit-CPs. This can be seen, for example, from their inability to combine with clauses that are modified by *takoe* 'such', a modifier that can only combine with Sit-CPs (see section 2.5):

(82) *Vasja znaet /rasstroilsja **takoe**, čto Maša pela.
Vasja knows /got.upset **such** COMP Masha sang.
'Vasja knows/got upset that Masha sang.'

When two Cont-CPs are disjoined and combine with a verb (83), we get an inference that the speaker is ignorant about the content of some fact or mental state: e.g., with 'know' the speaker is ignorant about the content of Vasja's knowledge, and with 'get upset' the speaker is ignorant about the content of Vasja's mental state: whether Vasja's angry that Masha sang or he is angry that Dina danced.

(83) *CP disjunction: ignorance about the content of the fact/mental state*

Vasja znaet /rasstroilsja (ili) [čto Maša pela] ili [čto Dina tancevala].
Vasja knows /got.upset (or) COMP Masha sang or COMP Dina danced

'Vasja knows/got upset that Masha sang or that Dina danced.'
✓ The speaker is ignorant about the content of Vasja's knowledge or the content of his upset mental state
✗ Vasja knows the fact that one of the two propositions is true: *Masha sang* ∨ *Dina danced* or Vasja's upset mental state has the disjunctive proposition as its propositional content.

With TP disjunction on the other hand, there is no ignorance on the part of the speaker (84). With 'know', there is a disjunctive fact that Vasja knows. With 'get upset', a disjunctive proposition is the content of Vasja's upset mental state.

(84) *TP disjunction: content of the fact/mental state is disjunctive*

Vasja znaet /rasstroilsja čto (ili) [Maša pela] ili [Dina tancevala].
Vasja knows /got.upset COMP (or) Masha sang or Dina danced

'Vasja knows/got upset that Masha sang or Dina danced.'
✗ The speaker is ignorant about the content of Vasja's knowledge or the content of his upset mental state.
✓ Vasja knows the fact that one of the two propositions is true: *Masha sang* ∨ *Dina danced* or Vasja's upset mental state has the disjunctive proposition as its propositional content.

Thus, with verbs just as with nouns, we see that disjunction of Cont-CPs has higher scope than disjunction of embedded TPs. For *znat'* 'know', we can hypothesize that the embedded clause describes an internal argument of the verb that denotes a fact,

which under my proposal would give us the truth-conditions in (85) and (86) for CP disjunction and TP disjunction respectively.

(85) $[\![$Vasja knows [that Masha sang] or [that Dina danced]$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{know}_{s,t}(s') \wedge \textsc{Holder}(s')=\text{Vasja} \wedge \exists x[\textsc{Theme}(s')=x \wedge \text{fact}(x)_{s,t}$
$\wedge [{}^{|\vdash_e}\textsc{Cont}(x) = \{s'\text{: M. sang in } s'\} \vee {}^{|\vdash_e}\textsc{Cont}(x) = \{s'\text{: D. danced in } s'\}]]]$

(86) $[\![$Vasja knows that [Masha sang] or [Dina danced]$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{know}_{s,t}(s') \wedge \textsc{Holder}(s')=\text{Vasja} \wedge \exists x[\textsc{Theme}(s')=x \wedge \text{fact}(x)_{s,t}$
$\wedge {}^{|\vdash_e}\textsc{Cont}(x) = \{s'\text{: Masha sang in } s' \vee \text{Dina danced in } s'\}]]$

For *rasstroit'sja* 'get upset', we can hypothesize that the embedded clause describes the propositional content associated with the mental state that has upset emotional coloring to it.[11] Under my proposal, this would give us the truth-conditions in (87) and (88) for CP disjunction and TP disjunction respectively.

(87) $[\![$Vasja got upset [that Masha sang] or [that Dina danced]$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{upset}_{s,t}(s') \wedge \textsc{Holder}(s')=\text{Vasja} \wedge [{}^{|\vdash_e}\textsc{Cont}(s') = \{s'\text{: Masha sang in } s'\} \vee {}^{|\vdash_e}\textsc{Cont}(s') = \{s'\text{: Dina danced in } s'\}]]$

(88) $[\![$Vasja got upset that [Masha sang] or [Dina danced]$]\!]^{s,g,t} = 1$ iff
$\exists s'[{}^{|\vdash_e}\text{upset}_{s,t}(s') \wedge \textsc{Holder}(s')=\text{Vasja} \wedge {}^{|\vdash_e}\textsc{Cont}(s') = \{s'\text{: Masha sang in } s' \vee \text{Dina danced in } s'\}]$

Thus, no matter how exactly Cont-CPs are integrated with the verbal meaning (see chapter 4 for discussion of this issue), in sentences with Cont-CPs I predict that CP disjunction should take high scope with respect to the Cont function, but TP disjunction should take narrow scope. As we've seen, this is a good prediction.

CPs that combine with verbs meaning 'know' and 'get upset' in other languages show the same behavior as Russian CPs. In (89)–(91) we see that CP disjunction in English, Hebrew and Italian also has to take high scope.

[11] In other words, here I am assuming that clauses that combine with *rasstraivat'sja* 'get upset' denote *subject matter* in the terminology of (Hartman 2012): they express the content of an emotive mental state. Hartman (2012) argues that some CPs with emotive verbs also describe *causers* of mental states. Elliott (2020) proposes that such CPs specify the content of a causing event, which is introduced in syntax by a functional projection CAUSE. In (Bassi & Bondarenko 2021: pp. 599–600) we adopt Elliott's assumption and show how CP disjunction will be different from TP disjunction with causer CPs under the equality semantics for Cont-CPs.

(89) *English:* * CONT > *or*, ✓ *or* > CONT
Bill knows/got angry [that Masha sang] or [that Dina danced].

(90) *Hebrew:* * CONT > *or*, ✓ *or* > CONT
Yosi yode'a [$_{CP}$ še Maša šara] o [$_{CP}$ še Dina rakda].
Yosi knows COMP Masha sang or COMP Dina danced
'Yosi knows that Masha sang or that Dina danced.'

(91) *Italian:* * CONT > *or*, ✓ *or* > CONT
Vera sa [$_{CP}$ che Maria ha cantato] o [$_{CP}$ che Dina ha ballato].
Vera knows COMP Maria has sang or COMP Dina has danced
'Vera knows either that Masha sang or that Dina danced.'

For additional data (from English and Hungarian) and discussion of CP disjunction obligatorily taking high scope see (Szabolcsi 1997, 2016). Szabolcsi discusses not only declarative CPs, but also interrogative ones.

(92) presents an additional contrast from English: we see that the continuation *'...but not both'* in English has different interpretations when it follows CP disjunction vs. TP disjunction.[12]

(92) *'But not both' test in English*
a. Bill knows [that Masha sang] or [that Dina danced], but not both.
✗ It is not the case both Masha sang and Dina danced.
✓ Bill doesn't know both facts.
b. Bill knows that [Masha sang] or [Dina danced] but not both.
✓ It is not the case both Masha sang and Dina danced.
✗ Bill doesn't know both facts.

[12]The verb doesn't have to be factive: (i) shows the same test with the non-factive *mention*.

(i) *'But not both' with a non-factive verb*
a. Bill mentioned [that Masha sang] or [that Dina danced], but not both.
✗ Bill mentioned *"Masha sang or Dina danced"*; according to Bill, it's not the case that both Masha sang and Dina danced.
✓ Bill didn't mention both things (e.g., he only mentioned that Masha sang).
b. Bill mentioned that [Masha sang] or [Dina danced] but not both.
✓ Bill mentioned *"Masha sang or Dina danced"*; according to Bill, it's not the case that both Masha sang and Dina danced.
✗ Bill didn't mention both things (e.g., he only mentioned that Masha sang).

With CP disjunction (92a), *both* has to refer to both facts that Bill knows. With TP disjunction (92b), *both* has to refer to the embedded propositions: both Masha singing and Dina dancing.

Cont-CP disjunctions that combine with verbs also show the constraint on 1st person attitude holders (93) (first observed for English by Szabolcsi (2016: ex. (22)-(23))), a constraint which disjunctions of embedded TPs inside clauses that combine with the same verbs lack (94).

(93) *1st person attitude holder infelicity with CP disjunction*

a. #Ja znaju (ili) [čto Maša pela] ili [čto Dina tancevala].
I know (or) COMP Masha sang or COMP Dina danced
'I know that Masha sang or that Dina danced.'

b. #I know that Masha sang or that Dina danced (but not both).

(94) *1st person attitude holder is fine with TP disjunction*

a. Ja znaju čto (ili) [Maša pela] ili [Dina tancevala].
I know COMP (or) Masha sang or Dina danced
'I know that Masha sang or Dina danced.'

b. I know that Masha sang or Dina danced (but not both).

This is expected: in (93) disjunction leads to an inference that the speaker is ignorant about the content of the fact that they know, which is an odd state of affairs. In (94) on the other hand, the speaker simply knows the fact whose content is the disjunctive proposition "Mary sang or Dina danced".

Factive verbs like *know* show an additional difference between CP disjunction and TP disjunction, illustrated with English in (95)-(96).

(95) Does Bill know [that Masha sang] or [that Dina danced]? CP $\vee$
presupposes: *Masha sang and Dina danced*

(96) Does Bill know that [Masha sang] or [Dina danced]? TP $\vee$
presupposes: *Masha sang or Dina danced*

With CP disjunction in (95) the presupposition that we observe is conjunctive: both Masha singing and Dina dancing are facts, and we're asking which of these two facts Bill knows. With TP disjunction on the other hand, we get a disjunctive

presupposition: it is presupposed that either Masha sang or Dina danced, and the speaker is asking if Bill knows this disjunctive fact.

The conjunctive presupposition with disjunction of Cont-CPs could arise if there is a version of the Cont head which introduces the factive presupposition that the embedded proposition is true in the evaluation situation:

(97) $[\![\text{Cont}_{factive}]\!]^{s,g,t} = \lambda p\text{: } p(s)=1.\lambda x.\ \textsc{Cont}(x) = p$

We can hypothesize that such $\text{Cont}_{factive}$ would need to occur in factive embedded clauses under predicates like *know*. Since disjunction of two CPs would involve the $\text{Cont}_{factive}$ head in each of the two embedded clauses, we will get two presuppositions to project, leading to the presupposition that both embedded propositions are true in the evaluation situation.[13,14]

We have seen that the proposal put forward in chapter 2 makes good predictions about the meanings of Cont-CP disjunctions, and the differences between them and TP disjunctions inside Cont-CPs. What about the approaches #1–#4 from the section 3.1? Approach #3 is basically identical to my proposal (barring the presence of

[13]The idea that material in the left periphery of the embedded clause can be the source of factive presuppositions has cross-linguistic support from morphology: many languages have distinct factive and/or non-factive complementizers. To mention some cases: Greek has a factive complementizer *pu* and a non-factive complementizer *oti* (Roussou 1994, Joseph 2016), Western Basque has a factive complementizer *ena*, Lapurdian-Navarrese and Zuberoan dialects of Basque have a factive complementizers *bait* (Artiagoitia & Elordieta 2016), adding the prefix *zere* to the embedded predicate creates a factive complement in Adyghe (Serdobolskaya 2016), Lithuanian has a designated non-factive complementizer *-ar* (Holvoet 2016), Maltese has a non-factive complementizer *jekk* (Borg & Fabri 2016), Kalmyk has a non-factive complementizer *giǯə* (Knyazev 2016a).

[14]Note that these presupposition facts cannot be captured if *know* is the item that introduces the factive presupposition. For example, if the disjoined CPs modify the internal argument of *know*, we will get the function in (i).

(i) $[\![\text{knows [that Masha sang] or [that Dina danced]}]\!]^{s,g,t} =$
$\lambda x\text{: } \textsc{Cont}(x)(s)=1.\lambda s'.\ {}^{\Vdash_e}\text{know}_{s,t}(s') \wedge \textsc{Theme}(s')=x \wedge [\textsc{Cont}(x) = \{s'\text{: Masha sang in } s'\}$
$\vee\ \textsc{Cont}(x) = \{s'\text{: Dina danced in } s'\}]$

This function presupposes that the content of the object being known is true in the situation of evaluation. Where defined, it returns true, when applied to an object x and a knowing situation s', just in case x is the Theme of knowing, and either its content is *"Masha sang"* or its content is *"Dina danced"*. Note that this predicts CP disjunction to exhibit a disjunctive presupposition (one of the two things has to be true: either Masha sang, or Dina danced), but this is not what we observe in (95)—the actual presupposition seems to be stronger than that and require that both Masha sang and Dina danced in the situation of evaluation.

the exemplification relation), so it makes the same correct prediction that disjunction of Cont-CPs should take scope over the Cont function. The same prediction is made by the approach #4, (23), repeated here as (98).

(98) **Approach#4: disjunction**
$[\![$that Mary sang or that Dina danced$]\!]^s$ =
{x: Cont(x) $\subseteq$ {s': Mary sang in s'} $\vee$ Cont(x) $\subseteq$ {s': Dina danced in s'}}
$\neq$ {x: Cont(x) $\subseteq$ {s': Mary sang in s' or Dina danced in s'}}

Since disjunction of universals is not equivalent to the universal scoping over disjunction, approach #4 correctly predicts that Cont-CPs scope higher than TPs.

Approach#2 is not really applicable to Cont-CPs, as it is not clear how sets of minimal situations/events/truthmakers could modify nouns like *idea* or *claim*, or mental states or events. Approach #1, according to which both TPs and CPs denote sets of non-minimal situations or worlds, or truth-values, makes wrong predictions about Cont-CP disjunction: it predicts that disjunction of two Cont-CPs should be equivalent to TP disjunction— a disjunctive proposition or disjunction of two truth values. This, as we have seen, does not capture the data correctly.

Now let us turn to the disjunction of Sit-CPs. The inferences that we get in sentences with disjunction of Sit-CPs are different from inferences in sentences with TP disjunctions inside Sit-CPs. Consider (99)-(100), where Sit-CPs modify nouns:

(99) *CP disjunction: ignorance about what kind of situation annoys Masha*

Mašu razdražaet situacija, (ili) [čto ej pridëtsja vsë
Masha.DAT annoys situation.NOM (or) COMP she.DAT will.have all
leto sidet' v Amerike], ili [čto ej nuzhno budet exat' v
summer sit.INF in America or COMP she.DAT need be.FUT go.INF in
Kazahstan za vizoj].
Kazakhstan for visa

'The situation either that she will have to be in America all summer or that she will need to travel to Kazakhstan for a visa annoys Masha.'
✓ The speaker is ignorant about what kind of situation annoys Masha.
✗ A situation that exemplifies a disjunctive proposition annoys Masha.

(100) *TP disjunction: situation exemplifies a disjunctive proposition*
Mašu razdražaet situacija, čto [(ili) ej pridëtsja vsë
Masha.DAT annoys situation.NOM COMP (or) she.DAT will.have all
leto sidet' v Amerike], ili [ej nuzhno budet exat' v
summer sit.INF in America or she.DAT need be.FUT go.INF in
Kazahstan za vizoj].
Kazakhstan for visa
'The situation that either she will have to be in America all summer or she will need to travel to Kazakhstan for a visa annoys Masha.'
✗ The speaker is ignorant about what kind of situation annoys Masha.
✓ A situation that exemplifies a disjunctive proposition annoys Masha.

In (99) we infer that the speaker is not sure about what kind of situation annoys Masha: it's either a situation that she'll have to be in America the whole summer, or it's a situation that she'll have to go to Kazakhstan to get a visa. This sentence does not have a reading according to which Masha is annoyed by a situation s, such that in all situations s' that satisfy the requirements in s, either Masha is America all summer of she goes to Kazakhstan to get a visa.

In (100) on the other hand there is no inference that the speaker is ignorant, they know the situation that annoys Masha: it is a situation that exemplifies the disjunctive proposition *"She will have to be in America the whole summer or she will have to go to Kazakhstan to get a visa"*. Now what kind of a situation that is can be different, as embedded disjunction of universal statements is ambiguous, just like unembedded disjunction of universal statements:

(101) (Ili) ej pridëtsja vsë leto sidet' v Amerike], ili [ej
(or) she.DAT will.have all summer sit.INF in America or she.DAT
nuzhno budet exat' v Kazahstan za vizoj].
need be.FUT go.INF in Kazakhstan for visa
'Either she will have to be in America all summer or she will need to travel to Kazakhstan for a visa.'
$\vee > \forall$: Either in all situations according to the rules she is in America all summer, or in all situations according to the rules she is going to Kazakhstan for a visa.
$\forall > \vee$ In all situations according to the rules, either she is in America all summer or she goes to Kazakhstan for a visa.

Thus, the situation s that annoys Masha in (100) could be a situation such that in all situations s' in which requirements in s are fulfilled Masha spends the summer in America or in all situations s' in which requirements in s are fulfilled Masha goes to Kazakhstan. I am not sure how to distinguish this reading from the one in (99). But (100) has another reading, which is more prominent, in which we perceive a single universal outscoping disjunction: Masha is annoyed by a situation s, such that in all situations s' that satisfy the requirements in s, either Masha is in America all summer or she goes to Kazakhstan. In this case Masha has a choice: both staying in America and going to Kazakhstan will allow her to maintain her student status. But she's annoyed that these are her only options. This reading is absent in (99).

As with Cont-CPs, the inference of the speaker's ignorance with Sit-CP disjunction results in unacceptability of 1st person experiencer DPs in these sentences (102). No such infelicity arises with TP disjunction (103).

(102) *1st person experiencer is odd with Sit-CP disjunction*
#Menja razdražaet situacija, (ili) [čto mne pridëtsja vsë leto
I.ACC annoys situation.NOM (or) COMP I.DAT will.have all summer
sidet' v Amerike], ili [čto mne nuzhno budet exat' v Kazahstan
sit.INF in America or COMP I.DAT need be.FUT go.INF in Kazakhstan
za vizoj].
for visa
'The situation either that I will have to be in America all summer or that I will need to travel to Kazakhstan for a visa annoys me.'

(103) *1st person experiencer is fine with TP disjunction*
Menja razdražaet situacija, čto [(ili) mne pridëtsja vsë leto
I.ACC annoys situation.NOM COMP (or) I.DAT will.have all summer
sidet' v Amerike], ili [mne nuzhno budet exat' v Kazahstan
sit.INF in America or I.DAT need be.FUT go.INF in Kazakhstan
za vizoj].
for visa
'The situation that either I will have to be in America all summer or I will need to travel to Kazakhstan for a visa annoys me.'

These judgements align well with what the proposal in chapter 2 predicts. If we disjoin two CompPs (104) and then combine them with the noun 'situation', we

get a predicate of things that are situations, and one of the two things is true about them: either they exemplify the proposition *"She will have to be in America in summer"*, or they exemplify the proposition *"She will need to go to Kazakhstan for a visa"*.

(104) ⟦situation [[$_{CompP}$ she will have to be in America in summer] or [$_{CompP}$ she will need to go to Kazakhstan for a visa]]⟧^{s,g,t} =
λx. situation(x)$_{s,t}$ $\wedge$ [x $\Vdash_e$ {s': she will have to be in America in summer in s'} $\vee$ x $\Vdash_e$ {s': she will need to go to Kazakhstan for a visa in s'}]

The prediction of my proposal about disjunction of two TPs in a Sit-CP, (105), is that once we combine such a CP with the noun 'situation', we'll get a predicate of things that are situations and that exemplify the disjunctive proposition *"She will have to be in America in summer or she will need to go to Kazakhstan for a visa"*.

(105) ⟦situation [$_{CompP}$ [$_{TP}$ she will have to be in America in summer] or [$_{TP}$ she will need to go to Kazakhstan for a visa]]⟧^{s,g,t} =
λx. situation(x)$_{s,t}$ $\wedge$ [x $\Vdash_e$ {s': she will have to be in America in summer in s' $\vee$ she will need to go to Kazakhstan for a visa in s'}]

In other words, disjunction of two Sit-CPs takes high scope with respect to the exemplification relation, whereas disjunction of two TPs inside a Sit-CP takes low scope with respect to the exemplification relation. This seems to be correct given the judgements we observed in (99)-(100). Whatever is the mechanism that allows to interpret unembedded TP disjunction of two universal modal statements as a single universal modal statement scoping over disjunction, (101), it is available for embedded TP disjunction as well. But that meaning can't be achieved by disjoining two Sit-CPs: Sit-CP disjunction can only involve disjunction outscoping the universal modals, as it involves disjoining two predicates of exemplifying situations.

Finally, when Sit-CPs combine with verbs, CP disjunction also takes higher scope than TP disjunction. This is illustrated with *byvat'* 'happen' in (106)-(107).

(106) *CP disjunction: ignorance about situations that used to happen*

Byvalo, (ili) [čto Lene nužno bylo sxodit' v GZ] ili [čto
happened (or) COMP Lena.DAT need be.PST go.INF in GZ or COMP
Kate nužno bylo pozvonit' v buxgalteriju].
Katya.DAT need be.PST call.INF in accounting.department

'(Either) that Lena had to go to GZ (the main building of the Lomonosov Moscow State University) or that Katya had to call the accounting department used to happen.'
✓ The speaker is ignorant about what kind of situations used to happen.
✗ There happened situations in which a disjunctive proposition was true.

(107) *TP disjunction: used to be situations exemplifying the disjunction*

Byvalo, čto (ili) [Lene nužno bylo sxodit' v GZ] ili [Kate
happened COMP (or) Lena.DAT need be.PST go.INF in GZ or Katya.DAT
nužno bylo pozvonit' v buxgalteriju].
need be.PST call.INF in accounting.department

'It used to happen that (either) Lena had to go to GZ (the main building of the Lomonosov Moscow State University) or Katya had to call the accounting department.'
✗ The speaker is ignorant about what kind of situations used to happen.
✓ There happened situations in which a disjunctive proposition was true.

In (106) we infer that the speaker is ignorant or can't recall what kinds of situations used to happen. They narrowed down the situations that used to happen to two kinds: either these were situations where Lena had to go to the main building of the Lomonosov Moscow State University, or these were situations in which Katya had to call the accounting department. This sentence does not have an interpretation according to which there used to be situations s, such that the requirements in s could have been satisfied in two ways: either by Lena visiting the main university building, or by Katya calling the accounting department.

In (107) on the other hand the speaker is not ignorant about the nature of the situations that used to occur. There used to be situations with requirements that were satisfiable in two ways: either by Lena going to the main building of the Lomonosov Moscow State University, or by Katya calling the accounting department. For example, this might have been situations of one of the professors making a mistake in grant paperwork. And such mistakes could be resolved in these two ways described by the disjoint propositions. The interpretation according to which there were situations with unknown requirements (either according to the requirements Lena had to visit GZ or according to the requirements Katya had to call the accounting department) is also possible, but much harder to get.

The predictions of my proposal with respect to (106)-(107) are in (108)-(109).

(108) ⟦It happened [that Lena had to go to GZ] or [that Katya had to phone the accounting department]⟧^{s,g,t} = 1 iff
$\exists s'[{}^{\Vdash}{}_{e}\text{happen}_{s,t}(s') \wedge \exists x[\textsc{Theme}(s')=x \wedge [x \Vdash_{e} \{s'\text{: Lena had to go to GZ in } s'\} \vee x \Vdash_{e} \{s'\text{: Katya had to phone the accounting department in } s'\}]]]$

(109) ⟦It happened that [Lena had to go to GZ] or [Katya had to phone the accounting department]⟧^{s,g,t} = 1 iff
$\exists s'[{}^{\Vdash}{}_{e}\text{happen}_{s,t}(s') \wedge \exists x[\textsc{Theme}(s')=x \wedge [x \Vdash_{e} \{s'\text{: Lena had to go to GZ in } s' \vee \text{Katya had to phone the accounting department in } s'\}]]]$

As we see, the proposal correctly captures the distinction in meaning between the two disjunctions. Sit-CP disjunction scopes higher than the exemplification relation, resulting in ignorance inferences about the types of situations that happened. TP disjunction scopes below the exemplification relation, resulting in the same two readings that are available for the unembedded disjunction.

Out of the approaches #1–4 sketched out in the section 3.1, approaches 3 and 4 cannot apply to Sit-CPs, as Sit-CPs do no describe propositional content. Approach#2, which is essentialy the same as mine when it comes to Sit-CPs, makes the correct prediction that disjunction should scope above the exemplification relation. Whether it makes correct predictions about TP disjunction or not depends on what denotation for TPs it assumes. We see that CP disjunction is not equivalent to TP disjunction, and thus versions of approach#2 which assume that TPs also denote predicates of minimal situations/events/truthmakers will be incorrect. Finally, approach#1 makes wrong predictions about Sit-CPs, as it predicts that CP disjunction should have the same meaning as TP disjunction.

3.4 Conjunction of bigger constituents in disguise

According to my proposal, conjunction of ContPs and CompPs is impossible. However, strings of the from *CP* AND *CP* are possible in many languages, and they are possible both for clauses that combine with verbs and for clauses that combine with nouns. This is illustrated for example with English sentences in (110).

(110) *CP AND CP*

a. Mina is surprised [**that** Swuna sang] and [**that** Hani danced].

b. Mina heard a claim [**that** Swuna sang] and [**that** Hani danced].

c. Mina doesn't recall a situation [**that** S. sang] and [**that** H. danced].

In this section I argue that strings of the from *CP AND CP* can arise when two matrix VPs are conjoined, and some further operation results in the verb (and potentially other material) in one of the VPs not being pronounced (111).

(111) *CP AND CP* strings are underlyingly VP conjunctions:

a. Subject [[[$_{CP}$...] ~~Object] Verb~~] AND [[[$_{CP}$...] Object] Verb]

b. Subject [[$_{CP}$...] ~~Verb~~] AND [[$_{CP}$...] Verb]

The exact nature of this operation will not be crucial to us: e.g., it could involve an ATB-movement of the verbs from the two conjuncts, or string deletion, or VP ellipsis with all constituents vacating VPs prior to that, or a multiple dominance structure. The important thing is that the conjunction in the underlying structure is not CP conjunction, but conjunction of bigger constituents.

If strings like *CP AND CP* arise from matrix VP conjunction (or conjunction of higher matrix constituents), we expect the conjunction in such sentences to always take higher scope than its surface scope, and to never be identical to TP conjunction. In what follows we will see that this prediction is borne out for Korean conjunction *kuliko*, as well as for conjunctions in other languages.

3.4.1 'CP and CP' involving ellipsis with Cont-CPs

3.4.1.1 'CP and CP' in Korean: *kuliko*

Korean conjunction *kuliko* cannot conjoin *v*Ps, (112)-(113), TPs, (114)-(115), or ContPs (116) within clauses that modify nouns.

(112) *vP conjunction with Cont-CP*

*[Swuna-ka nolayha] **kuliko** [Mina-ka chwumchwu]-ess-ta-nun
Swuna-NOM sing **CONJ** Mina-NOM dance-PST-DECL-ADN
cwucang-i iss-ess-ta
claim-NOM exist-PST-DECL

'There was a claim that Swuna sang and Mina danced.'

(113) *vP conjunction with Sit-CP*

*Mina-ka [Swuna-ka nolayha] **kuliko** [Hani-ka chwumchwu]-n
Mina-NOM Swuna-NOM sing **CONJ** Hani-NOM dance-ADN
sanghwang-ul kiekha-n-ta
situation-ACC remember-PRS-DECL

'Mina remembers the situation that Swuna sang and Hani danced.'

(114) *TP conjunction with Cont-CP*

*[Swuna-ka nolayha-**ss**] **kuliko** [Mina-ka chwumchwu-**ess**]-ta-nun
Swuna-NOM sing-**PST** **CONJ** Mina-NOM dance-**PST**-DECL-ADN
cwucang-i iss-ess-ta
claim-NOM exist-PST-DECL

'There was a claim that Swuna sang and Mina danced.'

(115) *TP conjunction with Sit-CP*

*Na-nun [Swuna-ka mwuncey-lul phul-**ess**] **kuliko**
I-TOP Swuna-NOM problem-ACC solve-**PST** **CONJ**
[sensayngnim-kkeyse sungca-ka iss-ta-ko
teacher-HON.NOM winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-$\varnothing_{\textbf{PST}}$]-un sanghwang-i silh-ta.
say.HON-HON-NEG-**PST**-ADN situation-NOM dislike-DECL

'I dislike the situation that Swuna solved the problem and the teacher didn't tell us that there is a winner.'

(116) *ContP conjunction with Cont-CP*

*[Swuna-ka nolayha-ss-**ta**] **kuliko** [Mina-ka chwumchwu-ess-**ta**]-nun
Swuna-NOM sing-PST-**DECL** **CONJ** Mina-NOM dance-PST-**DECL**-ADN
cwucang-i iss-ess-ta.
claim-I exist-PST-DECL

'There was a claim that Swuna sang and Mina danced.'

But *kuliko* can combine two CompPs, as is illustrated in (117) for a Cont-CP and in (118) for a Sit-CP.

(117) *CompP conjunction with Cont-CP*

[Swuna-ka nolayha-ss-ta-**nun**] **kuliko** [Mina-ka
Swuna-NOM sing-PST-DECL-**ADN** **CONJ** Hani-NOM
chwumchwu-ess-ta-**nun**] cwucang-i kiekha-n-ta
dance-PST-DECL-**ADN** claim-ACC exist-PST-DECL

'There was a claim that Swuna sang and that Mina danced.'

(118) *CompP conjunction with Sit-CP*

Mina-ka [Swuna-ka nolayha-**n**] **kuliko** [Hani-ka chwumchwu-**n**]
Mina-NOM Swuna-NOM sing-**ADN** **CONJ** Hani-NOM dance-**ADN**
sanghwang-ul kiekha-n-ta
situation-ACC remember-PRS-DECL

'Mina remembers the situation that Swuna sang and that Hani danced.'

This behavior is not surprising given *kuliko*'s distribution outside of Cont-CPs. *Kuliko* can't be used to conjoin unembedded verbal phrases (119) or TPs (120).

(119) ***VP conjunction**: ✓ ko, ✗ kuliko*

a. Mina-ka chwumchwu-**ko** nolayha-ss-ta.
Mina-NOM dance-**CONJ** sing-PST-DECL
'Mina danced and sang.'

b. *Mina-ka chwumchwu **kuliko** nolayha-ss-ta.
Mina-NOM dance **CONJ** sing-PST-DECL
'Mina danced and sang.'

(120) ***Kuliko cannot conjoin TPs***

*[Swuni-ka Mary-eykey chayk-ul cwu-ess], kuliko [Mini-ka
Swuni-NOM Mary-DAT book-ACC give-PST CONJ Mini-NOM
Juni-eykey kulim-ul cwu-ess]-ta.
Juni-DAT picture-ACC give-PST-DECL

'Swuni gave Mary a book, and Mini gave Juni a picture.'

Matrix sentences also have obligatory declarative markers, which I have assumed to be exponents of the Cont head (121). I assume that the matrix ContP introduces the speech event of the utterance.

(121) Swuna-ka mwuncey-lul phwul-ess-*(ta)
Swuna-NOM problem-ACC solve-PST-DECL
'Swuna solved the problem.'

Two ContPs don't seem to be conjoinable within a single sentence. The intuition of my consultants is that sequences like (122) involve two independent utterances.

(122) (Apeci-nun sensayngnim-i-ta). Kuliko emeni-nun
father-TOP teacher-COP-DECL CONJ mother-TOP
kyengchal-i-ta.
police.officer-COP-DECL
Father is a teacher. And mother is a police officer.
Comment: "these are two separate utterances".

Such uses of *kuliko* need further research.

Barring uses like (122), it seems that *kuliko* occurs in structures in which two VPs are conjoined and the verb in one of the conjuncts is not pronounced:

(123) [Swuni-ka Mary-eykey chayk-ul ~~cwu~~], **kuliko** [Mini-ka Juni-eykey
Swuni-NOM Mary-DAT book-ACC **CONJ** Mini-NOM Juni-DAT
kulim-ul cwu]-ess-ta.
picture-ACC give-PST-DECL
'Swuni gave Mary a book, and Mini gave Juni a picture.'

(124) Mary-ka [ecey motun sakwa-lul ~~mek~~] **kuliko** [onul motun
Mary-NOM yesterday every apple-ACC **CONJ** today every
panana-lul] mek-ess-ta.
banana-ACC eat-PST-DECL
'Mary ate every apple yesterday and every banana today.'

Other material in addition to the verb could be missing as well (125), but the verb has to be missing: it is not possible to conjoin two clauses with just an object being elided in one of the conjuncts for example (126).

(125) [Swuni-ka Mary-eykey ~~kulim-ul cwu~~], **kuliko** [Mini-ka Juni-eykey
Swuni-NOM Mary-DAT **CONJ** Mini-NOM Juni-DAT

kulim-ul cwu]-ess-ta.
picture-ACC give-PST-DECL
'Swuni gave Mary a picture, and Mini gave Juni a picture.'

(126) *[Swuni-ka Mary-eykey ~~kulim-ul~~ cwu-ess], **kuliko** [Mini-ka
Swuni-NOM Mary-DAT give-PST **CONJ** Mini-NOM
Juni-eykey kulim-ul poyecwu-ess]-ta.
Juni-DAT picture-ACC show-PST-DECL
'Swuni gave Mary a picture, and Mini showed Juni a picture.'

Verbless coordination like the one with *kuliko* has received a variety of analyses in the literature: e.g. ATB verb movement analysis (Kuno 1978, Saito 1987), movement of certain constituents followed by ellipsis (J.-S. Kim 1997, Sohn 2001, Abe & Hoshi 1997), in situ string deletion analysis (Mukai 2003), multiple dominance analysis (Chung 2004), a combination of several strategies (Ahn & Cho 2006).

Here I would like to argue that sentences with two CompPs are not an exception to the generalization that *kuliko* conjoins two verbal phrases with some deletion applying to the material of the first phrase. I.e., *kuliko* does not conjoin two CPs, but it appears when VP conjunction is followed by some mechanism that leaves the verb and potentially other constituents of the first conjunct unpronounced.

The evidence that this is what's happening comes from the interpretations that we get in sentences with strings like *CompP* AND *CompP*. Such sentences are felicitous in contexts where the conjunction takes wide scope with respect to the verb. For example, (127) can be felitiously followed by (128).

(127) **Wide scope context:** There are elections held between two parties. The party that is opposing to ours made some statements about our candidate in attempt to draw voters away from her. The speaker thinks that both owning a big company and laundering money are things that, if known about a candidate, would disadvantage them.

Na-nun [wuli-uy hwupo-ka ton.seythak-ul
I-TOP we-GEN candidate-NOM money.laundering-ACC
ha-yess-ta-nun] cwucang-man silh-un kes-i ani-ta...
do-PST-DECL-ADN claim-ONLY dislike-ADN thing-NOM be.NEG-DECL

'I don't only dislike the claim that our candidate did money laundering...'

(lit. 'It's not the case that I dislike only the claim that our candidate did money laundering...')

(128) *CompP AND CompP: ✓ in the context in (127)*

Na-nun [wuli-uy hwupo-ka ton.seythak-ul
I-TOP we-GEN candidate-NOM money.laundering-ACC
ha-yess-ta-nun] **kuliko** [khun hoysa-lul soyuha-yess-ta-nun]
do-PST-DECL-ADN **CONJ** big compamy-ACC own-PST-DECL-ADN
cwucang-i silh-ta.
claim-NOM dislike-DECL

'I dislike the claim that our candidate did money laundering and ~~dislike the claim~~ that she owned a big company.'

This is also a context in which using conjunction of matrix VPs is appropriate:

(129) *VP_{matrix} AND VP_{matrix}: ✓ in the context in (127)*

Na-nun [wuli-uy hwupo-ka ton.seythak-ul
I-TOP we-GEN candidate-NOM money.laundering-ACC
ha-yess-ta-nun cwucang-to silh]-**ko** [khun hoysa-lul
do-PST-DECL-ADN claim-ALSO dislike-**CONJ** big compamy-ACC
soyuha-yess-ta-nun cwucang-i silh]-ta.
own-PST-DECL-ADN claim-NOM dislike-DECL

'I dislike the claim that our candidate did money laundering and dislike the claim that she owned a big company.'

In (128) we saw the wide scope of conjunction in a sentence with *kuliko* and two Cont-CPs. Sentences with *kuliko* and two Sit-CPs also are felicitous in contexts supporting the wide scope of conjunction, (130)-(131).

(130) **Wide scope context:** There is a competition: the first student in class to solve the problem wins. Swuna was the first student to solve the problem, but the teacher didn't tell the students right away that there already was a winner, and they kept trying to solve it for a while. In addition to that, Mina and Swuna don't get along well, and really didn't want each other to win. Now Mina says:

Na-nun [sensayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-un] sanghwang-man silh-un kes-i
say.HON-HON-NEG-ADN situation-ONLY dislike-ADN thing-NOM
ani-ta...
be.NEG-DECL

'I don't only dislike the situation that the teacher didn't tell us there was a winner...' (lit. 'It's not the case that I dislike only the situation that the teacher didn't tell us there was a winner...')

(131) *CompP AND CompP:* ✓ *in the context in* (*130*)

Na-nun [sengsayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-un] **kuliko** [swuna-ka mwuncey-lul phwul-un]
say.HON-HON-NEG-ADN **CONJ** Swuna-NOM problem-ACC solve-ADN
sanghwang-i (motwu) silh-ta.
situation-NOM (both) dislike-DECL

'I dislike (both) the situation that the teacher didn't tell us there was a winner and ~~dislike the situation~~ that Swuna solved the problem.'

Thus, sentences with *kuliko* and two Sit-CPs pattern with matrix VP conjunction:

(132) VP_{matrix} *AND* VP_{matrix}*:* ✓ *in the context in* (*130*)

na-nun [sengsayngnim-kkeyse sungca-ka iss-ta-ko
I-TOP teacher-HON winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-un sanghwang-i silh]-**ko** [swuna-ka
say.HON-HON-NEG-ADN situation-NOM dislike-**CONJ** Swuna-NOM
mwuncey-lul phwul-un sanghwang-i silh]-ta.
problem-ACC solve-ADN situation-NOM dislike-DECL

'I dislike the situation that the teacher didn't tell us there was a winner and dislike the situation that Swuna solved the problem.'

Sentences with strings *CompP AND CompP* cannot be used in contexts in which conjunction takes narrow scope with respect to the verb. The sentence in (133) in the provided context cannot be followed by (134) with two Cont-CPs.

(133) **Narrow scope context:** There are elections held between two parties. The party that is opposing ours made some statements about our candidate in attempt to draw voters away from her. The speaker thinks that owning a big company would be considered a virtue for a candidate, but laundering money wouldn't be.

Na-nun [wuli-uy hwupo-ka khun hoysa-lul
I-TOP we-GEN candidate-NOM big company-ACC
soyuha-yess-ta-nun] cwucang-i silh-ci.anh-ta...
own-PST-DECL-ADN claim-NOM dislike-NEG-DECL

'I don't dislike the claim that our candidate owned a big company...'

(134) *CompP AND CompP: ✗ in the context in (133)*

#Na-nun [wuli-uy hwupo-ka khun hoysa-lul
I-TOP we-GEN candidate-NOM big company-ACC
soyuha-yess-ta-nun] **kuliko** [ton.seythak-ul ha-yess-ta-nun]
own-PST-DECL-ADN **CONJ** money.laundering-ACC do-PST-DECL-ADN
cwucang-i silh-ta.
claim-NOM dislike-DECL

'I dislike the claim that our candidate owned a big company and did money laundering.'

The intuition that my consultants report is that following (133) with (134) feels contradictory: the speaker just told us they do not dislike the claim that the candidate owned a big company, and now they are saying that they do dislike it. If it was possible for the conjunction in (134) to scope low, such infelicity should not arise: we should get a reading according to which the speaker dislikes the conjunctive claim. Conjunction of matrix VPs (135) behaves the same way as (134): it also results in a contradiction in the context of (133).

(135) *VP_{matrix} AND VP_{matrix}: ✗ in the context in (133)*

#Na-nun [wuli-uy hwupo-ka khun hoysa-lul
I-TOP we-GEN candidate-NOM big company-ACC
soyuha-yess-ta-nun cwucang-i silh]-**ko** [ton.seythak-ul
own-PST-DECL-ADN claim-NOM dislike-**CONJ** money.laundering-ACC

ha-yess-ta-nun cwucang-i silh]-ta.
do-PST-DECL-ADN claim-NOM dislike-DECL
'I dislike the claim that our candidate owned a big company and dislike the claim that she did money laundering.'

A felicitous follow-up of (133) would involve conjunction of smaller constituents within the embedded clause, for example conjunction of embedded verbal phrases:

(136) *VP_{emb} AND VP_{emb}: ✓ in the context in (133)*
Na-nun [wuli-uy hwupo-ka khun hoysa-lul soyuha]-**ko**
I-TOP we-GEN candidate-NOM big company-ACC own-**CONJ**
[ton.seythak-ul ha]-yess-ta-nun cwucang-i silh-ta.
money.laundering-ACC do-PST-DECL-ADN claim-NOM dislike-DECL
'I dislike the claim that our candidate owned a big company and did money laundering.'

Narrow scope is not available for *kuliko* with Sit-CPs as well: (138) is an infelicitous continuation of (137), just as matrix VP coordination (139).

(137) **Narrow scope context:** There is a competition: the first student in class to solve the problem wins. Swuna was the first student to solve the problem, but the teacher didn't tell the students right away that there already was a winner, and they kept trying to solve it for a while. The speaker has no negative feelings about Swuna solving the problem.
Na-nun Swuna-ka mwuncey-lul phul-un sanghwang-i silh-un
I-TOP Swuna-NOM problem-ACC solve-ADN situation-NOM dislike-ADN
kes-i ani-ta...
thing-NOM be.NEG-DECL
'I don't dislike the situation that Swuna solved the problem...' (lit. 'It's not the case that I dislike the situation that Swuna solved the problem')

(138) *CompP AND CompP: ✗ in the context in (137)*
#Na-nun [Swuna-ka mwuncey-lul phul-un] **kuliko**
I-TOP Swuna-NOM problem-ACC solve-ADN **CONJ**
[sensayngnim-kkeyse sungca-ka iss-ta-ko
teacher-HON winner-NOM exist-DECL-COMP

malssumha-si-ci.anh-un] sanghwang-i silh-ta.
say.HON-HON-NEG-ADN situation-NOM dislike-DECL

'I dislike the situation that Swuna solved the problem and the teacher didn't say that there was a winner.'

(139) *VP_{matrix} AND VP_{matrix}: ✗ in the context in (137)*

#Na-nun [Swuna-ka mwuncey-lul phul-un sanghwang-i
I-TOP Swuna-NOM problem-ACC solve-ADN situation-NOM
silh]-**ko** [sensayngnim-kkeyse sungca-ka iss-ta-ko
dislike-**CONJ** teacher-HON winner-NOM exist-DECL-COMP
malssumha-si-ci.anh-un sanghwang-i silh]-ta.
say.HON-HON-NEG-ADN situation-NOM dislike-DECL

'I dislike the situation that Swuna solved the problem and dislike the situation that the teacher didn't say that there was a winner.'

A felicitous follow-up to (137) requires conjunction of smaller constituents within the embedded clause, for example VPs:

(140) *VP_{emb} AND VP_{emb}: ✓ in the context in (137)*

Na-nun [Swuna-ka mwuncey-lul phul]-ko [sensayngnim-kkeyse
I-TOP Swuna-NOM problem-ACC solve-**CONJ** teacher-HON
sungca-ka iss-ta-ko malssumha-si-ci.anh]-un sanghwang-i
winner-NOM exist-DECL-COMP say.HON-HON-NEG-ADN situation-NOM
silh-ta.
dislike-DECL

'I dislike the situation that Swuna solved the problem and the teacher didn't say that there was a winner.'

The examples in (141)-(142) provide another illustration that *kuliko* cannot take narrow scope with respect to the verb. If it could, it should have been felicitous to assert that a claim/situation that p existed, but a claim with the content $p \wedge q$/situation exemplifying $p \wedge q$ did not exist. As we see, this is not possible.

(141) Swuna-ka nolayhay-ss-ta-nun cwucang-un iss-ess-ciman,
Swuna-NOM sing-PST-DECL-ADN claim-CONTR exist-PST-BUT

#[Swuna-ka nolayha-ss-ta-nun] **kuliko** [Mina-ka
Swuna-NOM sing-PST-DECL-ADN **CONJ** Mina-NOM
chwumchwu-ess-ta-nun] cwucang-un eps-ess-ta.
dance-PST-DECL-ADN claim-CONTR not.exist-PST-DECL
'There was a claim that Swuna sang, but there was no claim that Swuna sang and Mina danced.'

(142) Swuna-ka nolayhay-n sanghwang-un iss-ess-ciman,
Swuna-NOM sing-ADN situation-CONTR exist-PST-BUT
#[Swuna-ka nolayha-n] **kuliko** [Mina-ka chwumchwu-n]
Swuna-NOM sing-ADN **CONJ** Mina-NOM dance-ADN
sanghwang-un eps-ess-ta.
situation-CONTR not.exist-PST-DECL
'There was a situation that Swuna sang, but there was no situation that Swuna sang and Mina danced.'

Thus, sentences with strings *CompP AND CompP* again pattern with matrix VP conjunctions, (143)-(144).

(143) Swuna-ka nolayhay-ss-ta-nun cwucang-un iss-ess-ciman,
Swuna-NOM sing-PST-DECL-ADN claim-CONTR exist-PST-BUT
#[Swuna-ka nolayha-ss-ta-nun cwucang-un eps]-**ko** [Mina-ka
Swuna-NOM sing-PST-DECL-ADN claim-CONTR not.exist-**CONJ** Mina-NOM
chwumchwu-ess-ta-nun cwucang-un eps]-ess-ta.
dance-PST-DECL-ADN claim-CONTR not.exist-PST-DECL
'There was a claim that Swuna sang, #but there was no claim that Swuna sang and there was no claim that Mina danced.'

(144) Swuna-ka nolayhay-n sanghwang-un iss-ess-ciman,
Swuna-NOM sing-ADN situation-CONTR exist-PST-BUT
#[Swuna-ka nolayha-n sanghwang-un eps]-**ko** [Mina-ka
Swuna-NOM sing-ADN situation-CONTR not.exist-**CONJ** Mina-NOM
chwumchwu-n sanghwang-un eps]-ess-ta.
dance-ADN situation-CONTR not.exist-PST-DECL
'There was a situation that Swuna sang, #but there was no situation that Swuna sang and there was no situation that Mina danced.'

Finally, when we see *kuliko* between two clauses that combine directly with verbs, it also has to take wide scope: (145) is infelicitous in a context where Mina wasn't surprised by both Swuna's singing and Hani's dancing individually.[15]

(145) Mina-nun [Swuna-ka nolayha-ss-ta-ko] **kuliko** [Hani-ka
Mina-TOP Swuna-NOM sing-PST-DECL-COMP **CONJ** Hani-NOM
chwumchwu-ss-ta-ko] nollaweha-ss-ta.
dance-PST-DECL-COMP be.surprised-PST-DECL
'Mina was surprised that Swuna sang and that Hani danced.'
✓ *kuliko* > *surprise:* Mina was surprised by Swuna's singing, and was surprised by Hani's dancing.
✗ *surprise* > *kuliko:* Mina was surprised by the combination of Swuna's singing and Hani's dancing (but, for example, Swuna's singing on its own is not surprising to her).

To sum up, we have seen that Korean *kuliko* is a dedicated conjunction for VP coordination structures in which the verb and sometimes additional material within the first conjunct remain unpronounced. This leads to *kuliko* always taking wide scope with respect to verbs. The conjunction of both Cont-CPs and Sit-CPs with *kuliko* is only apparent: strings *CompP* KULIKO *CompP* are underlyingly VP conjunctions with some of the material of the first VP being silent (146).

(146) *CP* KULIKO *CP* strings are underlyingly VP conjunctions:
a. Subject [[[$_{CP}$...] ~~Object] Verb~~] KULIKO [[[$_{CP}$...] Object] Verb]
b. Subject [[$_{CP}$...] ~~Verb~~] KULIKO [[$_{CP}$...] Verb]

3.4.1.2 'CP and CP' in other languages

We have seen that Korean has different exponents for conjunction depending on whether the verb and potentially other material in the first conjunct go missing. This allows us to observe that true conjunction of CPs is not possible: it is ungrammatical with *-ko*, a conjunction that doesn't permit eliding the verb from one of

[15] For some of my consultants, (145) was not an ideally well-formed sentence independent of the interpretation: they gave it a question mark/3-4 rating on a 5-point scale. It is not clear to me what is the reason for this degradedness, but even speakers who didn't find the sentence fully well-formed shared the judgment that conjunction cannot take low scope with respect to the verb.

the conjuncts, and the data from scope suggest that apparent CP conjunction with *kuliko* actually involves conjunction of two matrix VPs.

Other languages on the other hand do not make the morphological distinction that Korean makes: the counterparts of *-ko* and *kuliko* in these languages are phonologically identical. English is such a language. Whether two conjuncts have all of their material pronounced (147a) or the verb in one of the conjuncts is missing (147b), the conjunction looks the same: *and*.[16]

(147) a. John [saw Labov] and [met with Chomsky].
b. John [saw Labov] and, [yesterday, ~~saw~~ Chomsky].
(Hirsch 2017: p. 82)

Other languages like English include Hebrew (*še*), Italian (*che*) and Russian (*i*).

Thus, for these languages we will not be able to directly observe the ungrammaticality of true CP conjunction. The expectation for them is that, first, *CP and CP* strings should be acceptable as long as the underlying matrix VP conjunction is acceptable, and second, *CP and CP* strings should have only wide scope readings of the conjunction with respect to the matrix verb.

First I would like to show some evidence that the first part of this prediction is correct: acceptability of *CP and CP* strings depends on the acceptability of the matrix VP conjunction. Evidence comes from Russian contrastive conjunction *a* 'but', which places a requirement on the two phrases it conjoins: there have to be at least two points of contrast between the conjuncts.[17] Consider (148)-(151).

(148) Dina pela, a Masha tancevala.
Dina sang BUT Masha danced
'Dina sang, but Masha danced.'

(149) *Dina pela, a Dina tancevala.
Dina sang BUT Dina danced
'Dina sang, but/and Dina danced.'

[16]See Hirsch (2017: pp. 82–84) for arguments that (147b) involves conjunction reduction. He proposes the structure in (i) for this sentence.

(i) $[_{TP}$ John$_1$ $[_{\&P}$ $[_{vP}$ t$_1$ saw Labov] [and $[_{vP}$ yesterday $[_{vP}$ t$_1$ saw Chomsky]]]]]

[17]Many thanks to Masha Esipova for bringing *a* 'but' to attention of Itai Bassi and me.

(150) *Dina pela, a Masha pela.
Dina sang BUT Masha sang
'Dina sang, but/and Masha sang.'

(151) Pozavčera Dina pela, a včera Dina tancevala.
day.before.yesterday Dina sang BUT yesterday Dina danced
'The day before yesterday Dina sang, but yesterday Dina danced.'

In (148) both subjects and predicates within the two conjuncts are different, and such phrases can be conjoined by *a* 'but'. In (149) only predicates contrast, and conjunction by *a* 'but' is impossible. The same is true in (150): conjuncts contrast only in the subjects inside of them, and this is not sufficient. In (151) we add contrasting adverbs to the conjuncts in (149), and conjunction by *a* 'but' becomes possible.

Now let us see how the double-contrast restriction manifests itself in cases with clausal embedding. Consider the sentences in (152)-(153).

(152) *Lena dumala [$_{CP}$ čto Dina pela], a Lena dumala, [$_{CP}$ čto Maša tancevala].
Lena thought COMP Dina sang BUT Lena thought COMP Masha danced
'Lena thought that Dina sang, but Lena thought that Masha danced.'

(153) Pozavčera Lena dumala [$_{CP}$ čto Dina pela], a včera Lena dumala, [$_{CP}$ čto Maša tancevala].
day.before.yesterday Lena thought COMP Dina sang BUT yesterday Lena thought COMP Masha danced
'The day before yesterday Lena thought that Dina sang, but yesterday Lena thought that Masha danced.'

We see that an embedded CP is considered as a single point of contrast: it is not sufficient to have two points of contrast *within* the embedded CP, additional point of contrast in the matrix clause needs to be present for *a* 'but' to be acceptable. The same restriction is present even if there is only one verb that is pronounced:

(154) *Lena dumala [$_{CP}$ čto Dina pela], a [$_{CP}$ čto Maša tancevala].
Lena thought COMP Dina sang BUT COMP Masha danced
'Lena thought that Dina sang, but that Masha danced.'

(155) Pozavčera Lena dumala [$_{CP}$ čto Dina pela], a
day.before.yesterday Lena thought COMP Dina sang BUT
včera [$_{CP}$ čto Maša tancevala].
yesterday COMP Masha danced
'The day before yesterday Lena thought that Dina sang, but yesterday (she thought) that Masha danced.'

If *a* 'but' was able to conjoin two CPs directly, we expect it to require two points of contrast *within* these CPs, but we see that this is not sufficient (154) and not even necessary (156): e.g., the clauses could vary only in their subjects. Whatever differences between the CPs exist, they will count as a single point of contrast.

(156) Pozavčera Lena dumala [$_{CP}$ čto Dina pela], a
day.before.yesterday Lena thought COMP Dina sang BUT
včera [$_{CP}$ čto Maša pela].
yesterday COMP Masha sang
'The day before yesterday Lena thought that Dina sang, but yesterday (she thought) that Masha sang.'

This contrasts with embedded TP conjunction, where there it is necessary and sufficient for the TPs to have two points of contrast within them (157).

(157) Lena dumaet [$_{CP}$ čto [$_{TP}$ Dina pela], a [$_{TP}$ Maša tancevala
Lena thinks COMP Dina sang BUT Masha danced
/*pela]].
/sang
'Lena thinks that Dina sang, but Masha danced /*sang.'

English *but* might provide us with another case where apparent CP conjunction exhibits the same restrictions as matrix VP conjunction.[18] In (158) we see that *but* can't conjoin two embedded CPs; cf. grammatical TP conjunction in (159).

(158) *I was surprised [$_{CP}$ that it was sunny] but [$_{CP}$ that Jill took a cab to work].

(159) I was surprised that [$_{TP}$ it was sunny] but [$_{TP}$ Jill took a cab to work].

[18] I am grateful to Frank Staniszewski for this observation.

The ungrammaticality of (158) follows if the underlying structure involves matrix VP conjunction, as it is not grammatical either:

(160) *I was [$_{VP}$ surprised that it was sunny] but [$_{VP}$ surprised that Jill took a cab to work].

Thus, we see that if a conjunction places certain restrictions on the phrases it conjoins, sentences with *CP* CONJ *CP* strings are acceptable in exactly those cases in which matrix VP conjunction would be acceptable. This is expected if sentences with *CP* CONJ *CP* strings are always structures with matrix VP conjunction followed by elision of some material in one of the conjuncts.

Now let us turn to the second part of our expectation about languages like English: *CP* CONJ *CP* strings should have only wide scope readings of the conjunction with respect to the matrix verb. The difference between the interpretation of embedded CPs and embedded TPs in English has been discussed by Szabolcsi (1997, 2016) and Bjorkman (2013). Both note that there is a systematic contrast between the two. Szabolcsi discusses examples like (161)-(162):

(161) Sue was surprised [**that** John was drunk] and [**that** Mary was driving].
preferred: 'surprised by this and surprised by that'
(Szabolcsi 2016: ex. (18))

(162) Sue was surprised **that** [John was drunk] and [Mary was driving].
can mean: 'surprised by the combination' (Szabolcsi 2016: ex. (19))

Her conclusion is that there is a strong preference for the wide scope reading with CP conjunction compared to TP conjunction.

Bjorkman focuses on a different contrast between conjoining CPs and TPs: the temporal ordering between the two propositions within conjuncts. In (163) we do not infer anything about how the elections and the riot are ordered with respect to each other ("symmetric *and*"), but in (164) we get an inference that the election preceded the riot ("asymmetric *and*").

(163) The newspaper reported [**that** a new government was elected] and [**that** there was a riot].
symmetric interpretation: temporal ordering between election and riot is not determined (Bjorkman 2013: ex. (11a))

(164) The newspaper reported **that** [a new government was elected] and [there was a riot].
asymmetric interpretation: first the new government was elected, then there was a riot (Bjorkman 2013: ex. (11b))

I would like to note that this contrast is expected if sentences with *CP* CONJ *CP* strings involve matrix VP conjunction. Note that when we conjoin two matrix VPs, we don't get any inference about the ordering of the two embedded propositions:

(165) The newspaper [reported that a new government was elected] and [(it) reported that there was a riot].
✗ inference about ordering of the election and the riot
✓ inference about ordering of the two reports: first the election was reported, then the riot was reported

We can still get an asymmetric inference, but it is not about the embedded propositions, but about the order of reports: the election was reported before the riot was. Thus, whatever the nature of the asymmetric inference is, it is always available, it's just that in (163) we are conjoining two matrix VPs, and thus the inference, if derived, will be about the order of reports.[19]

[19]One question that arises for languages like English, which have complementizer drop (*Jill knows* (*that*) *Mary came*), is whether we expect to see massive ambiguity in sentences with sentential conjunction (I'm grateful to Sabine Iatridou for bringing this issue to my attention). Consider (i).

(i) a. Jill knows **that** Mary came and Peter came.
$[_{CP}$ that Mary came] and $[_{CP}$ ~~that~~ Peter came]
$[_{CP}$ that $[_{TP}$ Mary came] and $[_{TP}$ Peter came]]
b. Jill knows Mary came and **that** Peter came.
$[_{CP}$ ~~that~~ Mary came] and $[_{CP}$ that Peter came]
c. Jill knows Mary came and Peter came.
$[_{CP}$ ~~that~~ Mary came] and $[_{CP}$ ~~that~~ Peter came]
$[_{CP}$ ~~that~~ $[_{TP}$ Mary came] $[_{TP}$ Peter came]]
d. Jill knows **that** Mary came and **that** Peter came.
$[_{CP}$ that Mary came] and $[_{CP}$ that Peter came]

If we see two complementizers pronounced, (id), or if we see one complementizer at the beginning of the second conjunct, (ib), there is no ambiguity: we are dealing with CP conjunction. For the latter case, this is corroborated by the fact that *and* takes wide scope with respect to the embedding predicate: *Jill is surprised Mary came and that Peter came* is compatible with *and* > *surprised* scope, but not with **surprised* > *and* scope (I'm grateful to Patrick Elliott for the judgment). The cases that are potentially ambiguous are sentences with one complementizer right after the verb, (ia), and sentences with no complementizers, (ic). Sentences with one complementizer like (ia) seem to be preferentially interpreted as TP conjunction under a single C. One hypothesis could be that

Now I would like to turn to the observations made by Itai Bassi and me about sentences with *CP and CP* strings in Russian, as well as in English, Hebrew, and Italian. In all of these languages, there seem to be speakers who exclusively get wide scope readings in sentences with *CP and CP* strings, but also speakers who, at least in certain cases, allow for narrow scope readings in addition to the wide scope interpretations. We found no speakers that would only have narrow scope readings in sentences with *CP and CP* strings. No significant differences in judgments were detected that would stem from the type of the clause involved: Sit-CPs vs. Cont-CPs, modifiers of nouns vs. modifiers of verbs—in all configurations the availability of the narrow scope seemed to just be determined by the type of a speaker. Thus, my proposal from chapter 2 makes good predictions for some speakers but not others.

I would like to suggest that all speakers of the aforementioned languages have a parse of the sentences with *CP and CP* strings which involves matrix VP conjunction, but that the speakers who additionally are able to get narrow scope readings are getting to these interpretations by using a non-Boolean conjunction of a certain kind (section 3.5). My hypothesis is that the speakers who only permit wide scope either don't have this non-Boolean conjunction in their grammars, or it is at least much harder for them to access it.

In the rest of this section, I will discuss the data on the scope of conjunction in sentences with *CP and CP* strings. Let us first consider clauses that combine with nouns; here I will use the data from Russian. For all speakers, conjunction in sentences with two Cont-CPs can take wide scope. For example, in (166) we get a reading where the speaker didn't have a thought that the algorithm will slow down the program and also didn't have a thought that the output of the results will be impossible in some cases.

(166) *Wide scope of* AND *with Cont-CPs:* ✓ (all speakers)

U menja ne bylo mysli, [**čto** algoritm zamedlit rabotu
by me NEG was thought.GEN **COMP** algorithm will.slow.down work
programmy] **i** [**čto** vydača rezul'tatov v časti slučaev
program.GEN **CONJ COMP** output results.GEN in part cases.GEN

complementizer drop in coordinate structures is restricted: it either applies in both conjuncts, or in neither. I leave investigation of sentences with no complementizers for further research.

okažetsja nevozmožnoj].
will.turn.out impossible

'I didn't have a thought that the algorithm will slow down the program and I didn't have a thought that the output of the results will become impossible in some cases. '

Narrow scope of conjunction, on the other hand, is impossible for many speakers: it feels infelicitous to follow up (167a) with the sentence in (167b).

(167) *Narrow scope of AND with Cont-CPs:* ✗/✓ (depends on the speaker)

a. #/^{ok} U nas byla mysl', čto algoritm zamedlit
by us emerged thought COMP algorithm will.slow.down
rabotu programmy...
work program.GEN
'We had a thought that the algorithm will slow down the program...'

b. No u nas nikogda ne voznikalo mysli, [**čto** algoritm
but by us never NEG emerged thought.GEN **COMP** algorithm
zamedlit rabotu programmy] **i** [**čto** vydača rezul'tatov
will.slow.down work program.GEN **CONJ COMP** output results.GEN
v časti slučaev okažetsja nevozmožnoj].
in part cases.GEN will.turn.out impossible
'But we never had a thought that the algorithm will slow down the program and the output of the results will become impossible in some cases.'

Such an infelicity would be explained if the underlying structure of (167b) involves matrix VP conjunction: then the first conjunct would say that the group that the speaker belongs to did not have a thought that the algorithm will slow down the program, which is in contradiction with (167a). There are however some speakers that find (167b) acceptable, so they must have a parse of the sentence that doesn't involve the matrix VP conjunction.

All of the speakers agree that the narrow scope of conjunction works well with two TPs embedded under a single complementizer:

(168) *Narrow scope of* AND *with TPs:* ✓ (all speakers)

a. [ok] U nas byla mysl', čto algoritm zamedlit rabotu
by us emerged thought COMP algorithm will.slow.down work
programmy...
program.GEN
'We had a thought that the algorithm will slow down the program...'

b. No u nas nikogda ne voznikalo mysli, **čto** [algoritm
but by us never NEG emerged thought.GEN **COMP** algorithm
zamedlit rabotu programmy] **i** [vydača rezul'tatov v
will.slow.down work program.GEN **CONJ** output results.GEN in
časti slučaev okažetsja nevozmožnoj].
part cases.GEN will.turn.out impossible
'But we never had a thought that the algorithm will slow down the program and the output of the results will become impossible in some cases.'

The judgments are the same for Sit-CPs. All speakers can get the wide scope of conjunction in sentences with *Sit-CP and Sit-CP* strings: (169) is easily understood as saying that there wasn't a situation of the algorithm slowing down the program and there also wasn't a situation of the output not being possible in certain cases.

(169) *Wide scope of* AND *with Sit-CPs:* ✓ (all speakers)

Ne bylo situacii, [**čt**o algoritm zamedlil rabotu
NEG was situation.GEN **COMP** algorithm slowed.down work
programmy] **i** [**čto** vydača rezul'tatov v časti slučaev
program.GEN **CONJ COMP** output results.GEN in part cases.GEN
okazalas' nevozmožnoj].
turned.out impossible

'There wasn't a situation that the algorithm slowed down the program and there wasn't a situation that the output of the results became impossible in some cases.'

The narrow scope reading of conjunction however is not available for many speakers (170).

(170) *Narrow scope of AND with Sit-CPs:* ✗/✓ (depends on the speaker)

a. #/^{ok} U nas byla situacija, čto algoritm zamedlil rabotu
by us was situation COMP algorithm slowed.down work
programmy...
program.GEN
'We had a situation that the algorithm slowed down the program...'

b. No ne bylo situacii, [**čto** algoritm zamedlil rabotu
but NEG was situation.GEN **COMP** algorithm slowed.down work
programmy] **i** [**čto** vydača rezul'tatov v časti slučaev
program.GEN **CONJ COMP** output results.GEN in part cases.GEN
okazalas' nevozmožnoj].
turned.out impossible
'But there was no situation that the algorithm slowed down the program and the output of the results became impossible in some cases.'

The sentence in (170a) tells us that there was a situation that exemplifies the algorithm slowing down the program. This statement makes the wide scope interpretation false, as it contradicts one of its conjuncts. The narrow scope reading however is compatible with (170a), as it says that there wasn't a situation that exemplifies a conjunctive proposition. Again, we see that sentences with *CP and CP* strings are not felicitous under the narrow scope for some speakers. On the other hand, everyone agrees that the narrow scope interpretation is perfect with the conjunction of TPs within the embedded clause:

(171) *Narrow scope of AND with TPs:* ✓ (all speakers)

a. ^{ok} U nas byla situacija, čto algoritm zamedlil rabotu
by us was situation COMP algorithm slowed.down work
programmy...
program.GEN
'We had a situation that the algorithm slowed down the program...'

b. No ne bylo situacii, **čto** [algoritm zamedlil rabotu
but NEG was situation.GEN **COMP** algorithm slowed.down work
programmy] **i** [vydača rezul'tatov v časti slučaev okazalas'
program.GEN **CONJ** output results.GEN in part cases.GEN turned.out

nevozmožnoj].
impossible
'But there was no situation that the algorithm slowed down the program and the output of the results became impossible in some cases.'

CPs that combine with verbs also show the same contrasts. Here I will provide examples from English, Hebrew, Russian and Italian that were collected together with Itai Bassi (Bassi & Bondarenko 2021). Consider (172).

(172) **Context:** It is usually very sunny in our town. Bill always walks to work on sunny days. But on the rare occasions that it rains, he takes a cab to work. Today was sunny, but Bill deviated from his routine.

a. #/^{ok} I was surprised
[that it was sunny today] and [that Bill took a cab to work].

b. ^{ok} I was surprised
that [it was sunny today] and [Bill took a cab to work].

In the provided context, it's not true that the speaker is surprised about the day being sunny, it is in fact common for it to be very sunny in their town. Thus, the wide scope reading of the conjunction is false in this context. The narrow scope interpretation is however true: the combination of it being sunny and Bill taking a cab to work is something that the speaker does not expect. All speakers find embedded TP conjunction good in this context, but many speakers report that embedded CP conjunction is infelicitous. This is expected if for these speakers matrix VP conjunction is the only possible structure for sentences with *CP and CP* strings. Wide scope readings for CP conjunction are available for all speakers (173).

(173) **Context:** It is usually very cloudy in our town, but Bill nevertheless always walks to work. Today not only it was sunny, but Bill for some reason took a cab to work.
✓ (all speakers): I was (both) surprised [that it was sunny today] and [that Bill took a cab to work].

Sentences with other emotive verbs behave in the same way. In English (174), Hebrew (175) and Russian (176) wide scope of conjunction is good with CP conjunction, but the narrow scope for many speakers is not available—conjunction of

TPs inside of the embedded clause has to be used.

(174) *English:*

a. Bill got angry [$_{CP}$ that Masha sang] and [$_{CP}$ that Dina danced].
✓ *angry* > AND, ✗/✓ AND > *angry*

b. Bill got angry [$_{CP}$ that [$_{TP}$ Masha sang] and [$_{TP}$ Dina danced]].
✓ AND > *angry*

(175) *Hebrew*

a. hitacbanti [$_{CP}$ še Maša šara] ve [$_{CP}$ še Dina rakda].
I.got.upset COMP Masha sang CONJ COMP Dina danced
'I got upset that Masha sang and that Dina danced.'
✓ *upset* > AND, ✗/✓ AND > *upset*

b. hitacbanti [$_{CP}$ še [$_{TP}$ Maša šara] ve [$_{TP}$ Dina rakda]].
I.got.upset COMP Masha sang CONJ Dina danced
'I got upset that Masha sang and Dina danced.'
✓ AND > *upset*

(176) *Russian*

a. Ja razozlilas', [[$_{CP}$ čto Maša pela] i [$_{CP}$ čto Dina
I got.angry COMP Masha sang CONJ COMP Dina
tancevala]].
danced
'I got angry that Masha sang and that Dina danced.'
✓ *angry* > AND, ✗ AND > *angry*[20]

b. Ja razozlilas', [$_{CP}$ čto [$_{TP}$ Maša pela] i [$_{TP}$ Dina tancevala]].
I got.angry COMP Masha sang CONJ Dina danced
'I got angry that Masha sang and Dina danced.'
✓ AND > *angry*

Another verb with which we can see the contrast between CP conjunction and TP conjunction is 'doubt'. Again, accross different languages we find speakers for whom the narrow scope of conjunction is unavailable in sentences with *CP and CP* strings, (177)-(179). Those speakers need to use embedded TP conjunction to

[20]For this sentence, all speakers I consulted disallowed the narrow scope.

report that they doubt that the combination of Mary's singing and Dina's dancing took place (while they could have no doubts that Mary will sing, for example).

(177) *Italian*

a. Dubito [$_{CP}$ che Maria abbia cantato] e [$_{CP}$ che Dina abbia ballato].
doubt.1SG COMP Maria has.SUBJ sung CONJ COMP Dina has.SUBJ danced.
'I doubt that Maria sang and that Dina danced.'
✓ *doubt* > AND, ✗/✓ AND > *doubt*

b. Dubito [$_{CP}$ che [$_{TP}$ Maria abbia cantato] e [$_{TP}$ Dina abbia ballato]].
doubt.1SG COMP Maria has.SUBJ sung CONJ Dina has.SUBJ danced.
'I doubt that Maria sang and Dina danced.'
✓ AND > *doubt*

(178) *English*

a. I doubt [$_{CP}$ that Masha sang] and [$_{CP}$ that Dina danced].
✓ *doubt* > AND, ✗/✓ AND > *doubt*

b. I doubt [$_{CP}$ that [$_{TP}$ Masha sang] and [$_{TP}$ Dina danced]].
✓ AND > *doubt*

(179) *Russian*

a. Ja somnevajus', [$_{CP}$ čto Maša pela] i [$_{CP}$ čto Dina tancevala].
I doubt COMP Masha sang CONJ COMP Dina danced
'I doubt that Masha sang and that Dina danced.'
✓ *doubt* > AND, ✗/✓ AND > *doubt*

b. Ja somnevajus', [$_{CP}$ čto [$_{TP}$ Maša pela] i [$_{TP}$ Dina tancevala]].
I doubt COMP Masha sang CONJ Dina danced
'I doubt that Masha sang and Dina danced.'
✓ AND > *doubt*

But there are some speakers who admit the narrow scope readings with CP conjunction, sometimes they report that they need to have additional stress on the conjunction to make the reading available.

To sum up, we have seen that in English, Hebrew, Italian and Russian CPs of different kinds (Sit-CPs and Cont-CPs, CPs that combine with verbs and those that combine with nouns) are always compatible with the wide scope reading of conjunction, but are accepted with the narrow scope reading of conjunction only by some people. I propose that the wide scope reading should be attributed to the matrix VP conjunction configuration. The people for whom it is the only reading are immediately accounted for under my proposal, because according to it CPs can never be conjoined due to their semantics. In the next section I will address the group of people who can at least in some cases get the narrow scope readings of conjunction in sentences with *CP and CP* strings.

As for other approaches to the meaning of embedded CPs, any approach will be able to account for the wide scope readings of conjunction by saying that *CP and CP* strings can involve conjunction of constituents that are bigger than just CPs. Where approaches differ is in how they handle speakers of Korean and speakers of other languages which disallow narrow scope readings of conjunction for *CP and CP* strings. As discussed before, approaches that ban CP conjunction (approach#2, according to which CPs are sets of minimal situations and approach#3, according to which CPs are sets of entities whose content equals the embedded proposition) will have no problem with these data, but will need to say something special about the population that can get the narrow scope readings for *CP and CP* strings. On the other hand, approaches that predict that CP conjunction should be equivalent to TP conjunction (approach#1, according to which CPs are sets of non-minimal situations/worlds, and approach#4, according to which CPs are sets of entities whose propositional content is the subset of the embedded proposition) immediately account for the speakers who allow narrow scope readings with CP conjunctions, but make bad predictions for Korean and for the speakers who only get wide scope readings. These approaches also miss the fact that restrictions we observe in matrix VP conjunctions carry over to sentences with *CP and CP* strings.

3.5 Conjunction by non-Boolean AND

There are some speakers across different languages who can get narrow scope readings in sentences with *CP and CP* strings. So sentences like (180)–(182) do not sound contradictory to them.

(180) We had a thought that the algorithm will slow the program down, but we didn't have a thought [**that** the algorithm will slow the program down] and [**that** the output in some cases will be impossible].

(181) There was a situation that the algorithm slowed the program down, but there wasn't a situation [**that** the algorithm slowed the program down] and [**that** the output in some cases was impossible].

(182) I don't doubt that Mary came, but I doubt [**that** Mary came] and [**that** Dina came].

Note that the speakers in this category still perceive the differences between CP disjunction and TP disjunction (section 3.3), so we could not argue that for these speakers the CP-layer of embedded clauses lacks semantic contribution.

Itai Bassi and me (Bassi & Bondarenko 2021) made a proposal about the grammars of these speakers which I will adopt here. We proposed that some speakers are able to get the narrow scope reading of conjunction by using a non-Boolean meaning for conjunction as in (183):

(183) $[\![\text{and}_{\text{NON-BOOL}}]\!]^{s,g,t} =$
$\lambda P\text{: } P \in D_{et}.\lambda Q\text{: } Q \in D_{et}.\lambda z.\ \exists x,y,\ [x \sqcup y = z \wedge P(x) = 1 \wedge Q(y) = 1]$

The meaning in (183) has been independently proposed as one of the meanings for conjunction in (Link 1984). In (183) the conjunction takes two predicates of individuals P and Q, and returns a predicate of individuals z, where z is a pair of two individuals x and y, such that P is true of x and Q is true of y. Such a meaning for conjunction is motivated by cases of NP conjunction which result in predicates that hold of sums of two singulars (Heycock & Zamparelli 2005, Champollion 2016, Fox & Johnson 2016). Consider (184)-(185).

(184) Every woman and man who came in together are smiling and frowning respectively. (Fox & Johnson 2016: p. 6)

(185) that mutually incompatible man and woman (≠ that mutually incompatible man and mutually incompatible woman)
(Heycock & Zamparelli 2005: p. 253)

In these examples NPs denote predicates that hold of pluralities that are sums of two singulars: a man and a woman. Not in all languages $and_{NON\text{-}BOOL}$ will be morphologically identical to the garden-variety intersective conjunction. For example, to get the predicate-of-pairs readings for NPs in Korean one has to use compounds of two nouns without any overt conjunctive element:

(186) motun **nam-nye**-ka chwumchwu-ess-ta
every **man-woman**-NOM dance-PST-DECL
'Every pair consisting of a man and a woman danced.'

Kuliko, which can occur linearly between two noun phrases, cannot be interpreted as $and_{NON\text{-}BOOL}$: in (187) we only get interpretations corresponding to the conjunction of two propositions.

(187) motun namca-ka **kuliko** yeca-ka chwumchwu-ess-ta
every man-NOM **CONJ** woman-NOM dance-PST-DECL
✗ 'Every pair consisting of a man and a woman danced.'
✓ 'Every man danced and some/every woman danced.'

The contrast in (188)-(189) makes the distinction even more clear: while the relative clause in (188) restricts the pluralities described by the NP 'man and woman' to those that came in together, the relative clause in (189) can be restricting only the set of men, hence the impossibility of creating the desired reading.

(188) motun hamkke tuleo-n **nam-nye**-ka hana-nun wut-ko
every together come.in-ADN **man-woman**-NOM one-TOP smile-CONJ
hana-nun ccingkuli-n-ta.
one-TOP frown-PRS-DECL
'Every man and woman who came in together are smiling and frowning (respectively).' (lit. 'Every man and woman who came in together, one of them smiles, one of them frowns.')

(189) *motun hamkke tuleo-n namca-ka **kuliko** yeca-ka hana-nun
every together come.in-ADN man-NOM **CONJ** woman-NOM one-TOP
wut-ko hana-nun ccingkuli-n-ta.
smile-CONJ one-TOP frown-PRS-DECL
'Every man and woman who came in together are smiling and frowning.'

This confirms that *kuliko* cannot have the meaning of $and_{\text{NON-BOOL}}$.

So my hypothesis is that the speakers that get the narrow scope readings in sentences with 'CP and CP' strings have $and_{\text{NON-BOOL}}$, it is homophonous with the intersective conjunction and their grammars permit it not only with NPs, but with CPs as well. Here are the meanings that we will get for conjunction of Cont-CPs and Sit-CPs with this non-Boolean conjunction:

(190) $[\![$[COMP CONT the algorithm will slow down the program] $and_{\text{NON-BOOL}}$ [COMP CONT the output in some cases will be impossible]$]\!]^{s,g,t}$ =
$\lambda z.\ \exists x,y\ [x \sqcup y = z \wedge {}^{\Vdash_e}\text{CONT}(x) = \{s:$ the algorithm will slow down the program in $s\} \wedge {}^{\Vdash_e}\text{CONT}(y) = \{s:$ the output in some cases will be impossible in $s\}]$

(191) $[\![$[COMP the algorithm will slow down the program] $and_{\text{NON-BOOL}}$ [COMP the output in some cases will be impossible]$]\!]^{s,g,t}$ =
$\lambda z.\ \exists x,y\ [x \sqcup y = z \wedge x \Vdash_e \{s:$ the algorithm slowed down the program in $s\} \wedge y \Vdash_e \{s:$ the output in some cases was impossible in $s\}]$

In (190) we get a predicate of pluralities consisting of exactly two entities: one of them exemplifies a predicate of entities with content *"The algorithm will slow down the program"*, the other exemplifies a predicate of entities with content *"The output in some cases will be impossible"*. In (191) we get a predicate of pluralities that consist of sums of situations that exemplify the algorithm slowing down the program and situations that exemplify the output in some cases being impossible.

What kinds of properties will the entities in the denotations like (190)-(191) possess? For example, what will be the propositional content of entities in (190)? And what proposition will the entities in (190) exemplify? Here I will make the mereological assumptions in (192): that a mereological sum of an entity with content p and an entity with content q has $p \wedge q$ as its content (see Elliott 2020 for the same assumption about belief states); and that a mereological sum of an entity ex-

emplifying p and an entity exemplifying q exemplifies $p \wedge q$ (see Fine 2017c: p. 563 for the same assumption about sums of exact verifiers).[21]

(192) *Mereological assumptions:*

a. For any x and y in the domain of CONT:
iff $^{\Vdash_e}\text{CONT}(x) = p \wedge {}^{\Vdash_e}\text{CONT}(y) = q$, then $^{\Vdash_e}\text{CONT}(x \sqcup y) = p \wedge q$.

b. For any x and y:
iff $x \Vdash_e p \wedge y \Vdash_e q$, then $(x \sqcup y) \Vdash_e p \wedge q$.

Here are the truth-conditions we will get for sentences with strings *CP and CP* in (180) and (181):

(193) ⟦We didn't have a thought [[COMP CONT the algorithm will slow down the program] $and_{\text{NON-BOOL}}$ [COMP CONT the output in some cases will be impossible]]⟧$^{s,g,t} = 1$ iff $\neg\exists s'$ [$^{\Vdash_e}\text{have}_{s,t}(s') \wedge \text{Holder}(s')$=we $\wedge$ $\exists z$[Theme(s')=$z \wedge \text{thought}(z)_{s,t} \wedge \exists x,y$ [$x \sqcup y = z \wedge {}^{\Vdash_e}\text{CONT}(x)$ = {s: the algorithm will slow down the program in s} $\wedge {}^{\Vdash_e}\text{CONT}(y)$ = {s: the output in some cases will be impossible in s}]]]

= 1 iff $\neg\exists s'$ [$^{\Vdash_e}\text{have}_{s,t}(s') \wedge \text{Holder}(s')$=we $\wedge \exists z$[Theme(s')=$z \wedge \text{thought}(z)_{s,t}$ $\wedge {}^{\Vdash_e}\text{CONT}(z)$ = {s: the algorithm will slow down the program in s and the output in some cases will be impossible in s}]]

(194) ⟦There wasn't a situation [[COMP the algorithm will slow down the program] $and_{\text{NON-BOOL}}$ [COMP the output in some cases will be impossible]]⟧^{s,g,t} = 1 iff $\neg\exists z$ [$^{\Vdash_e}\text{exist}_{s,t}(z) \wedge \text{situation}(z)_{s,t} \wedge \exists x,y$ [$x \sqcup y = z \wedge x \Vdash_e$ {s: the algorithm will slow down the program in s} $\wedge\, y \Vdash_e$ {s: the output in some cases will be impossible in s}]]

= 1 iff $\neg\exists z$ [$^{\Vdash_e}\text{exist}_{s,t}(z) \wedge \text{situation}(z)_{s,t} \wedge z \Vdash_e$ {s: the algorithm slowed down the program in s and the output sometimes was impossible in s}]

(193) will be true as long as we don't have an object z in our possession, such that z is a thought consisting of two parts: a sub-thought with the content *"The algorithm will slow down the program"*, and a sub-thought with the content *"The output in some cases will be impossible"*. Given (192), this will be true as long as we don't have a

[21] Further research is needed to determine whether assumptions in (192) should apply to all individuals and situations, or whether they only hold for some kinds of individuals and situations.

thought with content *"The algorithm will slow down the program and the output in some cases will be impossible."* This is completely compatible with us having a thought with content *"The algorithm will slow down the program"*.

(194) will be true as long as there wasn't a situation that consisted of two parts: a sub-situation exemplifying the algorithm slowing down the program, and a sub-situation exemplifying the output in some cases being impossible. By (192), this will be true as long as there is no situation exemplifying the conjunctive proposition. Again, this is compatible with there existing a situation that exemplifies the algorithm slowing down the program.

Thus, the non-Boolean conjunction allowed us to get the narrow scope reading in an indirect way, by specifying the properties of the two subparts of the complex entity that the CP conjunction is true of. Clauses that combine with verbs directly (which are almost always Cont-CPs, see section 4) will be conjoinable by $and_{NON\text{-}BOOL}$ in exactly the same way as clauses that are nominal modifiers.

The explanation of the narrow scope readings of CP conjunction with the help of $and_{NON\text{-}BOOL}$ makes a prediction, provided that $and_{NON\text{-}BOOL}$ is the only kind of non-Boolean conjunction available in the grammar: since $and_{NON\text{-}BOOL}$ needs two properties as its arguments, it will not be able to apply to nominalized clauses that denote individuals, and thus narrow scope readings should not be available in sentences with them. At least in Russian, this prediction is borne out. Even those speakers that can get narrow scope readings with non-nominalized CPs, get only wide scope readings when CPs are overtly nominalized:

(195) **Nominalized Cont-Ps:** ✓ *AND* > *not confirm*, ✗ *not confirm* > *AND*

Ira ne podtverždala [**togo**, **čto** algoritm zamedlil rabotu
Ira NEG confirmed **DEM** **COMP** algorithm slowed.down work
programmy] i [**togo**, **čto** vydača rezul'tatov v časti slučaev
program.GEN CONJ **DEM** **COMP** output results.GEN in some cases
okazalas' nevozmožnoj].
turned.out impossible

'Ira did not confirm (the claim) that the algorithm slowed down the program and (did not confirm the claim) that the output of the results became impossible in some cases.'

(196) **Nominalized Sit-Ps:** ✓ AND > *not exist*, ✗ *not exist* > AND

Ne byvalo [**togo, čto** algoritm zamedljal rabotu programmy]
NEG was **DEM** **COMP** algorithm slowed.down work program.GEN
i [**togo, čto** vydača rezul'tatov v časti slučaev okazyvalas'
CONJ **DEM** **COMP** output results.GEN in some cases turned.out
nevozmožnoj].
impossible

'(The situation) that the algorithm slowed down the program did not happen and (the situation) that the output of the results became impossible did not happen.'

In (195) and (196) I am using predicates that combine with entities with content and situations respectively. The sentence in (195) is incompatible with a context in which Ira did confirm that the algorithm slowed down the program. The sentence in (196) is incompatible with a context in which situations of the algorithm slowing down the program did occur. All speakers agree that conjunctions in (195)-(196) have to take wide scope over the matrix verb.

3.6 Concluding remarks

In this chapter I have discussed and tested the predictions that different theories of clausal meanings make about embedded CP conjunction and disjunction, including the predictions of my proposal put forward in chapter 2.

The approach#1, that equates the meaning of the embedded CP with the proposition (set of non-minimal situations/worlds/a truth value) makes wrong predictions about both conjunction and disjunction. It cannot explain why conjunction of CPs with *-ko* should be impossible in Korean, why there are speakers that only get wide scope of conjunction in sentences with *CP and CP* strings, and why CP disjunction is not equivalent to TP disjunction.

The approach#4, according to which CPs are predicates of entities whose content is a subset of the embedded proposition, makes good predictions about clausal disjunction, but incorrectly predicts that CP conjunction should be always equivalent to TP conjunction. Thus, it cannot account for the fact that *-ko* conjunction

cannot conjoin ContPs and CPs in Korean and cannot provide an explanation for the speakers that lack the narrow scope readings of CP conjunction.

My proposal is a combination of approaches#2 (for Sit-CPs) and #3 (for Cont-CPs): some clauses denote sets of exemplifying situations, and some are sets of (exemplifying) entities whose propositional content *equals* the embedded proposition. This approach correctly predicts that CP disjunction is not equivalent to TP disjunction, and argues that it is never possible to conjoin embedded CPs by a conjunction with an intersective meaning. Thus, it has the advantage of explaining the behavior of clausal conjunction in Korean and the judgments of the speakers who disallow narrow scope readings. I proposed that the speakers who allow narrow scope readings arrive at them with a help of an independently motivated conjunction $and_{NON\text{-}BOOL}$, which creates a predicate of pairs such that each conjunct is true of one of the members of the pair.

One consequence of the current proposal is that it expects an asymmetry between CP conjunction and CP disjunction. While true intersective CP conjunction is predicted to be impossible, true intersective CP disjunction is possible: the high scope with CP disjunction is not necessarily the result of a Conjunction Reduction configuration, but follows from the semantics of Cont and Comp elements at the left periphery of embedded CPs. Thus, my proposal has an expectation about languages like Korean, which have overt Cont and Comp items, that needs to be tested in the future: it expects disjunctions $ContP \vee ContP$ and $CompP \vee CompP$ to be in principle possible. In this way, my proposal is different from the proposal in (Hirsch 2017), which claims that there are no cross-categorial operators in natural languages and connectives like *and* and *or* can only operate on propositional meanings. Hirsch (2017) expects disjunction to be just like conjunction: provided CPs do not have propositional meanings, they should neither be able to be conjoined nor be able to be disjoined. Looking at clausal disjunction in languages like Korean will be crucial for adjudicating between the two approaches.

Part II

Integrating Clauses into the Argument Structure

Chapter 4

Two paths to clausal embedding

4.1 Introduction

This chapter discusses the question of how embedded clauses combine with matrix verbs. In section 2.5 of chapter 2 we observed that embedded verbs differ in whether the clauses that they combine with introduce displacement into the meaning of the sentence: there are picky verbs that take only Cont-CPs or Sit-CPs, but there are also verbs that combine with both kinds of clauses. In this chapter I will discuss how exactly clauses that describe propositional content and clauses that describe situations can be integrated with the meanings of attitude and speech verbs: how they are introduced into the argument structures of verbs, and what consequences the way they are integrated has for their syntax.

In section 4.2 I present my proposal: I argue that embedded clauses can be either modifiers within nominal arguments of verbs ("via DP argument path") or modifiers of situation arguments of verbs ("via Situation argument path"). However, there is a restriction for Sit-CPs: they can only occur as modifiers within nominal arguments.[1] Sections 4.3–4.5 motivate the distinction between the two types of integration that I propose. We will see that in some languages this difference is marked morphologically (section 4.3), that it results in systematic differences in interpretations that nominalized and bare (non-nominalized) CPs get (section 4.4), and that it accounts for the fact that bare CPs do not behave like arguments of the verb (section 4.5). Section 4.6 explores the predictions of my proposal regard-

[1] There is one exception to this generalization: clauses that combine with verbs like *slučat'sja* 'occur' and *byvat'* 'happen' in Russian. See section 4.2 for discussion.

ing the possibility of extraction from embedded clauses that combine with verbs. I suggest that viewing bare CPs as modifiers of the situation argument allows us to understand why extraction out of them is possible in some cases but not others.

4.2 The proposal

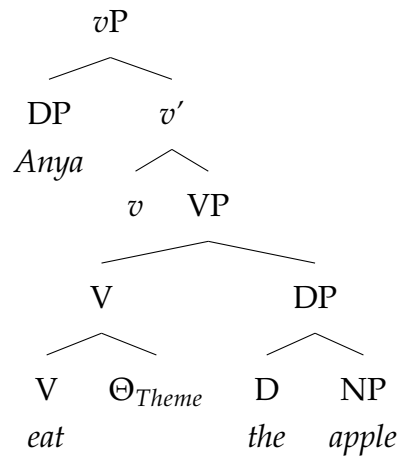
I propose that clauses that combine with verbs have essentially the same meanings as clauses that combine with nouns: they can be Cont-CPs and Sit-CPs.[2,3]

(1) $[\![$[Comp Cont the squirrel ate the peanut]$]\!]^{s,g,t}$ = *Cont-CP*
$\lambda x.\ {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: the squirrel ate the peanut in } s\}$

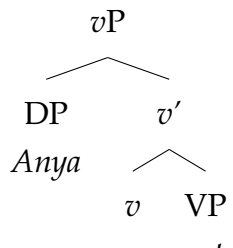
(2) $[\![$[Comp the squirrel ate the peanut]$]\!]^{s,g,t}$ = *Sit-CP*
$\lambda x.\ x \Vdash_e \{s\text{: the squirrel ate the peanut in } s\}$

To address the question of how such clauses compose with verbal meanings, let us first discuss my assumptions about how verbs combine with arguments more generally. Recall from the introduction (section 1.2.3) that I am assuming a neo-Davidsonian approach (Castañeda 1967, a.o.), where the only true argument of the verb is the event (= exemplifying situation) argument. All other arguments are introduced by functional projections, including the internal argument (3).

(3) *vP of "Anya ate the apple"*



(4) *vP of "Anya ate"*



[2]There is only one difference, which will be discussed soon: Cont-CPs that combine with verbs can be sometimes predicates of situations with propositional content as opposed to predicates of individuals with propositional content.

[3]Recall the definition of exemplification introduced in section 1.2.3 of chapter 1, (59): x exemplifies p ($x \Vdash_e p$) iff $x \in p \wedge (\forall x'[x' \sqsubset x \Rightarrow x' \in p] \vee \forall x'[x' \sqsubset x \Rightarrow x' \notin p])$.

I hypothesize that there is no general requirement for verbs to combine with all the argument-introducing functional projections that they in principle could combine with. For example, the verb *eat* doesn't have to combine with Θ_{Theme}, and this is how we derive the sentence *Anya ate* (4).[4] Of course, there are verbs that do not allow for the same flexibility in whether they combine with their internal arguments, and I will not be able to provide a theory of what determines how different verbs behave (see section 4.5.4 for additional discussion of obligatoriness/optionality).

When an argument-introducing head $\Theta_{Th(eme)}$ is merged, it takes the the set of situations denoted by the verb as its first argument, the individual that it introduces as its second argument, and returns back a predicate of situations, (5)-(6).[5]

(5) $[\![\Theta_{Th}]\!]^{s,g,t} = \lambda p\text{: } p \in D_{st}.\lambda x.\lambda s'.p(s')=1 \wedge \textsc{Theme}(s')=x$

(6) $[\![\text{eat } \Theta_{Th} \text{ the apple}]\!]^{s,g,t} =$
$= \lambda s'.\ ^{\Vdash_e}\text{eating}_{s,t}(s') \wedge \textsc{Theme}(s')=\iota x(\text{apple}(x)_{s,t})$

Because of this semantics of Θ_{Theme}, it is not possible to have a structure where Θ_{Theme} combined with the verb but no argument was introduced. **An argument of the verb** in this system is an argument of the argument-introducing head that combined with the verb. Since in this system verbs don't take arguments directly (except for the situation argument), any restrictions that they place on their argu-

[4] I use *eat* here just to illustrate the general idea; I leave open the possibility that sentences in which *eat* takes a direct object and the ones where it doesn't have more structural differences within their *v*Ps than just the presence/absence of Θ_{Theme}.

One clear difference between the two sentences has to do with aspect: the eventuality in a sentence like *Anya ate the apple* is telic, but the eventuality in a sentence like *Anya ate* is atelic. So (4) cannot be seen just as (3) with an existential closure applied over the Theme argument (I thank Sabine for pointing this out): *Anya ate* $\neq$ *Anya ate something*. The remaining question is how this aspectual distinction between (3) and (4) relates to the syntactic representation: e.g., is the difference of having Θ_{Theme} + DP vs. not having Θ_{Theme} + DP sufficient, or does the aspectual difference needs to be somehow additionally encoded in syntax?

[5] In (3) I follow the syntactic literature in assuming that argument-introducing heads first combine with the verbal projection and then with the DP, and thus are of type <st,<e,t>>. This order could in principle be reversed: we could have a <e,<st,t>> type head that combines first with the DP and then with the verb. As long as Θ takes both constituents as arguments, we have an indirect selectional relation between the verb and the nominal argument, as Θ can place restrictions both on verbs and on DPs it combines with, ensuring the compatibility between the verb and the DP.

Note that if we assumed instead that Θ-heads are of type <e,<s,t>> and combine first with a DP and then combine with the verb by Predicate Modification, the resulting ΘPs would be indistinguishable from verbal modifiers.

ments have to be encoded via the *allosemy* of argument-introducing heads (Marantz 2013, Harley 2014, Wood & Marantz 2017, Schwarzschild 2022): see *Sense Insertion* and *Allosemy* in (67), section 1.2.3. For example, Θ_{Theme} would have in fact slightly different meanings depending on the verb it combines with, with the versions differing in the presuppositions about the internal argument that are introduced, (7).[6]

(7) Θ_{Theme}

a. $\Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x.\lambda s'$: x is an incremental argument of s'. $p(s')=1 \wedge \textsc{Theme}(s')=x$. /___ $\sqrt{eat}, \sqrt{read}, \sqrt{write}$...

b. $\Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x$: x didn't exist as an object before t. $\lambda s'$. $p(s')=1 \wedge \textsc{Theme}(s')=x$. /___ $\sqrt{put\ together}, \sqrt{assemble}, \sqrt{form}$...

c. $\Leftrightarrow \lambda s.\lambda g.\lambda t.\lambda p.\lambda x$: x is animate. $\lambda s'$. $p(s')=1 \wedge \textsc{Theme}(s')=x$. /___ $\sqrt{kill}, \sqrt{make\ smile}, \sqrt{congratulate}$...

If Θ_{Theme} combines with verbal roots like $\sqrt{eat}, \sqrt{read}, \sqrt{write}$, then the internal argument that it introduces will have to be an incremental theme (see Krifka 1998, Tatevosov 2012, 2015, a.o.): e.g., the more of the eating situation passes, the more of the apple is being eaten, the more of the writing situation passes, the more of the object being written comes into existence. If Θ_{Theme} combines with verbs like $\sqrt{put\ together}, \sqrt{assemble}, \sqrt{form}$, it requires its internal argument to not exist as a single object before the situation described by the verb: e.g., if a table has already existed before t, it can't be assembled at t. Θ_{Theme} could also impose the requirement that the internal argument is animate, which would be required for verbs like $\sqrt{kill}, \sqrt{make\ smile}, \sqrt{congratulate}$. In other words, whatever restrictions on internal arguments might exist, they have to be introduced by Θ_{Theme} in this framework. So Θ_{Theme} will have multiple allosemes, and the choice between them is conditioned by the verb it combines with.

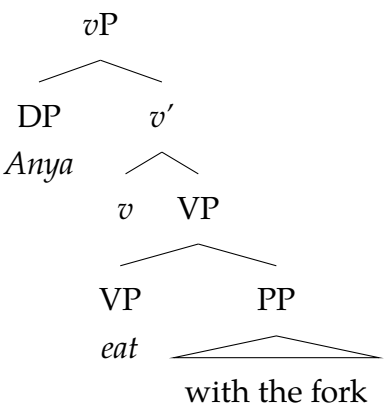
[6] Recall from chapter 1, section 1.2.3 that *Sense Insertion* associates meanings with abstract roots, and then the rule for interpreting terminal nodes, (68), repeated here as (i), states that the interpretation of a terminal with respect to a situation s, an assignment function g, and a time interval t, is the meaning that was paired with the root applied to s, g and t.

(i) *Interpreting Terminal Nodes*
If α is a terminal node that is a pair <r,m> of an abstract root r (with its syntactic features) and a meaning m, then $[\![\alpha]\!]^{s,g,t} = m(s)(g)(t)$.

As we see in (7), the meanings paired with Θ_{Theme} are actually not sensitive to these parameters.

A modifer of the verb in this system is a constituent that does not combine via an argument-introducing head. Modifiers combine by directly ascribing some property to the situation argument of the verb.[7] Consider (8)-(10):

(8) *vP of "Anya ate with the fork"*



(9) $[\![\text{with the fork}]\!]^{s,g,t} =$
$\lambda s'.\ \textsc{Instr}(s')=\iota x(\text{fork}(x)_{s,t})$

(10) $[\![\text{eat with the fork}]\!]^{s,g,t} =$
$\lambda s'.\ {}^{\Vdash_e}\text{eating}_{s,t}(s')$
$\wedge\ \textsc{Instr}(s')=\iota x(\text{fork}(x)_{s,t})$

The prepositional phrase *with the fork* denotes a predicate of situations such that the instrument in those situations is the fork (9). No argument-introducing head is needed and none is used to compose this PP with the verb $\sqrt{eat}$: they combine by Predicate Modification, and we get a predicate of eating situations in which the instrument of eating is the fork (10). Note that whether something is an argument or a modifier of the verb in this system cannot be determined by looking at the resulting meaning: if we compare (6) and (10), we see that both *the apple* and *the fork* are related by some relation (Theme, Instr) to the eating situation.

The other way to look at this distinction between arguments and modifiers is to note that *v*Ps in (3) and (8) differ in which element contributes the relation that relates some entity with the situation described by the verb. The PP in (8) contributes that relation (Instr) itself—-it is part of the PP's meaning, whereas the object in (3) does not contribute any relation itself. It will be a Theme if it is related to the verb by Θ_{Theme}, but it will stand in different relations if it is introduced by other functional

[7] Note that if we assumed instead that Θ-heads are of type <e,<s,t>> and combine first with a DP and then with the verb by Predicate Modification, the distinction between arguments and modifiers would have been much harder to draw. By our definition then ΘP would have been considered a modifier of the verb (because it combines with the verb, but not via an extra argument-introducing head), but the DP it takes would still be an argument. Then the only difference between *the fork* in (8) and *the apple* in (3) would amount to whether the DP combines with the verb with the help of a lexical head like preposition *with* (then it's not an argument of the verb), or with the help of a functional head like Θ_{Th} (then it's an argument of the verb).

heads. For example, in a sentence like *The apple made me sick* it would be introduced by v_{Caus} and stand in relation of being a CAUSER. Thus, we can formulate the distinction in the following way. Modifiers do not need any mediator to "connect" to the situation argument of the verb, and they themselves encode the properties that situations have (like 'have the fork as an instrument'). Arguments on the other hand require mediators: they need some externally introduced relation that would specify how they are related to the situation described by the verb.

One important question that this approach raises, and that I will have to leave open, has to do with how entities that have been related to situations in different ways interact with the exemplification semantics for verbal predicates.[8] For example, what things are included in *a minimal situation of eating* (or put differently: what does it mean to be a situation *in which there is eating*—what are the minimal conditions that a situation has to meet in order to qualify)? THEMES and AGENTS (or rather the *thin particulars* thereof (Armstrong 1978, Kratzer 1989), see ft. 15 of chapter 1) should probably be included in *a minimal eating situation*, but for example will such situations be big enough to include INSTRUMENTS, or are instruments like forks not part of minimal eating situations? By our definition of exemplification (see (59) in section 1.2.3 of chapter 1), it seems that INSTRUMENTS have to be external to the minimal eating situations: if there is a situation s in which Anya ate the pickle with a fork, then it's probably not a minimal situation of eating, as we can find $s' \sqsubset s$ in which *There is eating* is true, but the fork is not present: this would be an s' that contains just Anya chewing and swallowing the pickle. In other words, s is not homogeneous: in some of its parts *There is eating* is true, in others it is false, hence s is not exemplifying *There is eating*. On the other hand, both Anya and the pickle are different from the fork in that it doesn't seem possible to find a situation s' which would describe an *Anya-eating-the-pickle* event and in which *There is eating* is true, but either Anya is not present, or the pickle is not present. Anya and the pickle seem essential to there being eating. Thus, the present approach raises a general question: is there a connection between being an argument vs. being a modifier as defined in this system and whether or not the individual related to the verbal meaning is a part of exemplifying situations described by the verb? While I'm leaving this question open, I will tentatively assume that modifiers of verbs are *not* parts of exemplifying situations described by them: i.e., although the INSTR relation that

[8] I am grateful to Kai von Fintel for bringing this question to my attention.

the preposition introduces links the fork to a situation that exemplifies eating, this relation does not imply that the fork is itself part of the exemplifying situation.

With these assumptions about the argument structure of verbs in place, let us turn to my proposal about how verbs combine with clauses. I will argue that there are two general ways to combine embedded clauses with verbs, (11)-(12).

(11) **Combining CP via the DP argument**

a. $[\![\textit{verb}\ \Theta_{Th}]\!]^{s,g,t} = \lambda x.\lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge \textsc{Theme}(s')=x$

b. $[\![\textit{verb}\ \Theta_{Th}\ \text{CP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge \textsc{Theme}(s')=\iota x([\![\text{CP}]\!]^{s,g,t}(x))$

c. $[\![\textit{verb}\ \Theta_{Th}\ \text{CP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge \exists x\,[\textsc{Theme}(s')=x \wedge [\![\text{CP}]\!]^{s,g,t}(x)]$

(12) **Combining CP via the Situation argument**

a. $[\![\textit{verb}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s')$

b. $[\![\textit{verb}\ \text{CP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge [\![\text{CP}]\!]^{s,g,t}(s')$

The first way is what I will call combining *via the DP argument*. In this case the clause is predicated of an argument introduced by a functional head. For example, if the argument-introducing head is Θ_{Theme}, the verb combines with it first, forming a complex verbal head with the meaning in (11a). The clause is predicated of the individual x that Θ_{Theme} introduces. The internal argument of the verb could be a definite description (11b), or an indefinite description (11c), but the clause is part of the nominal predicate of the internal argument of the verb. We will discuss how exactly it becomes part of the nominal predicate shortly.

The second way is what I will call combining *via the Situation argument*. In this case the CP is predicated of the situation argument of the verb directly. If the verb does not combine with any arguments via functional heads, it will just directly compose with a CP (12b). This mode of composition is also compatible with the verb first combining with an argument with the help of an argument-introducing head like Θ_{Theme}, and then combining with a CP that modifies its situation argument:

(13) **CP via the Situation argument in the presence of a Theme**

$[\![\textit{verb}\ \Theta_{Th}\ \text{DP}\ \text{CP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge \textsc{Theme}(s')=[\![\text{DP}]\!]^{s,g,t} \wedge [\![\text{CP}]\!]^{s,g,t}(s')$

So, the main difference between the two ways of integration of embedded clauses lies in what kind of argument the CP is predicated of: (i) the individual arguments of verbs that are introduced by functional projections (Themes, Causers, etc.); (ii)

the situation argument of the verb.

Now let us consider the integration via the THEME argument in more detail. According to our denotations for Cont-CPs and Sit-CPs, repeated again in (14)-(15) below, CPs are predicates of individuals (type <e,t>).

(14) $[\![$[COMP Cont the squirrel ate the peanut]$]\!]^{s,g,t}$ = *Cont-CP*
λx: $x \in D_e$. $^{\Vdash_e}$CONT(x) = {s: the squirrel ate the peanut in s}

(15) $[\![$[Comp the squirrel ate the peanut]$]\!]^{s,g,t}$ = *Sit-CP*
λx: $x \in D_e$. $x \Vdash_e$ {s: the squirrel ate the peanut in s}

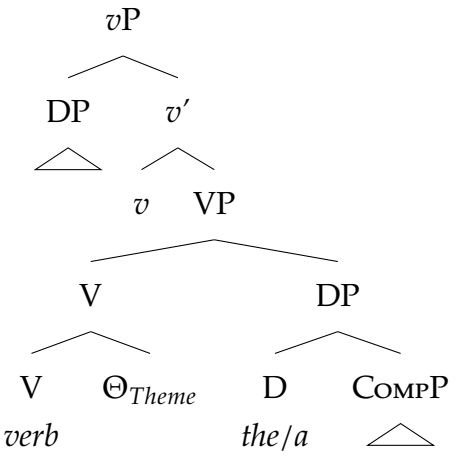
We do not have any principles of composition that would directly compose them with complex verbal heads like [*verb* Θ_{Th}] (type <e,st>). I suggest that in order for CPs to combine with the THEME argument, they have to be nominalized: they combine with some nominal projections, and it is the resulting DP is what combines with the verb.[9] There are at least two possible strategies of nominalization that we could entertain due to the semantics that we have for Cont-CPs and Sit-CPs. Since these clauses are predicates of individuals, we could hypothesize that they combine with determiners directly (16). Another option is that clauses combine with nominal predicates before they compose with determiners (17). Both determiners and nominal predicates could in principle have null exponence.

[9] An alternative to nominalization has been proposed in (Kratzer 2006): she claims that clauses can modify internal arguments of verbs with the help of the semantic principle *Restrict* (Chung & Ladusaw 2003). I formulate this principle with small modifications to fit my framework below:

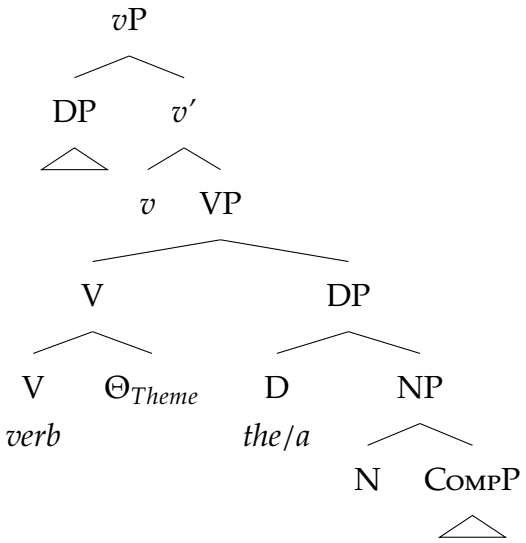
(i) **Restrict (formulated based on Chung & Ladusaw 2004: 5, 10)**
If α is a branching node and {β, γ} are the set of its daughters, then, for any situation s, assignment g and time t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are, and if $[\![\beta]\!]^{s,g,t}$ denotes a predicate $P\beta$ of type <e,<s,t>>, and $[\![\gamma]\!]^{s,g,t}$ denotes a predicate $P\gamma$ of type <e,t>, then $[\![\alpha]\!]^{s,g,t} = \lambda x$: $x \in D_e$ and x is in the domain of $[\![\beta]\!]^{w,g}$ and $[\![\gamma]\!]^{s,g,t}$. $\lambda s'$: $s' \in D_s$ and s' is in the domain of $[\![\beta]\!]^{s,g,t}(x)$. $P\beta(x)(s') = 1$ & $P\gamma(x) = 1$.

I opted to not adopt this principle because I am afraid it might lead to overgeneration issues, at least for the languages I have been working with. Note that the output of *Restrict* is another function of type <e,<s,t>>. Thus, it predicts that we should be able to first modify the THEME argument of the verb by the embedded clause, and then saturate it by a DP. It is not clear that this option is ever attested. For example, in SOV languages like Buryat and Korean, we expect this derivation to produce the word order S—[DP—[CP—V]], distinct from the order in which CP is a DP-internal modifier of the noun (S—[[CP—DP]—V]), and this word order does not seem to be possible in these languages (see section 4.5.3 for examples and discussion).

(16) *DP–CP structure*



(17) *DP–NP–CP structure*



In section 4.3 I will argue that both of these strategies are in fact attested: in Korean there is some evidence suggesting that a lexical noun is present in the structure (17), but in Russian there is evidence suggesting that no lexical noun is present (16). In Buryat it seems that Cont-CPs might contain a null nominal, but Sit-CPs lack it, but more research on this issue is needed. Let us illustrate the path of combining via Theme with the structure in (16) with a definite determiner. Nominalized Cont-CPs and Sit-CPs will have the denotations in (18) and (19) respectively.

(18) $[\![\text{D}_{def}\ [\text{Comp Cont the squirrel ate the peanut}]]\!]^{s,g,t} =$ *Cont-CP*
$\iota x(^{|\vdash_e}\text{Cont}(x) = \{s\text{: the squirrel ate the peanut in s}\})$

(19) $[\![\text{D}_{def}\ [\text{Comp the squirrel ate the peanut}]]\!]^{s,g,t} =$ *Sit-CP*
$\iota x(x \mid\vdash_e \{s\text{: the squirrel ate the peanut in s}\})$.

In (18) the nominalized clause denotes a contextually salient unique individual whose propositional content is *"The squirrel ate the peanut"*. This could be a fact, or a claim, or an idea whose existence is in the common ground.[10] In (19) the nominal-

[10]One might wonder whether there are certain individuals with propositional content whose existence is a logical fact and thus is always in the common ground (I thank Danny Fox for raising this concern). I suggest that making the denotation of the determiner explicitly context-sensitive, as is illustrated in (i), should help us avoid any potential issues: once we restrict ourselves to looking at individuals that some contextually salient property $g(1,<e,t>)$ is true of, we should in principle be able to find unique individuals that the predicate described by the clause holds of.

ized clause denotes a contextually salient unique individual that is an exemplifying situation of the squirrel eating the peanut. These clauses can saturate the internal argument of the verb that has been introduced by Θ_{Theme}. For example, if our verb is *remember*, we will get the following meanings for VPs:

(20) $[\![$*remember* Θ_{Th} [Comp Cont the squirrel ate the peanut]$]\!]^{s,g,t}$ =
$\lambda s'.\ {}^{\Vdash_e}\text{remember}_{s,t}(s')$
$\wedge$ Theme$(s') = \iota x({}^{\Vdash_e}\text{Cont}(x) = \{s\text{: the squirrel ate the peanut in } s\})$

(21) $[\![$*remember* Θ_{Th} [Comp the squirrel ate the peanut]$]\!]^{s,g,t}$ =
$\lambda s'.\ {}^{\Vdash_e}\text{remember}_{s,t}(s')$
$\wedge$ Theme$(s')= \iota x(x \Vdash_e \{s\text{: the squirrel ate the peanut in } s\})$

In (20) we get a predicate of remembering situations in which what is remembered is the contextually unique individual (fact/rumor/thought, etc.) with propositional content *"The squirrel ate the peanut"*. In (21) the VP denotes a predicate of remembering situations in which the thing being remembered is the contextually unique minimal situation of the squirrel eating the peanut.

Nothing in this proposal forces nominalized CPs to be definite descriptions, or limits the nominal structure in which they occur to DP and NP layers. Since CPs are predicates of individuals, their semantics should in principle allow them to occur in a variety of syntactic configurations in which nominal predicates can occur. And given that the syntactic structures of noun phrases vary cross-linguistically, the expectation is that syntactic structures of nominalized CPs would vary accordingly.

Now let us discuss how CPs compose with verbs via the Situation argument:

(22) $[\![$*verb* CP$]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}_{s,t}(s') \wedge [\![\text{CP}]\!]^{s,g,t}(s')$

Because both Cont-CPs and Sit-CPs are predicates of individuals, they can combine with verbs directly by Predicate Modification. Recall our definition of Predicate Modification in (71), repeated below as (23).

(23) *Predicate Modification* (*PM*)
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$

(i) $[\![\text{D}_{def\{1,<e,t>\}}]\!]^{s,g,t} = \lambda p\text{: } p \in \text{D}_{et}.\ \iota x(g(1,<e,t>)(x) \wedge p(x))$

if both β and γ are, if there is some domain $D_{<\sigma,t>}$ such that both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are in it, and there is some item $x \in D_\sigma$ such that $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are both defined for it. In this case, $[\![\alpha]\!]^{s,g,t} = \lambda x$: x in D_σ and x is in the domain of both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$. $[\![\beta]\!]^{s,g,t}(x) = [\![\gamma]\!]^{s,g,t}(x) = 1$.

In order to combine two constituents, there has to be some domain that the semantic values of both constituents are in. Denotations of verbs are in D_{st}, and thus they are also in D_{et}, since $D_s \subset D_e$. Denotations of embedded clauses are in D_{et} too. Thus, D_{et} is such a domain. Another restriction that needs to be met for PM to apply is that there be at least one individual such that both the meaning of the verb and the meaning of the embedded clause are defined for it. The meaning of the verb will be defined if the individual it takes as an argument is a situation. Thus, as long as the meaning of the clause doesn't require that its individual argument is a proper, non-situational individual, Predicate Modification will be able to combine the verb and the clause and return a predicate of situations such that they are both in the denotation of the verb and in the denotation of the embedded clause.

Let us now see how Cont-CPs will combine via the Situation argument. For example, let us take the verb *think*, which I assume to denote a set of situations that exemplify thinking. Combining *think* with a Cont-CP (14) by Predicate Modification will give us the predicate in (24).

(24) $[\![$think [Comp Cont the squirrel ate the peanut]$]\!]^{s,g,t}$ =
$\lambda s'$: $s' \in D_s$. $\Vdash_e$ think$_{s,t}(s') \wedge \Vdash_e$ Cont(s')=$\{$s: the squirrel ate the peanut in s$\}$

Let us unwrap what (24) says. First, it says that s' is a situation that is part of the situation of the evaluation s, and it occurs at t, and it exemplifies the proposition {s: there is thinking in s}, (25a). Second, it says that s' is a situation that exemplifies the set of individuals whose content is the embedded proposition, (25b).

(25) a. $\Vdash_e$ *think*$_{s,t}(s')$:
$s' \sqsubseteq s \wedge s'$ is at $t \wedge s' \Vdash_e$ {s: there is thinking in s}
b. $\Vdash_e$ Cont(s') = {*s: the squirrel ate the peanut in s*}:
$s' \Vdash_e$ {x: Cont(x) = {s: the squirrel ate the peanut in s}}

Recall that if the exemplification relation holds between s and p, it requires that $s \in p$ and that all proper parts of s are homogeneous with respect to p. Thus, (25a)

tells us that s' is a situation in which there is thinking, and that either all subparts of s' are thinking situations or none of the subparts of s' are thinking situations (and s' is then a minimal thinking situation).[11] (25b) tells us that s' exemplifies the set of individuals whose content is {s: the squirrel ate the peanut in s}. Note that this is compatible with (25a) being true, as (25b) only requires two things: (i) that it be true that the content of s' is {s: the squirrel ate the peanut in s}, and (ii) that all proper subparts of s' are homogeneous: either the content of them all is {s: the squirrel ate the peanut in s}, or s' is the minimal situation with this content. Thus, (24) will be true of an s' if it is a situation exemplifying thinking whose content is *"The squirrel ate the nuts"* and whose proper subsituations either all have *"The squirrel ate the nuts"* as their content, or none of them do. This is a fine meaning.[12]

Now consider what happens if we try to combine a Sit-CP via the Situation argument. Again, the clause will be able to combine by Predicate Modification (26).

(26) $[\![\text{think [Comp the squirrel ate the peanut]}]\!]^{s,g,t} =$
$\lambda s'\text{: } s' \in D_s.\ {}^{\Vdash_e}\text{think}_{s,t}(s') \wedge s' \Vdash_e \{s\text{: the squirrel ate the peanut in s}\} = \varnothing.$

a. $s' \sqsubseteq s \wedge s'$ is at $t \wedge s' \Vdash_e \{s\text{: there is thinking in s}\}$

b. $s' \Vdash_e \{s\text{: the squirrel ate the peanut in s}\}$

When we unwrap this meaning, we see that two conditions are imposed on s'. First, it has to be part of the evaluation situation s, has to happen at t, and has to exemplify {s: there is thinking in s}, (26a). Second, it has to exemplify the embedded proposition {s: the squirrel ate the peanut in s}, (26b). The problem is that these conditions can never both be true. If s' is a situation that exemplifies *thinking*, then we won't be able to find any *squirrel-eating-peanut* parts inside of it. Conversely, if s' is a minimal situation of the squirrel eating the peanut, it will not contain any think-

[11] Which one of these two options holds will depend on what kinds of predicates the lexical items of individual languages pick out. For example, Russian has both a telic verb *pridumat'* 'think of, come up with an idea' and an atelic stative verb *dumat'* 'think'. If *pridumat'* is true of a situation s', *pridumat'* is not true of any proper subparts of s'. If *dumat'* is true of s', it is true of all proper subparts of s'. Thus, exemplifying situations for *pridumat'* and *dumat'* will have different properties.

[12] An interesting question arises here: do exemplification conditions imposed by the verb and by the embedded clause have to match? For example, is it possible to have a situation of thinking of something such that none of its proper parts are situations of thinking of that thing (i.e., telic 'think'), but all of its proper parts have the same embedded proposition as their propositional content? To exclude such mismatches, we would need a general theory of how properties of attitude situations are related to properties of their propositional content.

ing. Thus, the predicate in (26) will always be an empty set, the sentences in which it appears will always be false, which I propose leads to their ungrammaticality (the connection between triviality and ungrammaticality will be discussed shortly).

Let us reflect on when we predict the same situation s to not be able to exemplify two distinct propositions. This happens when the two propositions that s exemplifies are not identical and tell us something about the internal make-up of s (27).

(27) $(\mathrm{s} \Vdash_e \mathrm{p}) \wedge (\mathrm{s} \Vdash_e \mathrm{q})$ is always false iff:

a. p characterizes s by what exists *within* s;

b. q characterizes s by what exists *within* s;

c. $\mathrm{p} \neq \mathrm{q}$

Exemplification requires homogeneity of the proper subparts of situations. And if p and q are distinct and characterize what exists within situations, we will not be able to find situations that are both homogeneous with respect to p and homogeneous with respect to q, and are possible situations. Let us illustrate this by looking at the four propositions in (28).

(28) a. p = {s: there is eating of something in s}

b. q = {s: there is building of something in s}

c. r = {s: there is moving in s}

d. v = {s: there is thinking in s}

These propositions differ in that if situations exemplify p or q, p and q are false of all of their subparts. But if situations exemplify r or v, r and v are true of all of their subparts. So we have three combinations of s exemplifying two propositions to consider, differing in how propositions behave with respect to exemplification.

If $s \Vdash_e$ {s: there is eating of something in s}, then s is a minimal situation of eating something. If $s \Vdash_e$ {s: there is building of something in s}, then s is a minimal situation of building something. Since s is a minimal situation of eating something, it must contain as its proper parts situations that contain just incomplete eatings of something and nothing else. Let us separate all such subparts of s and take the sum of this set of situations, $\sqcup s_{eating}$. By how we constructed $\sqcup s_{eating}$, $\sqcup s_{eating} \sqsubseteq s$. But if $\sqcup s_{eating} \sqsubseteq s$, then s cannot be a minimal situation of building of something. Let us consider two subcases. If $\sqcup s_{eating} = s$, then $\sqcup s_{eating}$ cannot be a minimal situation of building because it is not a member of {s: there is building of something in s}, as we

only took parts that included eating and nothing else when constructing $\sqcup s_{eating}$. If $\sqcup s_{eating} \sqsubset s$, then s cannot be a minimal situation of building because the situation that we would get from subtracting $\sqcup s_{eating}$ from s, let us call it s—$\sqcup s_{eating}$, would have to be a member of the set {s: there is building of something in s}, and thus s—$\sqcup s_{eating}$, and not s, would be a minimal situation of building.

If $s \Vdash_e$ {s: there is moving in s}, then both in s and in all proper parts of s there is moving. If $s \Vdash_e$ {s: there is thinking in s}, then both in s and in all proper parts of s there is thinking. Let us take any subpart of s that contains moving and nothing else; such subparts should exist if s contains moving. But such subparts won't be situations in which there is thinking. Thus, we would have found a subpart of s that is not a member of {s: there is thinking in s}. Hence, no s could exemplify both of these propositions at the same time.

Finally, let us take an s such that $s \Vdash_e$ {s: there is eating of something in s} and $s \Vdash_e$ {s: there is thinking in s}. Such an s would have to be a minimal situation of eating of something, but also a situation in which there is thinking in all parts of s. If s is a minimal situation of eating, it must contain some parts that are purely eating and include nothing else. But such parts will not be situations in which there is thinking, and thus s could not be an exemplifying situation of thinking.

To sum up, if we take two distinct propositions p and q, then no matter what they are, if they characterize a set of situations by telling us something about parts of these situations, no situation will be able to exemplify them both at the same time. A natural question that arises at this point is what happens if we take two propositions that are the same: would an attitude verb be able to compose with a Sit-CP if the embedded proposition is identical to the set of situations described by the verb? For example, let us assume that $[_{TP}$ *there is thinking*$]$ denotes a set of situations in which there is thinking. Then we will get (29) as the result of composing a Sit-CP that contains this TP with the verb *think*:

(29) $[\![\text{think [Comp there is thinking]}]\!]^{s,g,t} =$
$\lambda s'\text{: } s' \in D_s.\ {}^{\Vdash_e}\text{think}_{s,t}(s') \wedge s' \Vdash_e \{\text{s: there is thinking in s}\} = \lambda s'.\ {}^{\Vdash_e}\text{think}_{s,t}(s')$.

a. $s' \sqsubseteq s \wedge s'$ is at t $\wedge\ s' \Vdash_e$ {s: there is thinking in s}

b. $s' \Vdash_e$ {s: there is thinking in s}

In this case, we will not get an empty set as the denotation of the VP, and the meaning of the sentences that contain it thus will not be trivially false. In fact, we

will get the exact same meaning for the VP as if we haven't combined the verb with the embedded clause at all: a set of situations that exemplify {s: there is thinking in s}. I would like to suggest that combinations like in (29) are nevertheless semantically deviant: they are ruled out not because they are *trivial* in the way discussed above (they don't denote an empty set), but because they are *redundant*—the CP contributes the same meaning that has already been provided by the verb.

It has been observed in the literature that redundancy often leads to unacceptability. For example, the idea behind Grice's (1975) *Maxim of Brevity* is that sentences are unacceptable when their content could have been expressed by a simpler sentence (see also Meyer 2013, Katzir & Singh 2014, Mayr & Romoli 2016, a.o.). Another way to capture the ban on redundancy has been to argue that sentences are unacceptable when they or their parts provide information that is trivially true or false in their *local context* (Schlenker 2009, 2010, Mandelkern & Romoli 2018, a.m.o.): e.g. sentences like (30a) are bad, because the second conjunct is entailed by its local context—the first conjunct.[13] While the ban on redundancy is often discussed as something that sentences or propositions are subject to, we see redundancy banned on the subsentential level as well: e.g., it's not possible to just attach two identical relative clauses to a noun, (30b), or two identical adverbial phrases to a verb, (30c).

(30) a. #[Mary came home] and [Mary came home].
b. #Sue bought a jacket [that was velvet] [that was velvet].
c. #Tom laughed [very loudly] [very loudly].

While I have to leave relating the cases like (29) to the aforementioned theories for the future research, I would like to note that many cases of redundancy on the subsentential level, including (30b), (30c), and our target case in (29), can be dealt

[13] For example, Mandelkern & Romoli (2018) provide the following formulations of conditions that are based on the Maxim of Brevity and on the ban on triviality in local contexts respectively:

(i) **Brevity:**
a. p cannot be used in context c if ⟦p⟧ is contextually equivalent to ⟦q⟧, and q is a simplification of p.
b. q is a simplification of p iff q can be derived from p by replacing nodes in p with their subconstituents.

(ii) **Triviality condition:**
A sentence p cannot be used in a context c if part q of p is entailed or contradicted by the local context of q in c.

with if we build in an additional condition for the application of Precicate Modification, (31)—a condition that prohibits us to intersectively combine a predicate with itself.[14] This would make cases like (30b), (30c), and (29) ungrammatical due to the absence of a rule of semantic composition that could apply to them.

(31) ***Predicate Modification (PM) with a built-in Redundancy Restriction***
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are, if there is some domain $D_{<\sigma,t>}$ such that both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are in it, if there is some item $x \in D_\sigma$ such that $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$ are both defined for it, and if $\exists s,g,t: [\![\beta]\!]^{s,g,t} \neq [\![\gamma]\!]^{s,g,t}$.
In this case, $[\![\alpha]\!]^{s,g,t} = \lambda x$: x in D_σ and x is in the domain of both $[\![\beta]\!]^{s,g,t}$ and $[\![\gamma]\!]^{s,g,t}$. $[\![\beta]\!]^{s,g,t}(x) = [\![\gamma]\!]^{s,g,t}(x) = 1$.

To sum up, I propose that Sit-CPs cannot combine via the Situation argument path because the resulting semantic meanings are either redundant/trivial in their local context, (29), or lead to sentential meanings that are always trivially false, (26). If we adopt the version of Predicate Modification in (31) as the underlying cause of the ban on redundancy, then in the former case the ungrammaticality arises due to the failure to compute the semantic value of the VP. As for the latter case, we face the question of whether the ungrammaticality could be said to arise from *L-analyticity* (Barwise & Cooper 1981, von Fintel 1993, Gajewski 2002, Chierchia 2013, a.o.). While it's true that we arrive at a meaning that will always be trivially false, the question is: is this triviality due to the *logical skeleton* of the sentence? It's not obvious that it is:[15] while the exemplification relation in the meaning of the embedded clause is provided by a functional element (Comp), the second instance of the exemplification relation, existence of which gives rise to the trivial meaning, comes from an open-class element—the attitude verb. Thus, in order to postulate that the ungrammaticality of sentences containing VPs like (26) is due to *L-analyticity*, we would need to postulate that the exemplification relation in the meaning of *think* (and perhaps all other verbal predicates) is not part of the mean-

[14] We could also imagine a broader condition, which would say that the two predicates that we combine cannot always stand in an entailment relationship with each other:

(i) $\exists s,g,t: [\![\beta]\!]^{s,g,t} \not\subseteq [\![\gamma]\!]^{s,g,t} \wedge [\![\gamma]\!]^{s,g,t} \not\subseteq [\![\beta]\!]^{s,g,t}$.

[15] I'm grateful to Kai von Fintel and Sabine Iatridou for discussing this point with me.

ing of this open-class element, but is perhaps severed from it and is contributed by some functional element that immediately combines with the root $\sqrt{think}$.[16]

In the case of a verb combining with a Sit-CP above, both propositions that *s* was said to exemplify characterized *s* by *what exists within it*. If however at least one of the propositions does not characterize *s* by what exists *within* it, we will not get the same kind of redundancy or triviality as observed before, (32).

(32) $(s \Vdash_e p) \wedge (s \Vdash_e q)$ can be true iff:

a. *p* characterizes *s* by what exists within *s*;

b. *q* characterizes some relationship that *s* participates in.

In cases like (32) no contradiction will arise because *p* and *q* characterize different aspects of *s*: *p* tells us something about the internal structure of *s*, but *q* introduces some property true of *s*. For example, imagine that p = {s: there is running to the store in s} and q = {s: τ(s)= 5 minutes}. In this case *p* tells us that *s* must *contain* a running to the store, but *q* places no restrictions on what *s* contains, it just tells us that the duration of *s* is 5 minutes. So we will be able to find situations that exemplify *p* and *q* at the same time. These will be minimal situations of running to the store (none of whose proper parts are complete runnings to the store),[17] which last 5 minutes, and such that no proper part of theirs lasts 5 minutes.

The reason why Cont-CPs can combine via the Situation argument of verbs like *think* is that Cont-CPs do not characterize individuals by what exists within them, they, like the τ function above, characterize individuals by specifying a relation (Cont) that holds between them and the embedded proposition. Thus, no contradiction arises if a situation exemplifies the propositions {s: there is thinking in s} and {s: Cont(s) = p} at the same time.

[16]Here is how the lexical entries for $\sqrt{think}$ and for the functional element it combines with ($\Vdash_e$) could look like, (i)-(ii). Note that (ii) is almost identical to the meaning of Comp.

(i) $[\![\sqrt{think}]\!]^{s,g,t} = \lambda s'\text{: } s' \in D_s.\ s' \sqsubseteq s \wedge s' \text{ is at } t \wedge s' \in \{s\text{: there is thinking in } s\}$

(ii) $[\![\Vdash_e]\!]^{s,g,t} = \lambda p\text{: } p \in D_{st}.\lambda s'\text{: } s' \in D_s.\ s' \Vdash_e p.$

[17]If there exists a complete situation of running to the store *s*, then it means that there are smaller situations, which are subparts of *s*, that contain the Agent performing the running activity—siutations of moving rapidly on foot in which sometimes both feet are above the ground. If *s* is a *minimal* situation of running to the store, only *s*, but not any of its subparts, will contain the culmination of the event—the state of being in the store.

To sum up, the combination of my proposal about meanings of embedded clauses from the chapter 2 and my proposal about paths of composition in this chapter predict the following patterns to be possible:

	Path of composition	
Meaning	via the DP argument	via the Situation argument of verbs like *think*
Cont-CP	✓	✓
Sit-CP	✓	✗

Table 4.1: Combinations of CP meanings and composition paths

Cont-CPs can either be part of nominal predicates within DPs that are arguments of the verb, or they can modify the situation argument of verbs like *think*. Sit-CPs on the other can be constituents within DP arguments, but cannot modify the situation argument of verbs like *think*.

Note that the impossibility of Sit-CPs combining via the Situation argument relies on the verb being a predicate of situations that exemplify a proposition that characterizes situations in it by what exists within them. In the upcoming sections, I will suggest that this is not always the case: that propositions that situations in the extension of verbs like *slučat'sja* 'occur' exemplify do not impose any restrictions on the parts of the situations that are their members, making it possible for Sit-CPs to modify situation arguments of such verbs.

4.3 Bare CPs vs. nominalized CPs

That embedded clauses can have nominal structure on top of them has been extensively discussed in the literature (Rosenbaum 1967, Lees 1960, Kiparsky & Kiparsky 1970, Roussou 1991, Davies & Dubinsky 1999, 2009, Picallo 2002, Kallulli 2006, Takahashi 2010, Hartman 2012, Kastner 2015, Pietraszko 2019, Moulton 2020, a.o.) According to my proposal, whether embedded clauses are nominalized or not influences how they are integrated into the argument structure. To argue for this claim, I first introduce overtly distinct nominalized and bare clauses of Buryat, Korean and Russian (this section), and then examine the question of whether a clause being nominalized influences the interpretations available to it (section 4.4).

4.3.1 Buryat

As we have previously seen in section 2.2.1, three types of clauses can combine with Buryat verbs, (33)-(35). I have suggested that *gə* is the morpheme exponing the Cont head, because it has to be present in clauses that combine with Cont-NPs and must be absent with the clauses that combine with Sit-NPs.

(33) Dugar [mi:sgəi zagaha ədj-ə: gə-žə] han-a:.
Dugar.NOM cat.NOM fish eat-PST say-CVB think-PST
'Dugar thought that the cat ate the fish.'

(34) Dugar [mi:sgəi-n zagaha ədj-ə:š-i:jə-(n')] han-a:.
Dugar.NOM cat-GEN fish eat-PART-ACC-(3) think-PST
'Dugar remembered (an event of) the cat's eating the fish.'

(35) Dugar [mi:sgəi-n zagaha ədj-ə: g-ə:š-i:jə-(n')] han-a:.
Dugar.NOM cat-GEN fish eat-PST say-PART-ACC-(3) think-PST
'Dugar remembers (a claim) that the cat ate the fish.'

I propose that the participial suffix *-A:šA* and the converbial suffix *-žA*[18] are two allomorphs of COMP, (36): we see *-A:šA* when CompP combines with a head with the label N, and we see *-žA* when CompP combines with a heas with the label V.[19]

(36) a. Cont ⇔ *-gə* 'say'
b. Comp ⇔ *-A:šA* 'PART' /___N
⇔ *-žA* 'CVB' /___V

In (34) and (35) CompP combines with nominal projections, and we see *-A:šA* as the exponent of Comp. In (33) CompP combines directly with the verb, and we

[18]Capital letters in the suffixes stand for vowels that undergo vowel harmony. So we will see, for example, the same suffix *-A:šA* surfacing as *-a:ša*, *-ə:šə* or *-o:šo* depending on the base it attaches to.

[19]One might wonder whether we need to have two Vocabulary Insertion rules for COMP that each specify a context (/___N, /___V), as opposed to having one context-specific rule and one allomorph being an elsewhere case. While the latter option is in principle possible, I am unaware of arguments that would help us decide which allomorph should receive a context-specific rule, and which should be considered an elsewhere case, and hence I will keep two context-specific rules for now.

see *-žA* as Comp's exponent.[20,21] This allomorphy rule predicts that *-A:šA*-clauses should not be able to combine directly with the verb, and *-žA*-clauses should not be able to modify nouns. These are overall correct predictions. *-A:šA*-clauses must be nominalized to combine with verbs, and *-žA*-clauses generally do not combine with nouns. There is one exception to this, mentioned in chapter 2: *gəžə*-clauses can be complements to Cont-NPs, as shown in (16), repeated here as (37).

(37) [[Badma tərgə əmdəl-ə: gə-žə] zuga:] züb.
Badma cart break-PST say-CVB talk correct
'The rumor (lit. 'talk') that Badma broke the cart is correct.'

Most, if not all content nouns in Buryat seem to be derived from verbs. For example, *hana:n* 'thought, opinion' is likely derived from *hana-* 'think', *məndə:n* 'news' is likely derived from *məndə-* 'to know, find out', *urja:lga* 'invitation, call to action' from *urja:l-* 'to call, invite', *zuga:* 'rumor' from *zuga:l-* 'to talk, chat' etc. Thus, I hypothesize that examples like (37) arise when a CP combines with the verb directly, and then the verb undergoes nominalization.

Thus, the possible complements of Buryat attitude and speech verbs fit into the proposed classification in the following way:[22]

	Path of composition	
Meaning	via the DP argument	via the Situation of verbs like *think*
Cont-CP	*g-ə:šə* (say-PART)	*gə-žə* (say-CVB)
Sit-CP	*ə:šə* (PART)	✗

Table 4.2: CP meanings and composition paths in Buryat

Let us first discuss nominalized clauses in Buryat. As expected, both Cont-CPs

[20] I do not commit to the view that whenever we see *-A:šA* and *-žA*, they expone Comp with the semantics of exemplification proposed in chapter 2. A unified account of these morphemes with their uses in relative clauses (for *-A:šA*) and with adverbial clauses (for *-žA*) would require further research, as it would need to explain the differences between these clauses. If further examination shows that semantics of these morphemes cannot be unified across their uses, we could hypothesize that Comp is a head which not only has several allomorphs, but that also has various allosemes, the choice between which depends on the syntactic environment.

[21] In case of the participial marker in Sit-CPs, there will be additional allomorphy conditioned by the temporal/aspectual information specification of the lower T head.

[22] The vowel at the end of the participial marker underoges deletion when it is followed by the accusative case, this is why in (34) and (35) we see *-ə:š* and *-gə:š* respectively. The hiatus between *-gə* and *-ə:šə* is resolved by deletion of the vowel in *gə*.

and Sit-CPs can occur in nominalizations: both *gɔ:šɔ*-clauses and *-A:šA*-clauses are overtly nominalized in (34) and (35). The participial marker in (34) and (35) is followed by obligatory case marking and optional possessive marking.

How much nominal structure is there in these Buryat nominalizations? There is some evidence suggesting that nominalized Cont-CPs do have a content nominal present in their structure, which comes from the exceptional ability of nominalized Cont-CPs to have accusative subjects. Overall, Buryat embedded clauses can have accusative subjects only when there is a matrix verb that can assign accusative case present in the structure (Bondarenko 2017). So if we take a verb that assigns lexical case like dative, for example, (38), it will be incompatible with embedded clauses that have accusative subjects. This is illustrated with a non-nominalized CP in (39).

(38) Xübü:n Badma-da atarxa-na.
boy.NOM Badma-DAT envy-PRS
'The boy envies Badma.'

(39) Xübü:n Badma /??Badm-i:jɔ na:danxai aba-xa gɔ-žɔ atarxa-na.
boy.NOM Badma-NOM /Badma-ACC toy buy-POT say-CVB envy-PRS
'The boy is envious that Badma will buy a toy.'

However, there is one exception to the rule: CPs that combine with Cont-NPs can have accusative subjects even in the absence of an accusative-assigning verb:

(40) [[Badm-i:jɔ tɔrgɔ ɔmdɔl-ɔ: g-ɔ:šɔ /gɔ-žɔ] zuga:] buru:.
Badma-ACC cart break-PST say-PART /say-CVB rumor.NOM wrong
'The rumor that Badma broke the cart is false.'

In (40) we see that the Cont-NP 'rumor' is the nominative subject of the predicate *buru:* 'wrong', which cannot assign accusative case. Nevertheless, accusative marking of the embedded subject is possible. If null content nouns, just like overt ones, are small-size nominalizations of verbs, we can hypothesize that the noun inherits the verb's ability to assign accusative case. And thus whether the clause combines with the verb prior to nominalization (*gɔžɔ*-clause) or after the nominalization (*gɔ:šɔ*-clause), its subject can be marked accusative. Whatever the exact mechanism for assigning this exceptional case in sentences like (40) is, if there is a silent content nominal similar to *zuga:* in the structure of nominalized Cont-CPs,

we expect them to also allow accusative subjects in the absence of any visible source for accusative case too. This is in fact what we observe:

(41) [[Badm-i:jə tərgə əmdəl-ə: g-ə:šə-n′]] buru:.
Badma-ACC cart break-PST say-PART-3.NOM wrong
'That Badma broke the cart is false.'

Note that such exceptional ACC is not possible with nominalized Sit-CPs, (42).

(42) [Xübün-əi /*xübün-i:jə xoto ošo-hon-i:n′] hain.
boy-GEN /boy-ACC city go-PART-3POSS.NOM good
'That the boy went to the city is good.'

But this doesn't tell us anything about the presence of a null lexical noun in these sentences, as clauses that modify Sit-NPs cannot have accusative subjects either:

(43) Sajana [[Badm-i:n /*Badm-i:jə tərgə əmdəl-ə:šə] ušar] hana-na.
Sajana Badma-GEN /Badma-ACC cart break-PART event think-PRS
'Sajana remembers an event of Badma breaking the cart.'

In addition, there is a difference in proform substitution that might suggest that nominalized Cont-CPs, but not Sit-CPs have a lexical noun in their structure. Buryat has a general proform root *ti:* 'do so', which can appear in a variety proforms. When this root appears with the participial marker and case, it can serve as a proform for both nominalized Cont-CPs and nominalized Sit-CPs, (44)–(45).[23]

(44) Badma [Sajan-i:n bulj-a: g-ə:š-i:ə] han-a:, Ojuna baha
Badma Sajana-GEN win-PST say-PART-ACC think-PST Ojuna also
ti:-gə:š-i:jə /tərən-i:jə han-a:.
do.so-PART-ACC /that-ACC think-PST
'Badma remembered (the claim/rumor) that Sajana won, and Ojuna also remembered that (claim/rumor).'

(45) Badma [Sajan-i:n bulj-a:š-i:ə] han-a:, Ojuna baha ti:-gə:š-i:jə
Badma Sajana-GEN win-PART-ACC think-PST Ojuna also do.so-PART-ACC

[23]The hiatus between two long vowels in Buryat triggers *g*-epenthesis, hence the presence of [g] in *ti:-gə:š-i:jə*.

/*tərən-i:jə han-a:.
/that-ACC think-PST
'Badma remembered that Sajana won, and Ojuna also remembered that (= rememebered that event).'

We can hypothesize that *ti:* 'do so' substitutes for the ContP in (44) and for the TP in (45). However when we take a purely nominal proform *tərən* 'that' that substitutes for noun phrases, we see a difference between the two nominalizations: *tərən* can substitute for a nominalized Cont-CP (44), but not for nominalized Sit-CP (45). If we hypothesize that only nominalized Cont-CPs contain a lexical noun, this contrast could be explained: we could say that *tərən* 'that' is a proform for NPs.

To sum up, there is some evidence that nominalized Cont-CPs in Buryat have a lexical noun in their structure, whereas nominalized Sit-CPs might lack it.[24]

Now let us turn to the Buryat clauses that do not have any nominal morphology on top of them (33). I will call such non-nominalized clauses bare CPs. Bare CPs in Buryat bear a converbial suffix *-žA*, which we see elsewhere in the grammar on adverbial modifiers and within certain complex verbal forms. For example, in (46) we see it on a clause that describes a situation that gave rise to the matrix situation:

(46) *žə-clause as an adverbial modifier*

[Ojuna üxibü: türə-žə], badma əsəgə bolo-bo.
Ojuna child give.birth.to-CVB Badma father become-PST
'As Ojuna gave birth to a child, Badma became a father.'

I proposed that *-žA* is an exponent of COMP when CompP combines directly with the verb and modifies its situation argument. Recall that I predict that due to the semantics of CompPs and attitude verbs like *think*, Sit-CPs should not be able

[24]One might wonder if the presence of a null lexical noun in Cont-CPs predicts that we should find different kinds of nominal modifiers within nominalized Cont-CPs. Overall, I think the answer to this question depends on our general assumptions about the fine-grained structure of nominal phrases on the one hand (e.g., are there separate projections introducing different modifiers? in what DPs can they occur?) and assumptions about null abstract nouns on the other hand. As far as I know, null nouns within nominalized Cont-CPs in Buryat only allow possessors as their modifiers:

(i) [Sajan-i:n Darim-i:jə mašin-a:r büšü: jab-a: g-ə:šə-n'] ünən gü?
Sajana-GEN Darima-ACC car-INSTR quickly go-PST say-PART-3 true Q
'Is Sajana's (claim/thought/rumor) that Darima drove the car very quickly true?'

to combine by modifying the verb's situation argument. Since in Buryat the path via which the clause combines is reflected in its morphology, I predict that a clause with the *-žA* marker but without the *gə* morpheme (Cont) should not be able to combine with verbs like *hanaxa* 'think'. This is borne out:

(47) *Badma$_i$ (tərən-əi$_{i/k}$) xoni bari-ža hana-na.
Badma.NOM (that-GEN) sheep cut-CVB think-PRS
'Badma$_i$ remembers/thinks that he$_{i/k}$ killed a sheep.'

The sentence in (47) is ungrammatical, no matter what interpretation we try to attribute to it. On my account, this constraint follows from it being impossible for one situation to both exemplify the proposition {s: there is thinking in s} and the proposition {s: he killed the sheep in s} at the same time.[25]

4.3.2 Korean

As we have seen before in section 2.2.1, there are three main strategies of clausal embedding that we see with verbs in Korean (see discussion of these strategies in M.-J. Kim 2009, Shim & Ihsane 2015, Bogal-Allbritten & Moulton 2018, Lee 2019, Moulton, Bogal-Allbritten & Shimoyama 2020):

(48) *Three complementation patterns with verbs in Korean*

a. Kibo-nun [Dana-ka i chayk-ul ilk-**ess-ta-ko**]
Kibo-TOP Dana-NOM this book-ACC read-**PST-DECL-COMP**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

b. Kibo-nun [Dana-ka i chayk-ul ilk-**ess-ta-nun** **kes-ul**]
Kibo-TOP Dana-NOM this book-ACC read-**PST-DECL-ADN** **thing-ACC**

[25]While attitude and speech verbs cannot combine with clauses that lack Cont but bear the *-žA* marker, there is a small class of verbs that can combine with such complements. These are so-called restructuring verbs: *šadaxa* 'be able to', *ürdixə* 'manage', *əxilxə* 'begin', *du:haxa* 'finish' and *turšaxa* 'try'. My hypothesis is that these verbs select predicates of situations as their arguments: we wouldn't want to combine a predicate of beginning situations with a predicate of eating situations intersectively by PM, for example, because no situation is both a beginning phase of some situation and a complete situation of eating something.

yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

c. Kibo-nun [Dana-ka i chayk-ul ilk-**un** **kes-ul**]
Kibo-TOP Dana-NOM this book-ACC read-**ADN** **thing-ACC**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'
(Shim & Ihsane 2015: 131, ex. (4))

I suggest the following correspondence between the morphemes that we see in (48a)-(48c) and the syntactic heads:[26]

(49) a. Cont ⇔ *-ta* 'DECL'
b. Comp ⇔ *-nun* 'ADN' /___N
⇔ *-ko* 'COMP' /___V

The declarative marker *-ta* is the Cont head. In chapter 2 we have seen that this marker was possible only in clauses that combine with content nouns like 'claim', but not in clauses that combine with nouns like 'situation'. As in Buryat, I suggest that Comp in Korean has two allomorphs: we see the adnominal marker exponing Comp when CompP combines with a nominal projection, but the marker *-ko* when CompP combines with a verbal projection.

How Korean embedded clauses that combine with verbs fit into the proposed typology is illustrated in table 4.3.

	Path of composition	
Meaning	via the DP argument	via the Situation of verbs like *think*
Cont-CP	*-ta-nun kes* (-DECL-ADN thing)	*-ta-ko* (-DECL-COMP)
Sit-CP	*-nun kes* (-ADN thing)	✗

Table 4.3: CP meanings and composition paths in Korean

As expected, we see two kinds of nominalized clauses in Korean: nominalized Cont-CPs (*-ta-nun kes*) and nominalized Sit-CPs (*-nun kes*). Nominalized clauses in

[26] That *-ta* in nominalizations like (48b) corresponds to the introduction of the Cont function has been also proposed by Moulton, Bogal-Allbritten & Shimoyama (2020). They do not provide an explicit syntactic decomposition, but note that it could be done.

Korean have an overt nominal *kes* in their structure: e.g., M.-J. Kim (2009) analyzes it as exponing the head N, with a null DP layer on top of it.[27] Thus, it seems that Cont-CP and Sit-CP nominalizations do not differ in their nominal structures.

Korean has only one type of bare CPs that can combine with verbs like 'think': Cont-CPs. As we see from the ungrammaticality of (50), it is not possible to omit the declarative marker *-ta* in clauses with the complementizer *-ko*.[28]

(50) *Mina-nun [talamcuy-ka ttangkhong-ul mek-(ess)-ko] sayngkakha-n-ta
Mina-TOP squirrel-NOM peanut-ACC eat-(PST)-COMP think-PRS-DECL
'Mina thinks that the squirrel ate the peanuts.'

Again, this is predicted by my proposal. Since no situation can both exemplify thinking and the squirrel eating the peanuts, combining the verb and the clause by intersection will result in an empty set, which in turn will make any sentence containing this constituent trivially false. I proposed (section 4.2) that such triviality leads to ungrammaticality of *bare Sit-CPs + Verb* combinations like in (50).[29]

Moulton (2015) observed that *-ko*-clauses in Korean cannot combine with content nouns. This is illustrated in (51). They also can't combine with Sit-NPs (52).

(51) *[Swuna-ka mwuncey-lul phwul-ess-ta-ko] cwucang-i sasil-i-ta.
Swuna-NOM problem-ACC solve-PST-DECL-COMP claim-NOM fact-COP-DECL
'The claim that Swuna solved the problem is a fact.'

(52) *[Swuna-ka mwuncey-lul phwul-ess-ta-ko /phwul-ess-ko
Swuna-NOM problem-ACC solve-PST-DECL-COMP /solve-PST-COMP

[27] According to Kim, *kes* is an E-type pronoun: it relates the situation described by the embedded clause to a salient entity that bears some relation to it.

[28] We might wonder whether the complementizer *-ko* and the intersective conjunction *-ko* are in fact the same morpheme with the semantics of conjunction. I think this is in principle a possibility, and this would follow the proposal about the dependent mood marker *-aʔ* in Washo in (Bochnak & Hanink 2021). The authors argue that this marker has the semantics of conjunction, and it appears on clauses that are modifiers of the event argument of the verb. One potential issue that I see is that if the complementizer *-ko* has the meaning of conjunction, we might expect it to be able to combine a clause with a noun phrase. But this is not possible (51)–(52). So if *-ko* is a conjunction, we need to somehow ensure that it cannot conjoin two constituents if at least one of them is a noun.

[29] As discussed in 4.2, whether this case of triviality leading to ungrammaticality can be attributed to *L-analyticity* (Gajewski 2002, a.o.) depends on our assumptions about the source of the exemplification relation in the meanings of verbal predicates.

/phwul-ta-ko /phwul-ko] sanghwang-i hungmilop-ta.
/solve-DECL-COMP /solve-COMP situation-NOM interesting-DECL
'The situation that Swuna solved the problem is interesting.'

The adnominal clauses, with the Cont head and without it, can't combine directly with the verb: omitting the noun *kes* leads to ungrammaticality, (53a)–(53b).

(53) a. *Kibo-nun [Dana-ka i chayk-ul ilk-**ess-ta-nun**]
Kibo-TOP Dana-NOM this book-ACC read-**PST-DECL-ADN**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

b. *Kibo-nun [Dana-ka i chayk-ul ilk-**un**]
Kibo-TOP Dana-NOM this book-ACC read-**ADN**
yukamsulewehay-ss-ta /mit-ess-ta.
regret-PST-DECL /believe-PST-DECL
'Kibo regretted/believed that Dana read this book.'

On my account, the source of these restrictions is in the allomorphy rules for Comp. Since in (51) and (52) the CompP combines with a noun, the allomorph selected for Comp has to be the adnominal suffix.[30] In (53a)–(53b), CompPs combine directly with the verb, and thus the allomorph for Comp must be *-ko*, the adnominal marker cannot be chosen as an exponent. In other words, both in Buryat and in Korean the morphological distinction between the two kinds of complementizers reveals the path via which the clause combines by reflecting the syntactic type of the constituent it combines with.

Before we turn to Russian, let me note that the morphological distinction between the two kinds of complementizers in Buryat and Korean cannot be captured by appealing to a sortal restriction on the kinds of entities in the extension of embedded clauses. For example, imagine that we assumed that in languages like Buryat and Korean there are two different Comps that differ only in their restrictions on their individual argument:

(54) $[\![\text{Comp}_{nom}]\!]^{s,g,t} = \lambda p\text{: } p \in D_{et}.\ \lambda x\text{: } x \in D_e \wedge x \notin D_s.\ x \Vdash_e p$

[30] As in Buryat, in Sit-CPs the form of this adnominal suffix will be further conditioned by the features on the TP that Comp combines with.

$\Leftrightarrow$ Buryat *-A:šA* 'PART', Korean *-nun* 'ADN'

(55) $[\![\text{Comp}_{adv}]\!]^{s,g,t} = \lambda p\text{: } p \in D_{et}.\ \lambda x\text{: } x \in D_s.\ x \Vdash_e p$
$\Leftrightarrow$ Buryat *-žA* 'CVB', Korean *-ko* 'COMP'

These languages would have Comp_{nom}, (54), which would be a complementizer with the appearance of a nominal modifier, exponed by Buryat *-A:šA* 'PART' and Korean *-nun* 'ADN'. This complementizer would restrict its individual argument to proper individuals: individuals that are not situations. A clause with Comp_{nom} would denote a predicate of proper individuals.

These languages would also have Comp_{adv}, (55), which would be a complementizer that looks like a verbal modifier, exponed by Buryat *-žA* 'CVB' and Korean *-ko* 'COMP'. This complementizer would restrict its individual argument to individuals that are situations. A clause with Comp_{adv} would denote a predicate of situations.

Languages that do not have the morphological distinction between the two kinds of complementizers (e.g., Russian, English) would just have a single Comp which doesn't place any additional restrictions on its individual argument:

(56) $[\![\text{Comp}]\!]^{s,g,t} = \lambda p\text{: } p \in D_{et}.\ \lambda x\text{: } x \in D_e.\ x \Vdash_e p$
$\Leftrightarrow$ Russian *čto*, English *that*

The system sketched out above would make some good predictions. First, it would correctly predict that clauses with complementizers Comp_{adv} in languages like Buryat and Korean and clauses with complementizers Comp in languages like Russian (to be discussed in the next section) are able to combine by modifying the situation argument of verbs like *think*, whereas clauses with Comp_{nom} cannot do that. This restriction would arise because verbs like *think* are predicates of situations but clauses with Comp_{nom} are predicates of proper, non-situational individuals, and so the two won't be able to combine by Predicate Modification, as there will be no individuals for which both the meaning of the verb and the meaning of Comp_{nom}P are defined.

This system would also correctly predict that clauses with Comp_{nom} and Comp can combine with nouns like *claim*, but clauses with Comp_{adv} do not, if we assume that nouns like *claim* denote predicates of proper individuals that are not situations. Again, the restriction would arise because there will be no individual for which both the meaning of the noun and the meaning of the Comp_{adv}P are defined, as no individual can be a proper individual and a situation at the same time.

This system however will encounter a problem once we consider Sit-CPs. Empirically, in both Buryat and Korean we see Comp_{nom} in clauses that combine with Sit-NPs (Buryat *-A:šA* 'PART', Korean *-nun* 'ADN'). Comp_{adv} is not possible. But this is unfortunately the opposite of what we would expect in this system. Let us assume that nouns like *situation* place no restrictions on their argument, i.e., it is in D_e. We predict that a clause with Comp_{nom} will have an illicit meaning even before it combines with such a noun:

(57) $[\![\text{Comp}_{nom}\ [_{TP}\ \text{the squirrel ate the nuts}]]\!]^{s,g,t} =$
$\lambda x\text{: } x \in D_e \wedge x \notin D_s.\ x \Vdash_e \{s\text{: the squirrel ate the nuts in } s\}$
cannot be true of any individual

By definition of exemplification, if x exemplifies {s: the squirrel ate the nuts in s}, x is a member of {s: the squirrel ate the nuts in s}, and thus a situation. But the definedness condition of Comp_{nom} requires that x not be a situation. Thus, whenever (57) is defined, it will be false.

Moreover, this approach would also incorrectly predict that clauses not only with Comp, but also with Comp_{adv} should be able to combine with Sit-NPs. Consider the meaning that we will get for a Sit-CP with a Comp_{adv}:

(58) $[\![\text{Comp}_{adv}\ [_{TP}\ \text{the squirrel ate the nuts}]]\!]^{s,g,t} =$
$\lambda x\text{: } x \in D_s.\ x \Vdash_e \{s\text{: the squirrel ate the nuts in } s\}$

The individual argument in (58) has to be a situation, and this raises no issues, as situations can exemplify sets of situations, and also are members of D_e.

Thus, the system sketched out above makes the reverse predictions of what we empirically observe. Note that if we assume nouns like *situation* to be predicates of proper individuals only, then (58) would be ruled out, because there would be no individuals for which both (58) and nouns like *situation* are defined. But the problem is that (57) would still not be ruled in, as the issue arises before the noun is even combined. In addition, if nouns like *situation* had only proper individuals in their extension, we would also not be able to combine Sit-CPs with Comp with nouns: again, the requirement to be a proper individual is incompatible with exemplifying a set of situations. Thus, it doesn't seem possible to account for the two kinds of complementizers that we see in Buryat and Korean by appealing to restrictions that

different types of complementizers place on their individual arguments.[31]

4.3.3 Russian

Russian has two kinds of clauses that combine with verbs. One kind is a clause with the complementizer *čto* and no other markers (59). Another kind is a clause with a demonstrative *to* 'that' preceding the complementizer *čto* (60).

(59) Ja dumaju /somnevajus', [**čto** ona nevinovna].
I think /doubt **COMP** she innocent
'I think/doubt that she is innocent.'

(60) Ja znaju /pomnju, [**to čto** ona nevinovna].
I know /remember **DEM COMP** she innocent
'I know/remember that she is innocent.'

The distribution of *to* 'that' on top of *čto*-clauses is quite complex, but I believe that the general distribution is as is summarized in table 4.4 and (61).[32]

	Path of composition		
	via the DP argument		*via the Situation*
Meaning	ACC	NOM,OBLIQUE	*of verbs like think*
Cont-CP	(to) čto	to čto	čto
Sit-CP	(to) čto	to čto	✗

Table 4.4: Distribution of the demonstrative on Russian CPs

(61) **Generalization about *-to*'s distribution:**

a. Bare (non-nominalized) CPs cannot occur with *-to*.

b. Nominalized CPs always can occur with *-to*.

- *-to* is optional if the clause is part of an ACC DP complement to V;
- *-to* is obligatory otherwise.

[31] Some version of this alternative analysis sketched here might be made possible if we completely rethought our ontological commitments, for example, made the domains of individuals and situations disjoint, and then introduced some notion of individual correlates for all situations (see for example Chierchia 1984, 1985, a.o.). I leave working out such alternatives and comparing to the syntactic treatment that I proposed here for future research.

[32] See appendix in 4.8 for discussion of some exceptions to the generalizations I propose here; also see Knyazev 2016b, 2022.

The diagnostic for identifying bare CPs in Russian is that *-to* cannot occur with them. If an attitude or speech verb cannot combine with a DP, they will take only bare CPs: e.g. verbs *dumat'* 'think' and *somnevat'sja* 'doubt' exhibit such behavior—nominalized CPs are not possible with them (cf. (59) and (62)-(63)).

(62) *Ja dumaju /somnevajus' ètu ideju.
I think /doubt this idea.ACC
'I think about this idea/ doubt this idea.'

(63) *Ja dumaju /somnevajus', [to čto ona nevinovna].
I think /doubt DEM COMP she innocent
'I think/doubt that she is innocent.'

All nominalized clauses *can* occur with *-to*. But it is not always obligatory, which means there is no one–to–one mapping between the presence/absence of *-to* and the presence/absence of nominalization. The demonstrative is optional in nominalized clauses that appear as accsuative complements to verbs. For example, the verb *dokazyvat'* 'prove' can combine with accusative DPs (64a) denoting the target of the proof—the thing that is being proven ('hypothesis' in (64a)). It can also combine with clauses that receive the same interpretation. The demonstrative is optional on top of these clauses, as is illustrated in (64b).

(64) a. Èto dokazyvaet [ètu **gipotezu**].
this proves this **hypothesis.ACC**
'This proves this hypothesis.'
b. Èto dokazyvaet [(**to**) čto ona nevinovna].
this proves (**DEM.ACC**) COMP she innocent
'This proves that she is innocent.'

When nominalized clauses occur in syntactic environments other than accusative complements to verbs, the demonstrative becomes obligatory: e.g., *to* must occur on nominalized clauses bearing NOM, (65), or oblique cases (GEN, DAT, INSTR), (66).

(65) [***(To)** čto ix komanda propustila gol] opredelilo
(**DEM.NOM**) COMP their team missed goal determined.3SG
[isxod igry].
outcome.ACC game.GEN
'That their team missed a goal determined the outcome of the game.'

(66) a. Artëm pol'zovalsja našimi **dannymi**.
Artyom used our.INSTR **data.INSTR**
'Artyom used our data.'

b. Artëm pol'zovalsja **tem,** **čto** **/*čto** lektor ne otmečal
Artyom used **DEM.INSTR COMP /COMP** lecturer NEG noted
poseščaemost'.
attendance
'Artyom took advantage (lit. 'used') of the fact that the lecturer didn't take attendance.'

To is also obligatory in all nominalized clauses that are complements of prepositions. This includes ACC-marked nominalized clauses, (67a)–(67b). The preposition *pro* 'about' assigns ACC case to its complements, (67a). When a nominalized clause occurs as a complement of this preposition, we see that *to* is obligatory despite the fact that the nominalized clause receives accusative case. Thus, the optionality of *to* is restricted to the cases of structural ACC case assigned by verbs.

(67) a. Mitja rasskazal nam pro Leninu **poezdku**.
Mitya told us about Lena's **trip.ACC**
'Mitya told us about Lena's trip.'

b. Mitja rasskazal nam
Mitya told us
pro ***(to)**, čto Lena ezdila v Armeniju.
about (**DEM.ACC**) COMP Lena went to Armenia
'Mitya told us about Lena's going to Armenia.'

We can have at least two hypotheses about sentences with an optional demonstrative: either the optionality is due to verbs being able to combine with both nominalized and bare CPs, or the clauses are underlyingly nominalized, and the optionality arises due to the underspecification of the exponence rules for the structural accusative form of the demonstrative. In section 4.4.2 I will argue that while there are verbs that can take both bare and nominalized CPs, the accusative form of the demonstrative is in fact underspecified. Both ∅ and *-to* are possible exponents for the demonstrative bearing structural accusative case (68).[33]

[33]There is another possible way to capture the underspecification. Knyazev (2022) proposes that

(68) Dem^{o} ⇔ *to* /_____ NOM, ACC
⇔ ∅ /_____ ACC (structural)
⇔ *togo* /_____ GEN
⇔ *tomu* /_____ DAT
⇔ *tem* /_____ INSTR

One might wonder whether the modifier *takoe* 'such' that I discussed in chapter 1, section 2.5 should be regarded as another type of clause. Here is the example in (237), repeated below as (69):

(69) Slučilos' /proizošlo **takoe** čto belki s"eli vse orexi.
occurred /happened **such** COMP squirrels ate all nuts
lit. 'That the squirrels ate all the nuts occurred/happened.'

I would like to suggest that *takoe* + CP is just a very particular kind of nominalized Sit-CP. In section 2.5 I suggested that *takoe* is compatible only with clauses that describe situations. Since such clauses can never combine via the Situation argument, we expect to see *takoe* only with nominalized Sit-CPs. This seems borne out: to my

in Russian some verbs can lexicalize spans that include the verb and the head D_Δ (<V,D_Δ>), where D_Δ is the head that Knyazev assumes is the nominalizing head on clauses that occurs on top of CPs. Now if we have a verb that lexicalizes a span (ia), but also separate lexical items lexicalising just the nominalizing D_Δ head, (ib), and just the C head, (ic), we predict optionality to occur: The same structure [V [D_Δ [C [TP]]]] can now be lexicalized in at least two ways. Given the superset principle that applies in spanning, it could be that only V is exponed by (ia), and then D_Δ would be lexicalized by *-to*, and C would be lexicalized by *čto*. This would get us *V + to čto*. On the other hand, it could be that the item in (ia) expones the whole span <V,D_Δ>, and then *čto* lexicalizes C, giving us *V + čto* for the same syntactic structure. A nice feature of this approach is that the fact that ACC position is the odd one out might be provided with an explanation: for the demonstrative to be absent in a structure in which D_Δ is present, the verb and D_Δ have to be adjacent: spans must be continuous sequences of adjacent heads. If only accusative DPs are directly adjacent to lexical verbs, we expect only them to show the optionality of the demonstrative, which is what we see.

(i) a. <*dokazyvat'*, 'prove', <V,D_Δ>>
b. <*-to*, <D_Δ>>
c. <*čto*, <C>>

Furthermore, this approach can account for the fact that accusative nominalized clauses that are complements of prepositions require the overt presence of the demonstrative. If we have a structure [V [P[D_Δ [C [TP]]]]] in which the preposition intervenes between the verb and the DP, the verb and the D_Δ no longer form a span that can be exponed by lexical items like <*dokazyvat'*, 'prove', <V,D_Δ>>. Thus, entries like (ia) will only lexicalize verbs, and D_Δ will have to be lexicalized separately with the help of <*-to*, <D_Δ>>.

knowledge, there is no verb that cannot combine with a DP and can combine with a clause with *takoe*. But *takoe* has even more restrictions than that, as it can occur only on some kinds of indefinite nominalizations. That *takoe* is incompatible with definite nominalized clauses can be seen from examples like (70).

(70) Na prošloj nedele staršeklassniki pomogali rebjatam mladšix
on last week highschool.students helped guys younger
klassov s iv proektami. Lene (po)nravilos', (**to**/**#takoe**) čto
classes.GEN with their projects Lena liked (**DEM/such**) COMP
staršeklassniki pomogali rebjatam mladšix klassov.
highschool.students helped guys younger classes.GEN
'Last week highschool students helped the guys of younger classes with their projects. Lena liked that highschool students helped the guys of younger classes with their projects.'

The first sentence in (70) introduces a situation that happened last week. If existence of this situation is accepted by the participants of the conversation, then it should be strange to refer back to it with an indefinite due to *Maximize Presupposition!* (Heim 1991). As we see, it is infelicitous to use a nominalization with *takoe*, but not the one with *to* in such cases. This suggests that nominalizations with *to* are compatible with definite interpretations, but nominalizations with *takoe* must be indefinite.[34] Note that *-to* is not necessary for definite interpretations. Moreover, nominalizations with *to* can have indefinite uses. This is illustrated in (71).

(71) Maša gorditsja [tem, čto Lena pobedila], Ira gorditsja [tem,
Masha is.proud DEM.INSTR COMP Lena won Ira is.proud DEM.INSTR
čto Lena pobedila], Olja gorditsja [tem, čto Lena pobedila].
COMP Lena won Olya is.proud DEM.INSTR COMP Lena won
'Masha is proud that Lena won, Ira is proud that Lena won, Olya is proud that Lena won.'

a. ✓ They are proud of the same situation of Lena winning.
b. ✓ They are proud of different victories: e.g., Masha is proud that Lena

[34]There are likely to be even further restrictions on what kind of indefinite descriptions clauses with *takoe* can denote. My impression is that *takoe*-CPs cannot be specific indefinites and tend to take the lowest scope available. I leave investigation of properties of these clauses for future research.

won the swimming competition, Ira is proud that Lena won the cooking competition, Olya is proud that Lena won the chess tournament.

If nominalizations with *-to* were obligatorily definite, we would expect a uniqueness presupposition in (71) that would say that there is a unique situation of Lena winning that everyone is proud of. This is a possible interpretation, but it is not the only one. The sentence is also compatible with a context where there is no unique victory by Lena (71b): Lena in fact won three different competitions, and Masha, Ira and Olya are proud of different Lena's victories.

What regulates the choice between *to* and *takoe* in nominalized clauses is a complicated issue, and I will not be able to address it here. I would like however to note that the two items cannot co-occur on top of a clause: even in cases where both *to* and *takoe* are equally acceptable on their own, it is not possible to have both of them on top of an embedded clause:

(72) a. Ja ne pomnju togo /takogo, čto-by Lena prixodila.
I NEG remember DEM /such COMP-SUBJ Lena came
'I don't remember Lena coming.'

b. *Ja ne pomnju {togo takogo} /{takogo togo},
I NEG remember DEM such /such DEM
čto-by Lena prixodila.
COMP-SUBJ Lena came
'I don't remember Lena coming.'

I propose that both *to* and *takoe* are exponents of D^o. That *to* is a D^o's exponent has been previously proposed by Knyazev (2016b), and if *takoe* corresponds to he same head, the fact that it cannot co-occur with *to* is accounted for. What kind of determiner is present in D^o (definite/indefinite, what kind of indefinite) will determine whether D^o will be exponed as the demonstrative or as *takoe*; in ACC-marked nominalized complements to verbs D^o can be phonologically null.[35]

[35]When D^o has null exponence we do not know if the determiner present in the structure is the demonstrative or *takoe*. Examples like (70) show us that null exponence can correspond to the demonstrative: overt *takoe* is ungrammatical in (70) due to the definite interpretation, so the unpronounced D^o cannot be *takoe*. I have not been able to construct examples that would lack an overt D^o but could be only analyzable as having *takoe* as its determiner. So there is a possibility that the null allomorph of D^o in accusative positions has exclusively the interpretation of the demonstrative.

	Path of composition		
	via the DP argument		*via the Situation*
Meaning	ACC	NOM,OBLIQUE	*of verbs like think*
Cont-CP	(to) čto	to čto	čto
Sit-CP	(to/takoe) čto	to/takoe čto	✗

Table 4.5: Distribution & morphological realization of D^o on Russian CPs

Do Russian nominalized CPs contain a null lexical noun akin to the noun *kes* in Korean? I would like to suggest that they do not. The first argument against the presence of a null noun comes from proform substitution. All nouns in Russian are specified for gender. If nominalized CPs contained a null noun, it would have been specified for gender as well.[36] Thus, it should be possible to refer back to nominalized CPs with pronouns that bear gender features. Nominalized CPs in Russian can be referred back to with the pronoun *èto*:

(73) Ego slova podtverždajut, [(to) čto ona nevinovna], i eë slova
his words confirm (DEM) COMP she innocent and her words
tože **èto** /*tak podtverždajut.
also **this** /so confirm
'His words confirm that she is innocent, and her words confirm that too.'

(74) Lena xvastalas' [tem čto oni pobedili], i Ira tože **ètim**
Lena boasted DEM.INSTR COMP they won and Ira also **this.INSTR**
/*tak xvastalas'.
so boasted
'Lena boasted about them winning, and Ira also boasted about this/so.'

[36] For example, both nouns that remain unpronounced due to ellipsis and *pro* subjects of embedded clauses have to be specified for gender, (i)-(ii). In (i) we see this due to the gender agreement on the remaining demonstrative, in (ii) — due to the gender agreement on the past tense verb. This makes us expect that other null nominals would be specified for gender too.

(i) Ja igrala s ètoj devočkoj, a ona — s **toj** /*tem /*to [~~devočkoj~~].
I played with DEM girl and she with DEM.**FEM** /DEM.MASC /DEM.NEU ~~girl.**FEM**~~
'I played with this girl, and she (played) with that (girl).'

(ii) Petja$_i$ skazal, čto *pro*$_i$ sxodil /*sxodila /*sxodilo v magazin.
Petya said COMP 3SG.**MASC** went.**MASC** /went.FEM /went.NEU to store
'Petja$_i$ said that he$_i$ went to the store.'

Èto has nominal distribution (75): it can occupy all syntactic positions that DPs can occupy, e.g. it can be a subject, a direct object, an indirect object; it can be a complement of a preposition.

(75) Segodnja zamečatel'naja pogoda.
today wonderful weather
'The weather is wonderful today.'

a. **Èto** menja udivljaet.
this.NOM me surprises
'This surprises me.'

b. Mitja **èto** zametil. On **etomu** rad.
Mitya **this.ACC** noticed he **this.DAT** happy
'Mitya noticed this. He is happy about this.'

c. **Iz-za ètogo** ja ne mogu sosredotočitsja na rabote.
from this.GEN I NEG can concentrate on work
'Because of this I cannot concentrate on work.'

But *èto* cannot refer back to nouns anaphorically, as is illustrated (76) and (77); gendered pronouns have to be used in such cases.

(76) A: Maša ob"jasnila ètu **gipotezu**?
Masha explained this **hypothesis.FEM**
'Did Masha explain this hypothesis?'

B: Da, ona **eë** /**#èto** ob"jasnila.
yes she.NOM **she.ACC** /**this.ACC** explained
'Yes, she explained it (lit. 'her').'

(77) A: Lena ispravila ètu **situaciju**?
Lena remedied this **situation.FEM**
'Did Lena remedy this situation?'

B1: Da, ona **eë** /**#èto** ispravila.
yes she.NOM **she.ACC** /**this.ACC** remedied
'Yes, she remedied it (lit. 'her').'

Èto can be used deictically to refer to entities, picking out an individual salient in the context:

(78) *The speaker looks at the addressee's plate and sees something they want to try.*

Možno ja **èto** poprobuju?
can I **this** try
'Can I try this?'

We can understand the restriction on the use of *èto* in (76) and (77) in terms of *Maximize Presupposition!* (Heim 1991): a pronoun that is specified for gender has to be used in cases when its presupposition is met, blocking the use of *èto*.[37] Thus, *èto* can deictically refer to entities but cannot refer back to individuals introduced in the preceding context by a noun, because in the former case, unlike in the latter case, no discourse referent with certain gender features has been introduced.

Gendered pronouns cannot refer back to nominalized CPs:

(79) A: Maša ob"jasnila /prokommentirovala /zametila
Masha explained /commented /noted
[(to) čto nikto ne prišël]$_k$?
(DEM.ACC) COMP no one NEG came
'Did M. explain/comment-on/note (the fact) that no one came?'
B: Da, Maša èto /***ego**$_k$ /***eë**$_k$ ob"jasnila
yes Masha this.NOM **/he/it.ACC /she.ACC** explained
/prokommentirovala /zametila.
/commented.on /noted
'Yes, Masha explained/commented on/noted this.'

(80) A: [Takoe, čto Lena opazdyvala], byvalo?
such COMP Lena was.late happened
'Were there situations when Lena was late?
(lit. 'Did Lena being late used to happen?')'
B: Da, èto /*ona /*on /*ono byvalo.
yes this.NOM /she.NOM /he.NOM /it.NOM happened
'Yes, there were.' (lit. 'Yes, this used to happen')

This suggests that nominalized CPs do not contain a null lexical noun in their

[37] Given that inanimate referents are specified for the category of gender, the presupposition associated with gendered pronouns have to be quite abstract: that the individual falls into a certain arbitrary set of entities that the grammar decided to make reference to.

structure: if *Maximize Presupposition!* did not block *èto*, the conditions for the choice of a gendered pronoun were not met, which in turn means that the CP does not contain a noun bearing gender features (cf. Iatridou & Embick 1997, who show that *pro* can't have clauses as linguistic antecedents due to them lacking ϕ-features).

The second piece of evidence against the presence of a null noun comes from DP coordination. When two nouns with CP complements are coordinated, the agreement on the verb has to be plural:

(81) [Slux, čto Ira priedet], i [predpoloženie, čto ona privezët
rumor COMP Ira will.come and guess COMP she will.bring
dočku], obradovali /*obradovalo menja.
daughter made.happy.PL /made.happy.SG me
'The rumor that Ira will come and the guess that she'll bring her daughter made me happy.'

(82) [Situacija, čto Ira priedet], i [situacija, čto u nas budet
situation COMP Ira will.come and situation COMP by us will.be
večerinka], obradovali /*obradovalo menja.
party made.happy.PL /made.happy.SG me
'The situation that Ira will come and the situation that we will have a party made me happy.'

However, when two nominalized CPs are coordinated, plural agreement is impossible, and the default singular neuter has to be used instead:

(83) [To, čto Ira priedet], i [to, čto ona privezët dočku],
DEM COMP Ira will.come and DEM COMP she will.bring daughter
*obradovali /obradovalo menja.
made.happy.PL /made.happy.SG me
'That Ira will come and that she will bring her daughter made me happy.'

The impossibility of plural agreement can receive an explanation if the two nominalized CPs do not contain lexical nouns: if lexical nouns are the source of number features, then in their absence plural agreement with the coordination of two nominalized CPs will not be possible. Thus, based on the lack of number and gender features within Russian nominalized CPs, I conclude that they differ from Korean

CPs and Buryat Cont-CPs in that they do not contain a null lexical noun.[38]

Now I would like to discuss the path of combination via the Situation argument in Russian. Since the Cont head does not have overt exponence in Russian, it is difficult to illustrate that Sit-CPs cannot combine by modifying the situation argument of verbs like *think*. I have found no verb that takes only bare CPs and could combine with *takoe*, (84), and one possible explanation of this gap is that *takoe* is possible only on Sit-CPs, which cannot combine by modifying the situation argument of verbs like *think*, hence the ungrammaticality.

(84) *Lena dumala /somnevalas' /obmolvilas' /vyskazalas',
Lena thought /doubted /mentioned /said
[takoe **čto** ona nevinovna].
such **COMP** she innocent
'Lena thought/doubted/mentioned/said that she is innocent.'

However an alternative explanation is possible for (84) as well: if *takoe* is a determiner, as I suggested, then the clause in (84) is nominalized, and nominalized clauses cannot combine with verbs that do not take nominal arguments. Thus, we

[38]There seems to be genuine cross-linguistic variation in whether two conjoined nominalized clauses can trigger plural agreement. For example, McCloskey (1991) shows that in English two conjoined CPs in the subject position can trigger plural agreement under the following semantic condition: *"the conjoined propositions are contradictory or incompatible, or, more generally, when they specify a plurality of distinct states of affairs or situation-types"* (McCloskey 1991: pp. 564–565). This is illustrated in (i). Note that in Russian conjoined overtly nominalized clauses cannot trigger plural agreement even when they meet the suggested semantic requirement, (ii).

(i) [That the president will be reelected] and [that he will be impeached] **are** equally likely at this point. (McCloskey 1991: 564, ex. (5))

(ii) [To, čto Maša uedet], i [to, čto ona ostanetsja], odinakovo
DEM.NOM COMP Masha will.leave and DEM.NOM COMP she will.stay equally
verojatno /*verojatny.
likely.SG.NEU /likely.PL
'That Masha will leave and that she will stay are equally likely.'

Thus, even if we take examples like (i) to suggest that English CPs in the subject position are nominalized (Davies & Dubinsky 2001, a.o.), being nominalized is clearly not a sufficient condition for being able to trigger plural agreement. I suggest that the presence of a (null) lexical noun in the structure of the nominalized clause that bears ϕ-features is necessary for triggering plural agreement. On this approach, the difference between English and Russian is that the latter has a version of a nominalized CP structure with a null noun present in it (with the use of this noun perhaps giving rise to the semantic effects that McCloskey observes), but Russian does not.

do not have unambiguous evidence for the gap postulated in the table 4.5.

Recall that the impossibility of Sit-CPs combining via the Situation argument relies on the verb being a predicate of situations that exemplify a proposition that characterizes situations in it by what exists within them. Thus, the gap in table 4.5 is expected for verbs like *dumat'* 'think', *skazat'* 'say', etc. Here I would like to suggest that combining Sit-CPs via the Situation argument is however possible in certain cases when the verb has different semantics: Sit-CPs can combine as modifiers of verbs like *byvat'* 'happen' and *slučat'sja* 'occur'. Consider examples in (85) and (86).

(85) Byvalo, [čto ja napivalsja i togda zvonil ej]. <Link>
happened COMP I got.drunk and then called her
'It used to happen that I got drunk and called her.'

(86) I slučilos', [čto priexala v Donezk kakaja-to komanda]. <Link>
and occured COMP came in Donezk some team
'It (so) happened that some team came to Donezk.'

There is no overt determiner of any kind in (85) and (86). But according to our generalization in table 4.5, we should expect to see some determiner in these sentences if they have to involve a nominalized clause. Verbs *byvat'* 'happen' and *slučat'sja* 'occur' do not assign accusative case (when they combine with DPs, DPs are nominative). In nominative nominalized clauses determiners generally cannot be omitted. Thus, if the clauses in in (85) and (86) were nominalized, we would have expected them to have an obligatory determiner. If these clauses are not nominalized, these have to be bare Sit-CPs, as predicates 'happen' and 'occur' are not predicates of contentful eventualities that could combine with a bare Cont-CP (see section 2.5 of chapter 2 for discussion). I would like to argue that they are indeed bare Sit-CP modifiers, and that this is actually not ruled out by our semantics.

Let us consider verbs *byvat'* 'happen' and *slučat'sja* 'occur' in more detail. These verbs clearly can occur with nominalized CPs (with either the demonstrative or *takoe* 'such' on top of CP), and such CPs can be substituted by the proform with the nominal syntactic distribution *èto*:

(87) a. [**To /takoe** čto ja napivalsja] byvalo.
DEM.NOM /such.NOM COMP I got.drunk happened
'Me getting drunk did happen.'

b. [**Èto**] byvalo.
this.NOM happened
'This used to happen.'

(88) a. [**To /takoe** čto èta komanda priezžala v Donezk]
DEM.NOM /such.NOM COMP this team came in Donezk
slučalos' nečasto.
occured not.often
'That this team came to Donezk was rare.' (lit. 'occured not often')
b. [**Èto**] slučalos' nečasto.
this.NOM occured not.often
'This was rare.' (lit. 'occured not often')

Thus, the nominal path of combining with these verbs is definitely available for clauses.[39] However, the clauses that combine with *byvat'* 'happen' and *slučat'sja* 'occur' can also co-occur with an adverbial expression *tak* 'so', which also seems to be able to be used as a proform for clauses occuring with these verbs:

(89) a. Byvalo **tak**, [čto my podolgu drug druga smešili]. <Link>
happened **so** COMP we long.time each other made.laugh
'It used to happen so that we made each other laugh for a long time.'
b. Byvalo (i) **tak**.
happened (also) **so**
'This used to happen (also).' (lit. 'happened in this way also')

[39]There is a preference for overtly nominalized clauses with these verbs to occur before the verb, however this is not a hard constraint: e.g., in (i) the nominalized clause, which receives a contrastive interpretation, can occur after the verb.

(i) **Context:** Someone is accusing Ira of always being late or missing the classes on purpose. The speaker is trying to defend Ira.

Slučalos' [to /takoe, čto Ira opazdyvala]. No [togo /takogo čto-by Ira
occured DEM /such COMP Ira was.late but DEM /such COMP-SUBJ Ira
progulivala], ne slučalos'.
missed.classes not occured

'That Ira was late did happen, but there were no cases of Ira missing the class (on purpose).'

(90) a. Slučilos' **tak**, [čto lošad' spotknulas' eščë raz]. <Link>
occured **so** COMP horse tripped more once
'It occured so that the horse tripped one more time.'

b. **Tak** i slučilos'.
so and occurred
'(Exactly) this is what occured.' (lit. 'and in this manner it occured')

I take this as evidence that Sit-CPs can be modifiers when they combine with these verbs, in addition to being arguments (see also discussion of extraction data in section 4.6, which is in line with this conclusion).

Is this result unexpected from the perspective of our proposal? The answer to this question depends on the semantics for verbs like *byvat'* 'happen' and *slučat'sja* 'occur' that we assume. I suggest that what is special about these predicates is that they are almost vacuous: they do not tell us anything about the proper parts of the situations that are in their extension. And this is what allows them to take Sit-CPs as their modifiers. For example, let us entertain the following semantics for the verb *slučat'sja* 'occur':

(91) $[\![\textit{slučat'sja}]\!]^{s,g,t} = \lambda s'\text{: } s' \in D_s\text{. } s' \text{ is at t} \wedge s' \Vdash_e \{s'\text{: } s' \sqsubseteq s\}$

Slučat'sja 'occur' according to (91) is a predicate of situations which exist at the time of evaluation t and exemplify the set of situations which are part of the situation of evaluation s.[40] Given this semantics, *slučat'sja* can be modified by a Sit-CP:

(92) $[\![\textit{slučat'sja}\ [\text{Comp the squirrel ate the nut}]]\!]^{s,g,t} = \lambda s'\text{: } s' \in D_s\text{. } s' \text{ is at t} \wedge s' \Vdash_e \{s'\text{: } s' \sqsubseteq s\} \wedge s' \Vdash_e \{s'\text{: the squirrel ate the nut in } s'\}$

Both *slučat'sja* 'occur' and the Sit-CP are predicates of situations, and they will combine by Predicate Modification, resulting in a predicate of situations which occur at the evaluation time t, exemplify the set of situations which are part of the evaluation situation, and also exemplify the set of situations in which the squirrel ate the nut. This meaning will not result in a contradiction, because while the proposition {s': the squirrel ate the nut in s'} characterizes what exists within the situation s', the proposition {s': s' $\sqsubseteq$ s} does not: it only characterizes a relation that s' participates

[40] There might be some additional aspectual restrictions that need to be encoded in the meaning of this verb, e.g., stative situations probably should be excluded from its extension.

in. In this case, for (92) to be true of a situation *s'*, this situation would have to be part of the evaluation situation *s*, all its proper parts would have to be part of the evaluation situation *s*, and it would have to be a minimal situation of the squirrel eating the nut. These requirements are compatible with each other. Thus, combinations of verbs like *slučat'sja* 'occur' with Sit-CPs present a mirror image of verbs like *dumat'* 'think' combining with Cont-CPs: *dumat'* 'think' combining with Cont-CPs creates a licit meaning because only the verb, but not the embedded clause characterizes what is happening within the situation, whereas when *slučat'sja* 'occur' combines with Sit-CPs, only the clause, but not the verb characterizes what is happening within the situation.

I assume that after the clause modifies the verb, the situation argument of the predicate undergoes existential closure. After combining tense, we will receive the truth-conditions in (93).

(93) $[\![$*slučat'sja* [Comp the squirrel ate the nuts]$]\!]^{s,g,t}$ = 1 iff $\exists$t' < t
[$\exists$s'[s' is at t' $\wedge$ s' $\Vdash_e$ {s': s' $\sqsubseteq$ s} $\wedge$ s' $\Vdash_e$ {s': the squirrel ate the nut in s'}]]

I propose that the nominal path of combining a clause with verbs like *byvat'* 'happen' and *slučat'sja* 'occur' involves the following steps. First, an indefinite determiner combines with the CompP. Because CompP is a predicate of situations, the combination of the clause with the determiner will be a function that takes a set of situations and returns a truth-value (94).

(94) $[\![$ [D^o_{indef} Comp the squirrel ate the nuts]$]\!]^{s,g,t}$ =
λf: f $\in D_{st}$. $\exists$s'[s' $\Vdash_e$ {s': the squirrel ate the nut in s'} $\wedge$ f(s')=1].

This nominal phrase will be able to combine with verbs like *byvat'* 'happen' and *slučat'sja* 'occur' directly by taking them as arguments:

(95) $[\![$ [D^o Comp the squirrel ate the nuts] *slučat'sja*$]\!]^{s,g,t}$ = 1 iff $\exists$t' < t
[$\exists$s'[s' $\Vdash_e$ {s': the squirrel ate the nut in s'} $\wedge$ s' is at t' $\wedge$ s' $\Vdash_e$ {s': s' $\sqsubseteq$ s}]]

Note that the resulting meaning that we will get (95) is exactly the same as when we combine the bare clause with the verb by Predicate Modification (93). This is however only true as long as the determiner that we combined the clause with is indefinite. If the determiner is definite, we'll see a difference in presuppositionality:[41]

[41] Both definite and indefinite interpretations generally seem possible for nominalized Sit-CPs

(96) $[\![$ [D^o Comp the squirrel ate the nuts] *slučat'sja*$]\!]^{s,g,t}$ = 1 iff $\exists$t′ < t [ιs′(s′ $\Vdash_e$ {s′: the squirrel ate the nut in s′}) is at t′ $\wedge$ ιs′(s′ $\Vdash_e$ {s′: the squirrel ate the nut in s′}) $\Vdash_e$ {s′: s′ $\sqsubseteq$ s}]

Thus, what is special about verbs like *byvat'* 'happen' and *slučat'sja* 'occur' is that due to the almost vacuous semantics of these verbs, Sit-CPs can combine with them via their Situation argument both as modifying bare CPs and as saturating nominalized clauses. They constitute an exception to the generalization that Sit-CPs cannot combine by modifying the situation argument of the verb, but this exception follows if we make a plausible assumption that such verbs do not characterize the internal make-up of situations in their extension.

To sum up, we have seen that in Buryat, Korean and Russian clauses that combine with verbs come in two kinds: they can be nominalized or bare. Furthermore, in Buryat and Korean, where the Cont head has overt exponence, we saw that nominalized CPs can be both Cont-CPs and Sit-CPs, but bare clauses that combine with verbs like *think* have to be Cont-CPs. In Russian we saw some evidence that bare Sit-CPs can directly combine with verbs in a special case: with verbs like *byvat'* 'happen' and *slučat'sja* 'occur', which do not characterize the internal make-up of situations in their extension. In the next section we will discuss evidence that nominalized and bare CPs indeed combine with matrix verbs via two different paths.

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that combine with these verbs, (i)-(ii). However, there seem to be certain conditions for these readings to surface. For example, the determiner *takoe* 'such' cannot be used with definite Sit-CPs, (i), and there is a preference for using it for the indefinite interpretations of these clauses, (ii). Furthermore, definite interpretations seem to favor the nominalized clause preceding the verb, whereas with indefinite readings nominalized Sit-CPs tend to occur after the verb, (i)-(ii).

(i) **Context [definite]:** We know that the squirrel ate all the nuts (= there is a unique situation of this kind), and are wondering when that situation happened. Someone says:

[To /*takoe, čto belka s''ela vse orexi], slučilos' nedavno.
DEM /such COMP squirrel ate all nuts happened recently

'The situation of the squirrel eating all the nuts (lit. 'that the squirrel ate all the nuts') happened recently.'

(ii) **Context [indefinite]:** We see that someone looks surprised, and ask: what happened? They respond:

Da tut slučilos' takoe /?to čto belka s''ela vse orexi.
PTCL here happened such /DEM COMP squirrel ate all nuts

'It so happened that the squirrel ate all the nuts.'

4.4 Interpretations of bare CPs vs. nominalized CPs

In this section I argue that bare CPs and nominalized CPs never receive the same interpretations. Nominalized CPs receive the same interpretations as other DP arguments: e.g., they can be Causers (section 4.4.1), Theme arguments (section 4.4.2), About-arguments (section 4.4.3). Bare CPs on the other hand cannot receive any of these interpretations: they can only be interpreted as describing the situation introduced by the verb, which, to the exception of verbs like *byvat'* 'happen' and *slučat'sja* 'occur', means that such CPs describe the content associated with that situation.

While this distinction between bare and nominalized CPs might be surprising for theories of clausal embedding according to which CPs and DPs can play the same role in the argument structures of verbs, it is expected under my proposal. If clauses are predicates, the only possible way of combining them with the verb without nominalizing them is by Predicate Modification: by intersecting the meaning of the verb with the meaning of the clause. As predicates, clauses can be easily nominalized though, and then they combine like ordinary DP arguments of verbs, via the thematic heads, and receive the same interpretations as DPs. Once nominalized however, clauses can no longer serve as verbal modifiers. Thus, the difference in interpretations between bare and nominalized CPs on my account is a consequence of different integration paths available for them due to their meanings.

4.4.1 Bare CPs cannot be Causers

It has been observed that in many languages, bare CPs cannot be subjects, i.e., they cannot occupy the Spec, TP position (Rosenbaum 1967, Emonds 1970, 1976, Koster 1978, Davies & Dubinsky 1999, 2001, 2009, Hartman 2012, a.o.). This is also true for the languages under consideration: Buryat, Korean and Russian.

In (97) we see that in Buryat only nominalized Cont-CPs, but not bare ones can be subjects. (98) shows that nominalized Sit-CPs can be subjects as well.

(97) [Badma tərgə əmdəl-ə: g-ə:šə-n' /*gə-žə] buru:.
Badma cart break-PST say-PART.NOM-3 /say-CVB wrong
'That Badma broke the cart is false.'

(98) [Xübün-əi xoto ošo-hon-i:n'] hain.
boy-GEN city go-PART-3.NOM good
'That the boy went to the city is good.'

In Korean, we also see that subjects have to be nominal. In (99) we see that a nominalized Cont-CP with the nominal *kes* 'thing' is a possible subject (99a), but a bare Cont-CP with the complementizer *-ko* is not (99b).

(99) a. [Swuna-ka mwuncey-lul phwul-ess-ta-nun **kes**-i]
Swuna-NOM problem-ACC solve-PST-DECL-ADN **thing**-NOM
kecis-i-ta.
falsehood-COP-DECL
'That Swuna solved the problem is false.'

b. *[Swuna-ka mwuncey-lul phwul-ess-ta-**ko**] kecis-i-ta.
Swuna-NOM problem-ACC solve-PST-DECL-**COMP** falsehood-COP-DECL
'That Swuna solved the problem is false.'

The same is true of Sit-CPs: they have to be nominalized to be subjects (100).

(100) a. [Swuna-ka mwuncey-lul phwul-un **kes**-i] hungmilop-ta.
Swuna-NOM problem-ACC solve-ADN **thing**-NOM interesting-DECL
'That Swuna solved the problem is interesting.'

b. *[Swuna-ka mwuncey-lul phwul-**ko**] hungmilop-ta.
Swuna-NOM problem-ACC solve-**COMP** interesting-DECL
'That Swuna solved the problem is interesting.'

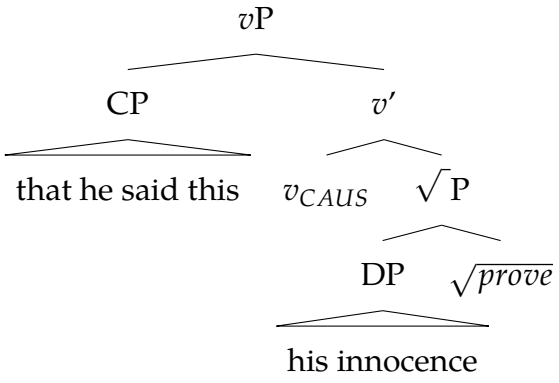
In Russian, bare CPs also cannot be subjects: as we see in (101), a determiner is required on top of the clause in order for it to occupy the subject position.

(101) [*(To) čto on èto skazal] dokazalo /podtverdilo /oproverglo
DEM COMP he this said proved /confirmed /falsified
[ego nevinovnost'].
his innocence.ACC
'(The fact) that he said this proved/confirmed/falsified his innocence.'

These data however only show us that Spec, TP cannot be occupied by bare CPs. They do not show us that bare CPs can't be Causers. It has been observed in the literature that constituents that do not get assigned case resist occurring in positions in which case is assigned (*The Case-Resistance Principle*, Stowell 1981), so the problem with the ungrammatical sentences above could be that there is a need to fill in the specifier of TP, but movement of a bare CP into that position from a *v*P-internal

base-generation position is prohibited. Thus, to settle whether bare CPs can be Causers, we need to determine whether configurations like in (102) are available.

(102) [That he said this] proved his innocence.



First, it is worth noting that in languages like Buryat it is not clear whether subjects have to move to the Spec, TP position. For example, NPI items like *nəgə-šjə* 'anyone' seem to require an operator like negation in order to be licensed. Such items are grammatical in the presence of negation when they are subjects:[42]

(103) a. *Nəgə-šjə xün radio šagna-na.
one-PTCL person radio listen-PRS
'Everyone/someone listens to the radio.'

b. Nəgə-šjə xün radio šagna-na-güj.
one-PTCL person radio listen-PRS-NEG
'Noone listens to the radio.'
(lit. 'It's not the case that anybody listens to the radio.')

Assuming that negation is lower than TP, this would suggest that subjects at least can remain in, or reconstruct to, a position lower than Spec,TP.[43]

Buryat is a language with overt causative morphology, so the presence of a Causer argument can be easily detected. As we see from (104)–(105), the Causer has to be a nominalized CP, a bare CP cannot be interpreted in this way: the only possible interpretation of (105) is the one where the clause describes the content of

[42]This example is from the elicitation materials of Alëna Aksënova.

[43] The reconstruction analysis of examples like (103b) would be still compatible with attributing the ban on bare CPs occurring as subjects to the Case-Resistance Principle, as on this account of (103b) the movement to Spec,TP could still be obligatory.

the utterance that was made by someone who made Sajana angry.

(104) [Badma tərgə əmdəl-ə: g-ə:šə-n'] Sajan-i:jə
Badma cart break-PST say-PART-3.NOM Sajana-ACC
gar-u:l-a:.
come.outside-CAUS-PST
'That Badma broke the cart made Sajana angry.'
(lit. 'made her come outside').

(105) [Badma tərgə əmdəl-ə: gə-žə] Sajan-i:jə gar-u:l-a:.
Badma cart break-PST say-CVB Sajana-ACC come.outside-CAUS-PST
a. *'That Badma broke the cart made Sajana angry.'
b. 'Someone made Sajana angry by saying *Badma broke the cart*'.

I.e., in (105) it is not possible understand the fact/claim that Badma broke the cart as the sole cause of Sajana's anger, there has to be some person salient in the context that is the actual CAUSER. This possible interpretation arises due to the availability of *pro*-drop in the language, and this *pro*-dropped CAUSER can be made overt:

(106) Tumən [Badma tərgə əmdəl-ə: gə-žə] Sajan-i:jə
Tumen Badma cart break-PST say-CVB Sajana-ACC
gar-u:l-a:.
come.outside-CAUS-PST
'Tumen made Sajana angry by saying *Badma broke the cart*'.

Thus, under the assumption that subjects in Buryat can remain in their base-generated position, the data above shows us that bare CPs cannot be CAUSERS in Buryat, only nominalized clauses can.[44]

That bare CPs cannot be CAUSERS can be shown more clearly for Russian. There are two pieces of evidence for this claim: from post-verbal sentential subjects (O V CP) of causative predicates and from CAUSERS in passive constructions. It has been argued that in Russian clauses with the OVS order the object is promoted into the Spec, TP position, and the subject remains inside the *v*P (Lavine & Freidin 2002, Bailyn 2004, Nikolaeva 2011, a.o.). Thus, Russian allows us to test whether

[44]But see ft. 43 however: if reconstruction is the right analysis for (103b), the Case-Resistance Principle account could be still maintained.

sentential subjects that remain inside the *v*P can be non-nominalized. As we see from the example in (107), when clauses that denote Causers occur post-verbally, they still must bear an overt demonstrative.[45]

(107) [Ego nevinovnost'] dokazalo /podtverdilo /oproverglo
his innocence.ACC proved /confirmed /falsified
[*(to) čto on èto skazal].
DEM COMP he this said
'(The fact) that he said this proved/confirmed/falsified his innocence.'

This suggests that embedded clauses must be nominalized to be *v*P-internal Causers of active sentences. Examples like (108)–(109) show us that clauses have to be nominalized to be *v*P-internal Causers of passive sentences as well.

(108) [*(To) čto ix komanda propustila gol] opredelilo
DEM COMP their team missed goal determined.3SG
[isxod igry].
outcome.ACC game.GEN
'That their team missed a goal determined the outcome of the game.'

(109) [Isxod igry] byl opredelën
outcome.NOM game.GEN was determined
[$_{DP}$ *(tem) [$_{CP}$ čto ix komanda propustila gol]].
DEM.INSTR COMP their team missed goal
'The outcome of the game was determined by (the fact) that their team missed the goal.'

In (108) we see the baseline active sentence with the obligatorily nominalized embedded clause occupying the subject position. In (109) we see that when we passivize this sentence, the embedded clause that remains in *v*P has to be nominalized and bear the instrumental case—the case of demoted Causers of passive sentences in Russian. We could have imagined that clauses that denote Causers of passive sentences would not require nominalization if they are not promoted into the Spec, TP position, but this is not what we observe.

To sum up, we have seen evidence that clauses not only need to be nominalized

[45]See discussion of apparent counterexamples and of (Hartman 2012) in the appendix 4.8.

in order to appear in the structural subject position in Spec, TP, but that clauses cannot denote CAUSERS and remain bare even when they remain within *v*P.

4.4.2 Bare CPs cannot be THEME-arguments

The second case study that I would like to discuss involves THEME-arguments: it turns out that clauses also have to be nominalized to be interpreted as internal arguments undergoing the eventuality described by the verb. The evidence for this comes from argument alternations that we can observe with certain speech verbs, for example verbs like 'explain', 'interpret', 'comment (on)', 'argue', 'justify'. While most of the discussion to come will involve data from Russian, let me start by illustrating the phenomenon under consideration in Korean and Mandarin Chinese, languages that are actually more transparent than Russian.

Internal (THEME) arguments of verbs like 'explain' denote entities that undergo the process described by the verb: entities that are the object of the explaining. For example, in Korean (110) we see a DP *iyu* 'reason' that can be the object of the verb *selmyengha-* 'explain'. In the sentence in (110) the reason for why Anna won the competition is something that Mary is explaining.

(110) Mary-ka [Anna-ka tayhwoy-lul wusungha-**n**] **iyu-lul**
Mary-NOM Anna-NOM competition-ACC win-**ADN** **reason-ACC**
selmyengha-yess-ta.
explain-PST-DECL
'Mary explained that Anna won the competition.'
✓ **THEME**: Mary explained the reason why Anna won the competition.

When however the same verb combines with a bare embedded clause, such an interpretation is impossible: the clause in (111) can only be interpreted as describing the content of Mary's explanation, but it cannot be understood as describing some reason or some fact that Mary is attempting to explain.

(111) Mary-ka [Anna-ka tayhwoy-lul wusungha-yess-ta-**ko**]
Mary-NOM Anna-NOM competition-ACC win-PST-DECL-**COMP**
selmyengha-yess-ta.
explain-PST-DECL
'Mary explained that Anna won the competition.'

✗ **Theme**:
Mary explained reason why/the fact that Anna won the competition.
✓ **Content-of-Utterance**: Mary said "Anna won the competition" as her explanation for some other fact.

Nominalized clauses with the bleached noun *kes* 'thing', unlike bare CPs, can be used to describe the object of explaining, even though they sound less natural than sentences with the noun *iyu* 'reason'. Here is an example based on a naturally occurring sentence with this reading (with minor modifications made to extract the example out of a more complex structure):[46]

(112) Kamdok-i [Sohn Heung-Min-ul wailtukhatu-lo
director-NOM Sohn Heung-Min-ACC wild.card-as
palthakha-ci.anh-un kes-ul] selmyengha-yess-ta.
employ-NEG-ADN thing-ACC explain-PST-DECL
'The director explained the fact that (s)he did not choose Sohn Heung-Min as the wildcard.' (based on the natural occurence: <Link>)

In Mandarin Chinese we see that the two readings with verbs like 'explain' are distinguished by their form as well.[47] When the verb combines with a noun *yuanyin* 'reason' (113), we get a reading where Anna's winning of the competition is what is being explained. The reading where the content of the explanation is described has to be introduced by a CP with *shuo* 'saying' in the left periphery of the clause (114); such CPs cannot describe the object of the explanation.

(113) *Mandarin Chinese*
Mali jieshi Anna ying-le bisai de yuanyin.
Mary explain Anna win-PFV competition REL reason
'Mary explained the reason that Anna won the competition.'
✓ **Theme**: Mary explained the reason why Anna won the competition.
✗ **Content-of-Utterance**: Mary said "Anna won the competition" as her explanation for some other fact.

[46] Some of the speakers that I worked with found examples with *kes* 'thing' a little bit degraded, mentioning that (110) is a better way to express this meaning.
[47] I am grateful to Danfeng Wu for her judgements.

(114) *Mandarin Chinese*
Mali jieshi shuo Anna ying-le bisai.
Mary explain saying Anna win-PFV competition
'Mary explained that Anna won the competition.'
✗ **Theme**: Mary explained why Anna won the competition.
✓ **Content-of-Utterance**: Mary said "Anna won the competition" as her explanation for some other fact.

That DPs and CPs receive different interpretations with the English verb *explain* has also been proposed in the literature (Pietroski 2000, 2005, Halpert & Schueler 2013, Elliott 2016, 2020), however we will see that this generalization is much less straightforward, as English does not overtly mark the distinction between nominalized and bare CPs, unlike languages like Korean.

Some other speech verbs show the same behavior as 'explain'. For example, let us consider the verb *haysekha-* 'interpret' in Korean. When it combines with noun phrases, they denote individuals that are objects of interpretation:

(115) Swuna-ka ku cwucang-ul haysekha-yess-ta.
Swuna-NOM DEM claim-ACC interpret-PST-DECL
'Swuna interpreted the claim.'

Bare CPs on the other hand cannot receive such an interpretation: *-ko* clauses can only describe what the content of the interpretation is (116).

(116) Swuna-ka [hoysa-ka hyepsang-ul ha-l
Swuna-NOM company-NOM negotiation-ACC do-ADN.FUT
cwunpi-ka toy-ess-ta-ko] haysekha-yess-ta.
preparation-NOM become-PST-DECL-COMP interpret-PST-DECL
'Swuna interpreted that the company is ready for negotiations.'
✗ **Theme**: 'The claim/situation that the company is ready for negotiations is the object of Swuna's interpretation.'
✓ **Content-of-Utterance**: 'Swuna provided an interpretation for some situation/statement, and it was *The company is ready for negotiations*.'

Nominalized clauses receive the same interpretation as ordinary DPs: they denote the individual that unergoes the interpretation, and they cannot describe what the

content of the interpretation is:[48]

(117) Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-ADN.FUT preparation-NOM
toy-**ess-ta-nun** **kes**-ul] kuncengcek-ulo haysekha-yess-ta.
become-**PST-DECL-ADN** **thing**-ACC positive-as interpret-PST-DECL
'Swuna interpreted (the claim) that the company is ready for negotiations as a good thing.'
✓ **Theme**: 'The claim that the company is ready for negotiations is the object of Swuna's interpretation, she interpreted this as a positive thing.'
✗ **Content-of-Utterance**: 'Swuna's interpretation of some other thing (as a positive thing) was that that the company is ready for negotiations.'

This is true not only of Cont-CPs, but of Sit-CPs as well:

(118) Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-ADN.FUT preparation-NOM
toy-**nun** **kes**-ul] kuncengcek-ulo haysekha-yess-ta.
become-**ADN** **thing**-ACC positive-as interpret-PST-DECL
'Swuna interpreted (the situation) that the company is ready for negotiations as a good thing.'
✓ **Theme**: 'The situation that the company is ready for negotiations is the object of Swuna's interpretation, she interpreted this as a positive thing.'
(Comment: "Here Swuna knows the situation first-hand")
✗ **Content-of-Utterance**: 'Swuna's interpretation of some other thing (as a positive thing) was that that the company is ready for negotiations.'

Furthermore, the bare CP can co-occur with the Theme argument:

[48] It seems that for some speakers, expressing something about the character of the interpretation is strongly preferred in sentences with nominalized CPs. In (117) the phrase *kuncengcek-ulo* 'as positive' serves this purpose. In sentences like (i) the interpertation is being explicitly asked about.

(i) [hoysa-ka hyepsang-ul ha-l cwunpi-ka toy-ess-ta-nun
company-NOM negotiation-ACC do-ADN.FUT preparation-NOM become-PST-DECL-ADN
kes-ul] ettekhey haysekha-ni?
thing-ACC how interpret-Q
'How do you interpret that the company is ready for negotiations?'

(119) Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-FUT.ADN preparation-NOM
toy-**ess-ta-ko**] [ku palphyomwun-ul] haysekha-yess-ta.
become-**PST-DECL-COMP** DEM statement-ACC interpret-PST-DECL
'Swuna interpreted that statement, (and her interpretation was) that the company is ready for negotiations.'

In (119) Swuna was interpreting that statement (THEME), and her interpretation of the statement was "The company is ready for negotiations":

(120) $[\![(119)]\!]^{s,g,t} = 1$ iff $\exists t' < t\,[\exists s'\,[\text{interpret}(s')_{s,t'} \wedge \text{THEME}(s') = \iota x(\text{statement}(x)_{s,t'})$
$\wedge\ \text{CONT}(s') = \{s\text{: the company is ready for negotiations in } s\}]]$

Thus, the data from Korean show that there is a one-to-one correspondence between the presence of nominalization of embedded clauses and their interpretation: bare CPs can describe only the propositional content associated with the situation argument of the speech verb, nominalized CPs can only denote THEME arguments.

Now let us turn to the data from Russian. Russian has a class of speech verbs with which embedded CPs can receive two interpretations, here are some of them:[49]

(121) a. *ob"jasnit'* 'explain'
the object of explanation vs. the content of the explanation
b. *argumentirovat'* 'argue'
the position that is argued for vs. what is said as the argument
c. *obosnovat'* 'justify'
the position that is being justified vs. what is said as the justification
d. *odobrit'* 'approve'
what is being approved vs. what is said as the approval
e. *ocenit'* 'evaluate'
the fact/opinion that is evaluated vs. the content of the evaluation
f. *prointerpretirovat'* 'interpret'

[49]There are some verbs that might be able to be attributed to this class, but the two readings that embedded clauses can get with them are quite difficult to distinguish truth-conditionally: e.g. *podtverdit'* 'confirm' (what was confirmed vs. what was said as a confirmation), *priznat'* 'admit' (the fact that was admitted vs. what was said as admission), *proanalizirovat'* 'analyze' (what was analyzed vs. what was the content of the analysis), *reklamirovat'* 'advertise' (what was advertised vs. what was said in order to advertise something). I opted to not use such verbs in this study.

what is being interpreted vs. the content of the interpretation

g. *prokommentirovat'* 'comment'
what is commented on vs. the content of the comment

h. *utočnit'* 'clarify'
what is being clarified vs. what is said as the clarification

i. *zametit'* 'note'
the fact that is being noted vs. the content of the note

All of these verbs can combine with DPs and assign accusative case to them. Such DPs can be interpreted only in one way: as denoting the individual that is undergoing the eventuality described by the verb. For example, consider (122):

(122) Lena ob"jasnila /prointerpretirovala /utočnila [$_{DP}$ èto vyskazyvanie].
Lena explained /interpreted /clarified this utterance.ACC
'Lena explained/interpreted/clarified this utterance.'

a. **Theme:** Lena explained/interpreted/clarified this utterance, e.g., by suggesting what in her opinion its author meant.

b. **What-was-uttered:** *Lena explained/interpreted/clarified some fact by producing this utterance.

The DP *èto vyskazyvanie* 'this utterance' in (122) can only be understood as the object that Lena is trying to explain/interpret/clarify. We could imagine a different interpretation, where 'this utterance' is what Lena produced in order to explain/interpret/clarify something. Such interpretation however is not possible.

When the verbs of this class combine with a CP that does not have an overt demonstrative on top of it, the embedded clause is ambiguous:

(123) Lena ob"jasnila /prokommentirovala /utočnila [čto xleba net].
Lena explained /commented /clarified COMP bread no
'Lena explained/commented/clarified that there's no bread.'

a. **Theme:**
Lena explained/commented/clarified the fact that there's no bread.

b. **Content-of-Utterance:**
Lena said *"there's no bread"* as an explanation for some other fact/as a comment on something/as a clarification of something.

On the first reading, the embedded clause describes the THEME argument, e.g. the fact that is undergoing the explanation/commenting/clarifying. In (123) this is the fact that there is no bread. For example, Lena could have said *"Katya made sandwiches last night"*, and that explained the absence of the bread.

On the second reading, the embedded clause provides the content of Lena's utterance: she said *"There is no bread"*, for example, in order to explain or clarify why she sent Petya to the grocery store, to comment on Petya's absence.

Here are a couple more examples of this alternation. In (124) the embedded clause can describe the position that Olya argued for: the position that parks should be preserved. We don't know what Olya's argument was: she could have said *"Parks help clean the air"*, or *"Parks provide good places for children's playgrounds"*, or something else—the sentence doesn't specify this. On this reading, modification *s uspexom* 'with success' is pragmatically plausible, as it specifies that Olya successfully provided an argument for the position at hand.

(124) Olja (s uspexom) argumentirovala,
Olya (with success) argued
[čto nužno soxranit' parki].
COMP necessary preserve.INF parks
'Olya (successfully) argued that it's necessary to preserve the park.'

a. **THEME:**
Olya (successfully) argued for the position that it's necessary to preserve the parks (e.g., by saying how they benefit the residents).

b. **CONTENT-OF-UTTERANCE:** Olya (#successfully) said *"it's necessary to preserve the parks"*, e.g., as a response to a question *"why should people vote in these municipal elections?"*.

But (124) also has another reading, where the embedded clause describes what Olya's argument for some position was. For example, someone asked Olya what is her justification for the position that it's important for people to vote in these elections, and she said *"The parks must be preserved"* as her argument (implying that not all candidates will be preserving them). This can be reported by saying (124). Modification by *s uspexom* 'with success' is pragmatically odd in an out-of-the-blue context for (124), as it implies that speaking is challenging for Olya.

Sentences in (125) and (126) are naturally occurring examples with the verb

prokommentirovat' 'comment' illustrating the two readings.

(125) **Theme** <Link>
Tatarov prokommentiroval, čto prokurory vstali na ego zaščitu:
Tatarov commented COMP prosecutors stood.up on his defense
"Èto vam kažetsja."
this to.you.PL seems
'Tatarov made a comment (about the claim) that prosecutors defended him: "It (only) appears this way."'

(126) **Content-of-Utterance** <Link>
Context: The tour participants got interested in ZiL fridges.
... èkskursovod prokommentiroval, čto v xolodil'nikax "ZiL"
guide commented COMP in fridges ZiL
teoretičeski možno perežit' jadernyj vzryv.
theoretically is.possible survive.INF nuclear explosion
'The museum guide commented that in theory it's possible to survive a nuclear explosion (if you hide) in ZiL fridges.'

The CP in (125) is unambiguously describing the opinion that was commented on, because there is a direct speech afterwards describing the content of the comment. The preceding context of (126) disambiguates the sentence: ZiL fridges being able to provide shelter is the new information that the guide shares with the tour participants, not a previously expressed opinion that the guide comments on.

In (127) and (128) we see sentences with the verb *obosnovat'* 'justify', that are also disambiguated by the context. The embedded clause in (127) describes the position that the speaker and their group wanted to justify; under the other reading the sentence would require a very specific context where producing an utterance requires special effort ('trying to say').

(127) **Theme** <Link>
My stremilis' obosnovat', čto vse èti metody vzaimosvyazanny...
we tried justify.INF COMP all these methods interconnected
'We were trying to justify that all these methods are interconnected...'
= trying to justify the position that these methods are interconnected

(128) **CONTENT-OF-UTTERANCE** <Link>

...ja tože napisal raport o perevode — obosnoval, čto u menja
I also wrote request about tranfer justified COMP by me
sem'ja i rebënok.
family and child
'...I also wrote a request to be transferred, I justified that I have a family and a child.' = the speaker wrote a request to be transferred and justified the transfer by writing *"I have a family and a child"*

In (128) on the other hand the embedded clause is interpreted as the content of justification. The other reading would be pragmatically odd: people usually know for a fact whether they have families and children, and aren't required to justify their beliefs on such matters.

Before we discuss what underlies this ambiguity of embedded clauses with verbs of speech in Russian, I would like to mention that some other languages also display the same two interpretations with verbs like *ob"jasnit'* 'explain'. As we see from (129) and (130) respectivelly, verbs meaning 'explain' in Italian and French can combine both with clauses that are interpreted as THEME arguments (= describe entities undergoing the explaining eventuality) and with clauses that describe the content of the explanation.

(129) *Italian*[50]

Maria ha spiegato che Anna ha vinto la gara di sci.
Maria has explained that Anna has won the race of ski
'Maria explained that Anna won the ski race.'

a. **THEME**: Maria explained the fact that Anna won the ski race (e.g., she said *"She trained more than other athletes"*).
b. **CONTENT-OF-UTTERANCE**: Maria said *"Anna won the ski race"* as an explanation of some fact (e.g., of the fact that Anna is very happy).

[50]I am grateful to Enrico Flor, Giovanni Roversi and Stanislao Zompì for the judgments.

(130) *French*[51]

Je leur ai expliqué que cet algorithme fonctionne lorsque $x < 5$,
I to.them have explained that this algorithm works when $x < 5$
mais pas lorsque $x \geq 5$
but not when $x \geq 5$
'I have explained to them that this algorithm works when x<5, but not when x≥5.'

a. **Theme**: I made the fact that this algorithm works when x<5 but not when x≥5 clear to them, provided an explanation of it.
b. **Content-of-Utterance**: I said *"This algorithm works when x<5 but not when x≥5"* as an explanation of some other fact, e.g., as an explanation for my frustration.

In English the empirical landscape is more complicated. Many speakers find only the Content-of-Utterance-reading available for embedded CPs as in (131a), and this is the most prominent judgment in the literature (Pietroski 2000, 2005, Halpert & Schueler 2013, Elliott 2016, 2020). However, Halpert & Schueler note that CP in subject positions are interpreted as objects of the explanation (131b).

(131) a. Nora explained that Fido barked. (Pietroski 2000: p. 655)
b. That Fido barked was explained. (Halpert & Schueler 2013: p. 9)
c. Now I will explain that this algorithm works whenever x<5, but not when x≥5. (Roelofsen & Uegaki 2021: 559, ft. 11)
d. How do we explain that Cameroon have won twice as many UCL golds as Nigeria? <Link>

Roelofsen & Uegaki provide an example in which the Theme interpretation of the CP seems available (131c). Moreover, one can find many naturally occurring examples where the CP describes the fact being explained; e.g., this commonly happens in *how*-questions (131d). Thus, it seems that English has the ambiguity of embedded clauses with 'explain' too, it just might exhibit additional constraints on the availability of the Theme interpretation which require further research.

[51] I am grateful to Keny Chatain, Adele Mortier and Vincent Rouillard for the judgments. This example was modeled after the English example in (Roelofsen & Uegaki 2021: 559, ft. 11) that allows for the explanandum reading of the verb *explain*, (131c).

I would like to argue that in languages in which embedded clauses seem ambiguous with verbs like 'explain', the embedded clauses in fact have two different structures: CPs that are understood as objects of explanation must be covertly nominalized, and CPs that describe the content of the explanation must be bare. Consequently, the two kinds of CPs combine with the verb via two different paths.

Recall that Russian embedded clauses can occur with demonstratives on top of them (section 4.3.3), and the generalization is that nominalized clauses can always have an overt demonstrative, whereas bare clauses can never occur with an overt demonstrative. In (132) we see that once we add a demonstrative to an embedded clause of verbs like 'explain', the ambiguity disappears: the clause can only describe the THEME argument of the verb, not the content of utterance.

(132) Lena ob"jasnila /prokommentirovala /utočnila [to čto xleba net].
Lena explained /commented /clarified DEM COMP bread no
'Lena explained/commented/clarified that there's no bread.'

a. **THEME:**
✓ Lena explained/commented/clarified the fact that there's no bread.

b. **CONTENT-OF-UTTERANCE:**
✗ Lena said *"There's no bread"* as an explanation for some other fact/as a comment on something/as a clarification of something.

This suggests that clauses that describe the content of utterance have to be bare. These data however do not tell us whether it is possible for bare clauses to express THEME arguments in addition to describing the content of utterance.

Recall also that whenever a clause can receive the same interpretation as an accusative DP that combines with the verb, the demonstrative is optional with it:

(133) a. Èto dokazyvaet, [ètu gipotezu].
this proves this hypothesis.ACC
'This proves this hypothesis.'

b. Èto dokazyvaet, [(to) čto ona nevinovna].
this proves (DEM.ACC) COMP she innocent
'This proves that she is innocent.'

There are two hypotheses that we could entertain about this optionality: either both bare and nominalized CPs can denote THEME arguments, or THEME arguments

are always nominalized, and the optionality comes from the rules of exponence. I would like to suggest that evidence from nominalized verbs of speech can adjudicate betweem these hypotheses in favor of the latter. While verbs of speech under consideration all assign accusative case to DP arguments (134), they lose their ability to assign accusative when they become nominalized: nominalizations of verbs of speech permit genitive THEME DPs only (135).

(134) Ja ob"jasnila/(pro)interpretirovala/(pro)kommentirovala ètot **fakt**.
I explained/interpreted/commented.on this **fact.ACC**
'I explained/interpreted/commented on this fact.'

(135) ob"jasnenie /interpretacija /kommentirovanie
explanation /interpretation /comment
ètogo **fakt-a** /*ètot **fakt**.
this **fact-GEN** /this **fact.ACC**
'explanation/interpretation/commenting of this fact.'

Given that genitive is an oblique case, and oblique demonstratives on top of CPs must be always overtly expressed if the clause is nominalized (see section 4.3.3), we can use nominalizations of verbs of speech to test the nature of the optionality of the demonstratives with verbs like 'explain'. Consider (136)–(137).

(136) *that.GEN + CP: only THEME interpretation*

Ob"jasnenie /interpretacija /kommentirovanie /utočnenie
explanation /interpretation /commenting /clarification
[**togo** **čto** drugogo vyxoda net] rasstroilo/a nas.
DEM.GEN COMP other way not.exist upset.NEU/FEM us

'The explanation of/interpretation of/comment on/clarification of the fact/position that there is no other way upset us.'

a. **THEME:** ✓'The explanation of/interpretation of/commenting on /clarification of the fact/position that there's no other way upset us.'
b. **CONTENT-OF-UTTERANCE:** ✗'The explanation/interpretation of /comment/clarification that said *"There's no other way"* upset us.'

(137) *No demonstrative: only Content-of-Utterance interpretation*

Ob"jasnenie /interpretacija /kommentirovanie /utočnenie
explanation /interpretation /commenting /clarification
[**čto** drugogo vyxoda net] rasstroilo/a nas.
COMP other way not.exist upset.NEU/FEM us

'The explanation/interpretation/comment/clarification that there is no other way upset us.'

a. **THEME:** ✗'The explanation of/interpretation of/comment on /clarification of the fact/position that there's no other way upset us.'
b. **CONTENT-OF-UTTERANCE:** ✓'The explanation/interpretation /comment/clarification that said *"There's no other way"* upset us.'

With nominalized verbs of speech, the ambiguity disappears. In sentences with the demonstrative in genitive case, the clause has to be interpreted as describing the object undergoing the eventuality described by the verb. In sentences without the demonstrative, the clause must be interpreted as describing the content of the utterance. If bare CPs could be interpreted as THEMES, the sentence in (137) would have been ambiguous, but it is not. This suggests that the optionality of the demonstrative is optionality of how the nominalizing head can be exponed, not optionality of having a nominalized layer on top of the clause.[52] For example, we could imagine

[52]The same holds for nominals derived from verbs like *dokazyvat'* 'prove' (for English *proof*, see discussion in Moulton 2009: pp. 66–76). The object of *dokazatel'stvo* 'proof' has to occur with the demonstrative in genitive case, as is illustrated in (i).

(i) Dokazatel'stvo [*(togo) čto ona nevinovna] bylo [čto ona ne mogla naxodit'sja na
proof DEM.GEN COMP she is.innocent was COMP she NEG could be.located.INF on
meste proisšestvija].
place accident.GEN
'The proof of her being innocent was that she couldn't have been at the place of the accident.'

The clause in the post-copular position describes the content of the proof, and thus the clause that directly combines with the nominalization has to describe the object undergoing the proof. As we see, a bare CP cannot describe this THEME argument. When bare CPs combine with 'proof', they describe what the content of the proof was, what was said in attempt to prove something:

(ii) On predjavil dokazatel'stvo, [čto (jakoby) ona ne mogla naxodit'sja na meste
he presented proof COMP (allegedly) she NEG could be.located.INF on place
proisšestvija].
accident.GEN
'He presented the proof, the content of which was that (allegedly) she couldn't have been at the place of the accident.'

that the rules for Vocabulary Insertion for D^o have some underspecification in them:

(138) $D^o \Leftrightarrow$ *to* /_____ NOM, ACC
$\Leftrightarrow \varnothing$ /_____ ACC (structural)[53]
$\Leftrightarrow$ *togo* /_____ GEN
$\Leftrightarrow$ *tomu* /_____ DAT
$\Leftrightarrow$ *tem* /_____ INSTR

Alternatively, it could be that verbs that assign accusative case can lexicalize spans contatining the D^o head of the clause they combine with (Knyazev 2022, see ft. 33 for discussion). Whatever the implementation is, it has to ensure that the optionality stems from how the D^o head in accusative DP complements to verbs can be lexicalized, and not from any structural difference between the clauses.

There is some additional evidence that supports the idea that THEME-describing clauses without overt demonstratives with verbs like 'explain' are nominalized. One piece of evidence comes from proform substitution. Consider (139)–(140).

(139) A: Maša ob"jasnila /prokommentirovala /zametila
Masha explained /commented /noted
[čto nikto ne prišël]$_k$?
COMP no one NEG came
'Did M. explain/comment-on/note (the fact) that no one came?'
B: Da, Maša **èto**$_k$ ob"jasnila /prokommentirovala /zametila.
yes Masha this explained /commented.on /noted
'Yes, Masha explained/commented on/noted this.'

(140) A: Maša ob"jasnila /prokommentirovala /zametila
Masha explained /commented /noted
[čto nikto ne prišël]$_k$?
COMP no one NEG came
'Did Masha explain/comment/note (by saying) that no one came to the class?'

[53] Recall from discussion in section 4.3 that accusative nominalized clauses that are complements of prepositions must occur with overt *to* on top of them, (67b).

B: * Da, Maša **èto**$_k$ ob"jasnila /prokommentirovala /zametila.
yes Masha this explained /commented.on /noted
'Yes, Masha explained/commented/noted this.'

C: Da, tak i skazala.
yes so and said
'Yes, she said so.'

In (139) A asks a question with the Theme reading of the embedded clause in mind: they're asking whether Masha explained/commented on/noted the fact that no one came. If that is the intended intepretation, then B can answer by using the proform *èto* to substitute for the CP. As we discussed in section 4.3.3, *èto* is a proform that has nominal distribution and can refer back to nominalized CPs. The fact that *èto* can refer back to the embedded clause in A's question suggests that the clause in A's question was nominalized.

In (139) A utters the same question with a different interpretation in mind: they would like to know whether Masha's explanation/comment/note was *"No one came"*. It is not possible for the person who responds to understand the question in this way, and give the response with *èto* in (140). The fact that *èto* cannot refer back to the embedded clause that is interpreted as the content of utterance suggests that the clause in A's question was not nominalized.

The *wh*-word *čto* 'what' and indefinite pronouns, e.g. *čto-to* 'something' or *koe-čto* 'something', can also only be understood as Theme arguments with the verbs like *ob"jasnit'* 'explain'. This is illustrated in (141)-(142). In (141) *čto* 'what' has to be asking about the object of the explanation/interpretation/justification, and can't be asking about their content. Indefinites in (142) can also only be understood as objects of explanation, which is further corroborated by the impossibility of a continuation with a clause that describes the content of the utterance.

(141) Čto Maša ob"jasnila /prointerpretirovala /obosnovala?
what Masha explained /interpreted /justified
Theme: ✓'What (fact) did Masha explain/interpret/justify?'.
Content-of-Utterance:
✗'What did Masha say as an explanation/interpretation/justification?'

(142) Nadja čto-to /koe-čto ob"jasnila. A imenno,
Nadya what-SPEC /KOE-what explained and concretely
'Nadya explained something. Specifically,
THEME: Nadya provided an explanation for something.
CONTENT-OF-UTTERANCE: *Nadya said something as an explanation.

a. ... ona ob"jasnila ètot fakt.
she explained this fact
'...she explained this fact.'

b. ... ona ob"jasnila čto dver' byla nezaperta.
she explained COMP door was open
'...she explained that the door was unlocked.'
THEME: ✓Yes, she explained (the fact) that the door was unlocked.
CONTENT-OF-UTTERANCE:
✗Yes, she said *"The door was unlocked"* as an explanation of some fact.

Thus, we see that CPs describing the Content of the Utterance cannot be substituted by proforms with nominal distribution, whereas CPs that describe the THEME allow such substitution. This corroborates our hypotheses that the former must be bare, whereas the latter must be nominalized.[54]

[54]One might wonder whether there is any proform at all that can substitute for the Content-of-Utterance CPs. I suspect that there isn't one. The only plausible candidates are *kak* 'how' and *tak* 'so': in sentences like (i)-(ii) they can be asking about or pointing to the content of the explanation.

(i) **Kak** Lena ob"jasnila *(èto?)
how Lena explained this
'How did Lena explain it?'

(ii) Lena ob"jasnila *(èto) **tak**.
Lena explained (it) **so**
'Lena explained it so.'

However, note that in sentences like (i)-(ii) expression of the THEME argument is obligatory, whereas CPs that describe content of utterance are normally incompatible with THEME arguments:

(iii) *Lena ob"jasnila [ètot fakt]$_{Theme}$ [čto Katja delala buterbrody noč'ju]$_{Content}$.
Lena explained this fact COMP Katya made sandwiches at.night
Intended: 'Lena explained this fact (by saying) *"Katya made sandwiches last night"*.'

Moreover, *kak* 'how' and *tak* 'so' do not have to ask about or point to the content of the explanation, e.g. *bystro* 'quickly' could be a response to (i). Thus, I conclude that *kak* 'how' and *tak* 'so' are manner adjuncts in a structure with a THEME argument rather than proforms for Content-of-Utterance CPs. Is it surprising that there are no proforms for these CPs? Natural languages seem to have verbal modifiers that form a very tight connection with the verb and cannot be substitued by proforms or questioned. Particles in many English phrasal verbs are an example of such modifiers:

(iv) Jill asked Susi out.

Another piece of evidence comes from the differences in abilities of the clauses to move: only clauses that are interpreted as THEME arguments can undergo movement. In (143) we see that an embedded clause has been promoted into the subject position in a sentence with a passivized verb. This CP has to be interpreted as the object of explanation/comment/justification, and cannot be interpreted as the content of the utterance. Because the nominalized clause occupies a position to which NOM case is assigned, the demonstrative on top of it is obligatory (see section 4.3.3).

(143) [*(To) čto ètot algoritm ne rabotaet] bylo ob"jasneno
DEM.NOM COMP this algorithm NEG works was explained
/prokommentirovano /obosnovano Lenoj.
/commented.on /justified by.Lena
'That this algorithm does not work was explained/commented on /justified by Lena.'

a. **THEME:** ✓'The fact/claim that this algorithm does not work was explained/commented on/justified by Lena.'

b. **CONTENT-OF-UTTERANCE:**
✗'*"This algorithm doesn't work"* was said by Lena as an explanation of some fact/as a comment on some claim/justification.'

English CPs in the subject position show the same behavior (Halpert & Schueler 2013): CP in (144) can only be understood as describing the fact that was explained.

(144) That Fido barked was explained.

a. **THEME:** ✓The fact that Fido barked was explained.

b. **CONTENT-OF-UTTERANCE:**
✗*"Fido barked"* was said as the explanation of something.

If only DPs can undergo movement to the subject position in sentences with passivization, then example (143)–(144) show us that THEME-denoting clauses can be nominalized, but clauses that describe the content of the utterance cannot.

---

a. *How did Jill ask Susi? — Out.
b. Did Jill ask Susi out? — * Yes, she asked her so.

So it could be that Content-of-Utterance CPs are similar to particles in phrasal VPs in being a modifier that contributes to the formation of the predicate and that cannot be independently referred to.

In fact, it seems that Content-of-Utterance CPs cannot move at all: e.g., it is not possible to scramble these clauses, but scrambling Theme-CPs is fine, (145).

(145) [Čto xleba net]$_k$ Lena ob"jasnila /prokommentirovala /zametila t_k.
comp bread no Lena explained /commented.on /noted
'Lena explained/commented on/noted that there is no bread.'

a. **Theme:** ✓Lena explained/commented on/noted the fact that there's no bread (e.g., by saying that Katya made sandwiches last night).

b. **Content-of-Utterance:** ✗Lena said *"There's no bread"* as an explanation for some other fact (e.g., for the fact that she sent Petya to the grocery store)/as a comment/as a note.

This distinction between clauses with two types of interpretations might fall under Takahashi's generalization (146), which states that CPs that move are generated in positions that permit DPs.

(146) *The Moved Clausal Complement Generalization*
A clausal complement is allowed to move only if its base-generated position is one in which a DP is allowed to appear.
(Takahashi 2010, via Knyazev 2016b: p. 16)

If clauses that describe Theme arguments are nominalized, whereas Content-of-Utterance CPs are verbal modifiers, then the ability of the former to move and the inability of the latter to move is not surprising.[55]

To sum up, data from demonstratives and nominalizations, as well as data from proform substitutions and movement all converge on the conclusion that with verbs like 'explain', clauses that describe the object undergoing the eventuality described by the verb must be nominalized, but clauses that describe the content of the utterance must be non-nominalized. In section 4.6 we will see further support for this conclusion coming from extraction: Theme-CPs and Content-of-Utterance CPs differ in whether movement out of them is possible, in the way that suggests that

[55]There are of course verbal modifiers that can undergo A-bar movement. E.g., in (i) the *in*-adverbial moves from the VP to the left periphery of the clause. However, it seems that not all modifiers can do that, e.g., particles of phrasal verbs are unable to undergo topicalization (ib).

(i) a. In 10 seconds, the peanutbutter pie was gone.
b. *Out, I would like Susi to ask me.

the former, but not the latter are nominalized. Thus, the appearance of ambiguity of *čto*-clauses arises because the nominalizing head D^o can have null phonological exponence when the DP it heads receives accusative case from the verb.

In this section we have seen that only nominalized clauses can be THEME arguments of verbs: bare CPs can only describe propositional content associated with the situation argument of the verb. What verbs seem to differ in, however, is whether THEME arguments of verbs and bare CPs can co-occur. In (119), repeated below as (147), we saw that Korean verb *haysekha-* 'interpret' allows a bare CP describing the content of the interpretation to co-occur with a THEME argument:

(147) Swuna-ka [hoysa-ka hyepsang-ul ha-l cwunpi-ka
Swuna-NOM company-NOM negotiation-ACC do-FUT.ADN preparation-NOM
toy-**ess-ta-ko**] [ku palphyomwun-ul] haysekha-yess-ta.
become-**PST-DECL-COMP** DEM statement-ACC interpret-PST-DECL
'Swuna interpreted that statement, (and her interpretation was) that the company is ready for negotiations.'

Not all verbs allow this: for example, with Russian *ob"jasnit'* 'explain' one cannot have both a THEME argument (expressed with a DP, (148), or a nominalized CP, (149)) and the Content-of-Utterance CP:[56]

[56]It is possible for a nominalized CP to co-occur with a nominalized clause in instrumental case:

(i) Lena ob"jasnila [(**to**), čto v škafu net xleba], [**tem,** čto Katja delala
Lena explained (**DEM.ACC**) COMP in cupboard no bread **DEM.INSTR** COMP Katya made
buterbrody].
sandwiches
'Lena explained the fact that there is no bread in the cupboard with (the claim) Katya made sandwiches.'

However, these instrumental nominalized CPs do not have much in common with the bare embedded clauses. First, instrumental CPs need not describe the Content of the Utterance, e.g. in (i) Lena need not have said *"Katya made sandwiches"*. It is sufficient for her to just draw attention of other people to a claim or situation that Katja made sandwiches in some way. For example, she might have shown others a text message that she received which claims that Katya made sandwiches. Such a context would not provide a sufficient requirement for using a bare CP.

Second, whereas Content-of-Utterance CPs are incompatible with the presence of THEME arguments, it is ungrammatical to have an instrumental CP without a THEME argument:

(ii) *Lena ob"jasnila [**tem,** čto Katja delala buterbrody].
Lena explained **DEM.INSTR** COMP Katya made sandwiches
Intended: 'Lena explained some fact with the claim that Katya made sandwiches.'

(148) *Lena ob"jasnila [ètot fakt]$_{Theme}$
Lena explained this fact
[čto Katja delala buterbrody noč'ju]$_{Content}$.
COMP Katya made sandwiches at.night
Intended: 'Lena explained this fact (by saying)
"Katya made sandwiches last night".'

(149) *Lena ob"jasnila [(to) čto xleba net]$_{Theme}$
Lena explained (DEM) COMP bread no
[čto Katja delala buterbrody noč'ju]$_{Content}$.
COMP Katya made sandwiches at.night
Intended: 'Lena explained (the fact) that there's no bread (by saying)
"Katya made sandwiches last night".'

With other speech verbs of this class, one sometimes encounters naturally occuring examples where a THEME and a bare CP describing the content of the utterance co-occur. For example, in (150) and (151) we see such examples with *prokommentirovat'* 'comment' and *argumentirovat'* 'argue' respectively.

(150) **Context:** The speaker was told at the hospital desk that they could see the doctor, but it turned out that the doctor doesn't admit patients. Maria is a hospital manager.
Maria [dannuju situaciju]$_{Theme}$ prokommentirovala,
Maria this situation commented.on
[čto ona tut ni pri čëm]$_{Content}$.
COMP she here not by something
'Maria commented on this situation [that the speaker was booked an appointment for a day when a doctor doesn't admit patients] [by saying] that it's not her fault.' <Link>

This suggests that instrumental CPs are adjuncts inside of sentences with THEME arguments. Moreover, instrumental CPs differ from Content-of-Utterance CPs in basically all the properties that I show the latter to have. While Content-of-Utterance CPs cannot be substituted by DPs, instrumental CPs can be (e.g., *včerašnej večerinkoj* 'with the yesterday's party' can occur in (i) instead of a CP); Content-of-Utterance CPs do not have proforms, but instrumental CPs do (*čem* 'with what', *tem* 'with that'), Content-of-Utterance CPs cannot move and do not constitute islands for movement, but instrumental CPs can move and are islands for movement, etc. Based on this total lack of common properties, I conclude that the two kinds of clauses are not related derivationally in any way.

(151) ...meždu pročim on [svoju poziciju]$_{Theme}$ argumentiroval —
between other he self's position argued
[čto komandu sozdaëm iz molodyx i perspektivnyx]$_{Content}$...
COMP team are.making from young and high-potential
'...by the way, he argued for his position, (saying) that we are building team from young (players) with high potential...'
(from a forum of the soccer club Krylia Sovetov, page no longer exists)
Judgement of native speakers:
the position that is defended can be unrelated to the CP, e.g., the position could be that the team has good chances of winning

Currently I do not have a theory that would predict why some verbs allow Theme-arguments to co-occur with Content-of-Utterance clauses, while others forbid such combinations. My hunch is that an important aspect of this variation might be coming from the properties of event structure and aktionsart of different verbal predicates, and from how these properties are mapped onto the syntactic representations. See appendix 4.9 for some discussion of these issues in Russian.

4.4.3 Bare CPs cannot be About-arguments

The third case study that I would like to consider involves About-arguments or *res*-arguments: individuals that the situation described by the verbal predicate is about (Quine 1956, Cresswell & von Stechow 1982). As we will see, in order for a clause to describe such an argument, it has to be nominalized; bare CPs cannot denote About-arguments. While the main discussion in this section will be about the verb *hanaxa* 'think' in Buryat, let us first consider Korean verb *sayngkakha-* 'think':

(152) Mina-nun [talamcuy-ka ttangkhong-ul mek-ess-ta-**ko**]
Mina-TOP squirrel-NOM peanut-ACC eat-PST-DECL-**COMP**
sayngkakha-n-ta.
think-PRS-DECL
✓ 'Mina thinks that the squirrel ate the peanuts.'
✗ 'Mina thinks about the fact that the squirrel ate the peanuts.'

(153) ?Mina-nun [talamcuy-ka ttangkhong-ul mek-ess-ta-nun /mek-un
Mina-TOP squirrel-NOM peanut-ACC eat-PST-DECL-ADN /eat-ADN
kes-ul] sayngkakha-n-ta.
thing-ACC think-PRS-DECL
✓ 'Mina thinks about the fact that the squirrel ate the peanuts.'
(*the sentence doesn't tell us what Mina's thoughts on the matter are*)
✗ 'Mina thinks that the squirrel ate the peanuts.'
(*Mina's thoughts are "The squirrel ate the peanuts"*)

We see that when *sayngkakha-* 'think' combines with a bare CP with the complementizer *-ko*, the clause must describe the content of Mina's thoughts. When the same verb combines with a nominalized clause, the result is slightly degraded, but the interpretation is clearly different: the clause describes *what Mina thought about*, not the content of her thoughts. Thus, we see that the presence of nominalization and the interpretation of the embedded clause are again in a one-to-one correspondence: nominalized CP ⇔ ABOUT-argument, bare CP ⇔ content of thoughts.

Now let us turn to the data from Buryat.[57] Buryat has a verb *hanaxa*, and when this verb combines with bare CPs (*gəžə*-clauses), it is naturally translated as 'think':

(154) a. Dugar [$_{CP}$ mi:sgəi zagaha ədj-ə: gəžə] han-a:.
Dugar cat.NOM fish eat-PST COMP think-PST
'Dugar **thought** that a cat ate the fish.'

b. **Context:** The fish was missing; Dugar was wrong about who ate it.
Dugar [mi:sgəi zagaha əd-jə: gəžə] han-a:, xarin mi:sgəi zagaha
Dugar cat.NOM fish eat-PST COMP think-PST but cat fish
ədj-ə:-güj.
eat-PST-NEG
'Dugar **thought** that a cat ate the fish, but a cat didn't eat the fish.'

As we see in (154b), when *hanaxa* combines with a *gəžə*-clause, it does not exhibit a factive inference: negating that a cat ate the fish is compatible with uttering that Dugar thinks that a cat ate the fish. The clause in (154b) can only be understood as describing the content of thoughts, not the topic of thoughts.

When however *hanaxa* combines with DPs, (155a), or nominalized Sit-CPs, (155b),

[57] The discussion in this section is based on my paper Bondarenko 2020.

it is naturally translated as 'remember'.

(155) a. Dugar mi:sgəi-jə han-a:.
Dugar.NOM cat-ACC think-PST
Paraphrase: 'There was/is a cat, and Dugar thought of it.'
Translation: 'Dugar **remembered** a cat.'

b. Dugar [$_{NMN}$ mi:sgəi-n zagaha ədj-ə:š-i:jə-n'] han-a:.
Dugar.NOM cat-GEN fish eat-PART-ACC-3 think-PST
Paraphrase: 'A cat ate the fish, and Dugar thought of that.'
'Dugar **remembered** a cat's eating the fish.'

The individual described by the DP or the nominalized clause denotes the object of thinking—*what the thinking is about*. The 'remember' translation seems to reflect that there is a presupposition associated with this ABOUT-individual. When the ABOUT-argument is expressed by the nominalized Sit-CP, part of this presupposition is a factive inference. This is illustrated in (156) and (157).

(156) **Context:** The fish was missing; Dugar is wrong about who ate it.

Dugar [mi:sgəi-n zagaha ədj-ə:š-i:jə-n'] han-a:,
Dugar cat-GEN fish eat-PART-ACC-3 think-PST
xarin mi:sgəi zagaha ədj-ə:-güj.
but cat fish eat-PST-NEG

'Dugar **remembered** a cat's eating the fish, but a cat didn't eat the fish.'

(157) **Context:** The speaker is ignorant about the issue, but wants to report Sajana's opinion/memory.

Bi Badma tərgə əmdəl-ə: gü gəžə məd-nə-güi-b...
1SG.NOM Badma.NOM cart break-PST Q COMP know-PRS-NEG-1SG

'I don't know whether Badma broke the cart...'

a. # ...(xarin) Sajana [Badm-i:n tərgə əmdl-ə:š-i:jə] han-a:.
(but) Sajana.NOM Badma-GEN cart break-PART-ACC think-PST
'...(but) Sajana remembered that Badma broke the cart.'

b. ...(xarin) Sajana [Badma tərgə əmdl-ə: gəžə] han-a:.
(but) Sajana.NOM Badma.NOM cart break-PST COMP think-PST
'...(but) Sajana thought that Badma broke the cart.'

The sentence in (156) is contradictory: the continuation *"A cat didn't eat the fish"* is incompatible with the preceding clause. In (157) we see that the speaker being ignorant about whether Badma broke the cart or not is incompatible with them uttering the sentence with a nominalized Sit-CP in (157a).

So the question that the data above bring about is: what gives rise to this factivity alternation, and why are bare embedded clauses interpreted differently from nominalized clauses and ordinary DP arguments? Let us first consider the inference we get in sentences with nominal arguments in more detail.

There is more to this inference than factivity. It seems that *hanaxa* requires a certain temporal relationship to hold between the situation described by the verb and the ABOUT-argument. For example, if the speaker utters (158a), they can follow it up with (158b), but not with (158c): Sajana remembering on Tuesday Badma's breaking the cart is compatible with Badma starting the breaking on Monday, but not on Wednesday, provided we are talking about the days of the same week.[58]

(158) a. Garag-ai xojor-to Sajana [Badm-i:n tərgə əmdəl-ə:š-i:jə-n']
day-GEN two-DAT Sajana.NOM Badma-GEN cart break-PART-ACC-3
han-a:.
think-PST
'On Tuesday Sajana remembered Badma's breaking the cart.'

b. ... Badma tərgə garag-ai nəgən-də əmdələ-žə əxil-ə:.
Badma.NOM cart day-GEN one-DAT break-CVB begin-PST
'Badma began to break the cart on Monday.'

c. ...# Badma tərgə garag-ai gurban-da əmdələ-žə əxil-ə:.
Badma.NOM cart day-GEN three-DAT break-CVB begin-PST
'Badma began to break the cart on Wednesday.'

In other words, it seems that the individual that is interpreted as the ABOUT-argument (the situation of Badma's breaking the cart in (158)) has to come into existence before the situation of thinking about it begins. I will call this presupposition ***pre-existence presupposition***. Consider (159)–(160), which illustrate this

[58] In Buryat the names of the days of the week are based on numerals, and in the literary Buryat Sunday is viewed as the first day: *garag-ai nəgən* (day-GEN one), 'Sunday' (Cheremisov 1973: p. 147). In the village where we gathered our data, however, Monday is considered to be the first day of the week, and thus *garag-ai nəgən* (day-GEN one) means 'Monday', *garag-ai xojor* (day-GEN two) — 'Tuesday', and *garag-ai gurban* (day-GEN three) — Wednesday.

presupposition with ordinary individuals denoted by DPs:

(159) **Context:** Currently Seseg has a child. The speaker is talking about some time 7 years ago.

Sɵsɵg gar-ga-x-a: bai-ga:n üxibü-jɵ: han-a:.
Seseg go.out-CAUS-POT-REFL be-PFCT child-ACC.REFL think-PRS

'Seseg remembered her future child.'
(lit. 'her child that will be caused to go out of her')

a. ✓**Context A:** 7 years ago, Seseg was pregnant with a baby, she has seen her/him during an ultrasound.
b. #**Context B:** 7 years ago, Seseg was not pregnant. But she really wanted a baby and was planning to have one.

(160) **Context:** Children at school are asked to imagine a magical animal that does not exist and draw it.

a. # Badma naiman tarxi-tai mi:sgɵj-(ɵ) hana-na.
Badma eight head-COM cat-(ACC) think-PRS
#'Badma is remembering an eight-headed cat.'
b. Badm-ain tarxi so: naiman tarxi-tai mi:sgɵj or-o:.
Badma-GEN head in eight head-COM cat come-PST
'Badma is thinking of an eight-headed cat.'
(lit. 'An eight-headed cat came into Badma's head.')

In (159) Seseg's child exists in the actual world at the time of the utterance, but this is not sufficient for (159) to be felicitous: the child needs to have existed before the matrix time, which in this case is some contextually salient time 7 years ago. Assuming that a time interval corresponding to an animate individual is its life span, (159) suggests that *hanaxa* requires that the left boundary of the time interval corresponding to its ABOUT-argument has to be before the left boundary of the situation of thinking. Note that there is no requirement for the right boundary of the time interval corresponding to the ABOUT-argument to be before the time of thinking: the child does not have to be dead for (159) to be felicitous.[59]

[59]The same observation can be made about nominalized Sit-CPs: the right boundary of the time interval corresponding to the situation described by Sit-CP in principle could be after the matrix time, although this depends on the tense/aspect within the nominalized clause. But one form that

In (160) the context requires that a fictional charachter of an eight-headed cat does not exist prior to Badma's thinking. We see that it is impossible to express the desired meaning with 'an eight-headed cat' being the direct object of *hanaxa*. Instead, a different construction has to be used, where the mental attitude is expressed without a designated attitude verb (lit. 'come into one's head').

Note that the pre-existence presupposition only arises when the ABOUT-argument is an internal argument of the verb. When *hanaxa* combines with a PP with the postposition *tuxai* 'about', no such presupposition is observed:

(161) a. Sʊsʊg gar-ga-x-a: bai-ga:n üxibü-n tuxai-ga:
Seseg go.out-CAUS-POT-REFL be-PFCT child-NOM about-ACC.REFL
hana-na.
think-PRS
'Seseg is thinking about her future child.'
✓ **Context:** Seseg is not pregnant.

b. ? Badma naiman tarxi-tai mi:sgʊj tuxai hana-na.
Badma eight head-COM cat about think-PRS
'Badma is thinking about an eight-headed cat.'
✓ **Context:** Badma is imagining a non-existing magical animal.

Thus, being a phrase that describes the object of thoughts is not sufficient for being subject to the pre-existence inference, combining via Θ_{About} is necessary.

Thus, I propose that in sentences where *hanaxa* combines with a nominal phrase (noun or nominalized clause), there is a pre-existence inference:

(162) **The pre-existence inference:**
(i) The ABOUT-argument of the situation described by *hanaxa* exists in the

admits the right boundary being after the matrix time is progressive ('be' + converb):

(i) a. **Context:** Ojuna was at a concert and left after Sajana started singing. Sajana is still singing now, and Ojuna is recalling her (ongoing) singing.
b. Ojuna [Sajan-i:n du: du:la-ža bai-x-i:jʊ] hana-na.
Ojuna Sajana-GEN song sing-CVB be-POT-ACC think-PRS
'Ojuna is remembering that Sajana is singing a song.'

In (i) the left boundary of Sajana's singing is before the utterance time, and the right boundary of Sajana's singing is after the utterance time. As we see, this is felicitous, further confirming that *hanaxa*'s presupposition does not place constraints on the right boundary of the ABOUT-argument.

situation at which *hanaxa* is evaluated (in the matrix situation);
(ii) The left boundary of the time interval that the time function τ returns when applied to the ABOUT-argument of the situation described by *hanaxa* is before the time at which *hanaxa* is evaluated (before the matrix time).

I conjecture that it is the pre-existence presupposition that gives rise to the 'remember' translation. While the meaning that we get is compatible with many contexts in which verbs like English *remember* could be used, it is different from such verbs in that it does not require the attitude holder to have previously had a mental state the same kind. This is illustrated in (163).

(163) Üsəgəldər Səlməg Badm-i:n hain xüdəl-dəg-i:jə türü:šənxijə:
yesterday Selmeg Badma-GEN well work-HAB-ACC for.the.first.time
han-a:.
think-PST
'Yesterday Selmeg thought for the first time of Badma working well.'
✓**Context A:** We have all known for a long time that Badma works very well. Selmeg, however, didn't have any thoughts on whether Badma worked well until yesterday.
Comment: '*Ojlgoxo* 'understand, sense' is better fit for this context, but *hanaxa* is acceptable too.'[60]
#Context B: We don't know if Badma works well. Selmeg didn't have any thoughts on whether Badma worked well until yesterday.

If *hanaxa* described memories when it combined with nominal phrases, then modification by *türü:šənxijə:* 'for the first time' should have been impossible: the attitude holder needs to have a previous mental state about an entity/event in order to remember them. The fact that such modification is possible suggests that *hanaxa*'s meaning does not reference memories or previous mental states: the pre-existence presupposition is about existence in the world at which *hanaxa* is evaluated.

The pre-existence inference is a presupposition: for example, it projects in questions (164) and from under negation (165). The projected inference is in (166).

[60]The preference for using *oilgoxo* 'understand, sense' in the context A is likely due to *Maximize Presupposition!*: *oilgoxo* presupposes that the attitude holder was unaware of the individual denoted by its internal argument before, and whenever this presupposition is met, using *oilgoxo* is preferred.

(164) **Context:** The speaker is ignorant about whether Badma broke the cart or not, and is wondering whether Sajana might have thoughts on the matter.
Bi Badma tərgə əmdəl-ə: gü gəžə mədə-nə-güi-b,
1SG.NOM Badma.NOM cart break-PST Q COMP know-PRS-NEG-1SG
Sajana [Badm-i:n tərgə əmdəl-ə:š-i:jə] hana-na gü?
Sajana.NOM Badma-GEN cart break-PART-ACC think-PRS Q
Intended: 'I don't know whether Badma broke the cart or not. Does Sajana think/remember that Badma broke the cart?'

(165) **Context:** The speaker wants to convey that Sajana's thoughts are consistent with reality.
[Badm-i:n tərgə əmdəl-ə:š-i:jə] Sajana han-a:-güi,
Badma-GEN cart break-PART-ACC Sajana.NOM think-PST-NEG
Badma tərgə əmdəl-ə:-güi.
Badma.NOM cart break-PST-NEG
Intended: 'Sajana didn't think/remember that Badma broke the cart, (and) Badma didn't break the cart.'

(166) **Projected inference:** There is a situation described by the nominalization in the situation at which *hanaxa* is evaluated that started before the time at which *hanaxa* is evaluated.

I propose that the presupposition is introduced by a functional head Θ_{About}, (167), which can combine with the verb *hanaxa* and introduce the argument which the thinking situation is about. Θ_{About} combines with a predicate of situations f and an individual x, and it returns back a predicate of situations which can be only true of situations such that x is part of them and the left boundary of the time interval corresponding to x is before the time of evaluation.

(167) $[\![\Theta_{About}]\!]^{s,t,g} = \lambda f\text{: } f \in D_{st}.\lambda x.\lambda s'\text{: } x \sqsubseteq s \wedge LB(\tau(x)) < t.\ f(s') \wedge \textsc{about}(s') = x.$
(where LB is 'left boundary'; ABOUT is a function that takes a situation with Content and returns its topic)

One alternative to making a theta-head the source of the presupposition is a hypotehsis that the presupposition comes from the complement (Kiparsky & Kiparsky 1970, Kallulli 2010, De Cuba 2007, De Cuba & Urogdi 2010, Kratzer 2006, Kastner

2015, Hanink & Bochnak 2017, a.m.o.). While presuppositions might come from complement clauses in some cases, it is implausible that this is happening in the case at hand. First, note that presuppositionality cannot be just due to the nominal status of the complement. Verbs *ətigəxə* 'believe' and *naidaxa* 'hope', which can take nominalized clauses of the same form and assign dative case to them, do not exhibit any presuppositions; e.g., there is no factive inference with them:[61]

(168) Sajana [Badm-i:n tərgə əmdəl-ə:š-tə-n'] ətig-ə:, xarin Badma tərgə
Sajana Badma-GEN cart break-PART-DAT-3 believe-PST but Badma cart
əmdəl-ə:-güi.
break-PST-NEG
'Sajana believed that Badma broke the cart (lit. 'in Badma's breaking the cart'), but Badma didn't break the cart.'

(169) Sajana [Səsəg-əi xada də:rə gar-a:ša-da] naida-na, xarin Səsəg
Sajana Seseg-GEN mountain up go.to-PART-DAT hope-PRS but Seseg
xada də:rə gar-a:-güi.
mountain up go.to-PST-NEG
'Sajana hopes that Seseg went up the mountain (lit. 'in Seseg's going up the mountain'), but Seseg didn't go up the mountain.'

Second, the presuppositionality cannot be reduced to definiteness: the individual denoted by the ABOUT-argument does not have to be unique, and hence can be indefinite, as is illustrated in (170) with the nominalized complement.

(170) Darima [Sajan-i:n Burjati tuxai du: du:l-a:š-i:jə] han-a:, Səsəg
Darima Sajana-GEN Buryatia about song sing-PART-ACC think-PST Seseg
[Sajan-i:n Burjati tuxai du: du:l-a:š-i:jə] han-a:, Narana baha
Sajana-GEN Buryatia about song sing-PART-ACC think-PST Narana also

[61] Danny Fox (p.c.) asked me whether it could be the case that the absence of factivity with these verbs arises because there is an extra layer of intensionality introduced in sentences with them, which makes the presupposition coming from the nominalized clause undetectable. This is in principle possible, but raises the question of what is the source of this extra layer (a different Θ-head, perhaps?) and also the issue of why the presupposition introduced by the clause cannot project over it, as presuppositions are able to do in other cases.

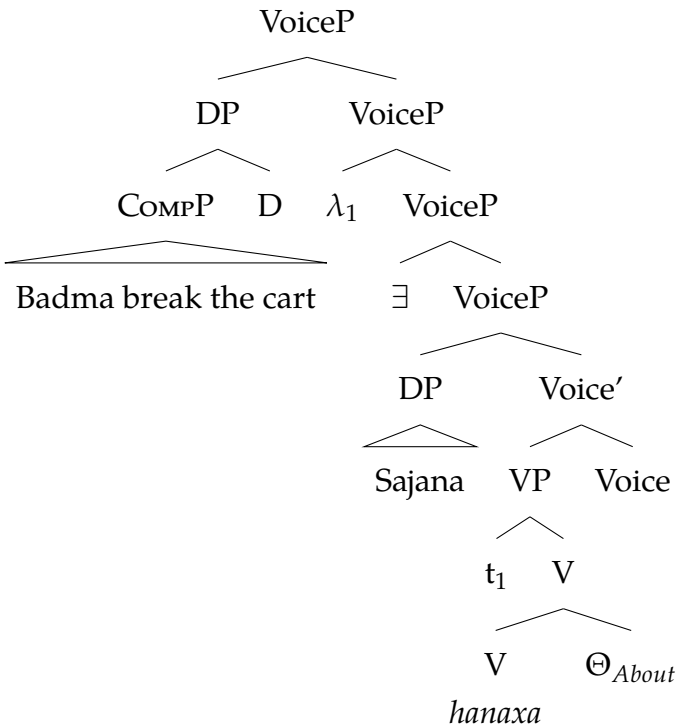
[Sajan-i:n Burjati tuxai du: du:l-a:š-i:jɵ] han-a:.
Sajana-GEN Buryatia about song sing-PART-ACC think-PST
'Darima remembered Sajana's singing a song about Buryatia, Seseg remembered Sajana's singing a song about Buryatia, and Narana also remembered Sajana's singing a song about Buryatia.'

a. ✓**Context A: They remembered different singings.**
There were several performers at the concert, one of them was Sajana. She sang several songs about Buryatia and a few Russian folk songs. After a while I asked three women who were at the concert their impressions.

b. ✓**Context B: They remembered the same singing.**
There were several performers at the concert, one of them was Sajana. She sang only one song about Buryatia and a few Russian folk songs. After a while I asked three women who were at the concert their impressions.

Thus, we need to derive the presupposition even with indefinite nominal complements. I assume that when the complement is indefinite, it will undergo QR (171).

(171)



Assuming that the presupposition of the Θ_{About} projects, and that the existential quantifier over times introduced by T is contextually restricted by a time interval t_2, we will get the truth-conditions in (175) for a sentence in (172).[62]

(172) Sajana [Badm-i:n tərgə əmdəl-ə:š-i:jə-n'] han-a:.
Sajana.NOM Badma-GEN cart break-PART-ACC-3 think-PST
'Sajana remembered Badma's breaking the cart.'

(173) $[\![$*Sajana hanaxa* $[\varnothing_a$ COMP *Badma break the cart*$]]\!]^{s,t,g}$ =

$$\begin{cases} 1 \text{ iff } \exists t' < t, t' \subseteq g(2) \\ \quad [\exists s', s''[^{\Vdash_e} think(s')_{s,t'} \wedge \textsc{Holder}(s') = \text{Sajana} \wedge \textsc{About}(s') = s'' \\ \quad \wedge s'' \sqsubseteq s \wedge LB(\tau(s'')) < t' \wedge s'' \Vdash_e \{\text{s: Badma broke the cart in s}\}]] \\ 0 \text{ iff } \forall t' < t, t' \subseteq g(2) \\ \quad [\exists s''[s'' \sqsubseteq s \wedge s'' \Vdash_e \{\text{s: Badma broke the cart in s}\} \wedge LB(\tau(s'')) < t'] \\ \quad \wedge \neg[\exists s', s''[^{\Vdash_e} think(s')_{s,t'} \wedge \textsc{Holder}(s') = \text{Sajana} \wedge \textsc{About}(s') = s'' \\ \quad \wedge s'' \sqsubseteq s \wedge LB(\tau(s'')) < t' \wedge s'' \Vdash_e \{\text{s: Badma broke the cart in s}\}]]] \\ \# \text{ otherwise} \end{cases}$$

The sentence will be true just in case at some prior time there is a situation of thinking by Sajana, and this thinking is about a situation that is part of the evaluation situation, pre-exists the thinking and exemplifies Badma breaking the cart. The sentence will be false if for all times t' in the contextually salient time interval that is before the time of evaluation the following is true. There is a situation that is part of the evaluation situation, which started before t' and which exemplifies Badma's breaking the cart, and it's not the case that there is thinking by Sajana about a pre-existing situation of Badma breaking the cart. The sentence is undefined otherwise.

Thus, the sentence in (172) presupposes that there is a situation of Badma break-

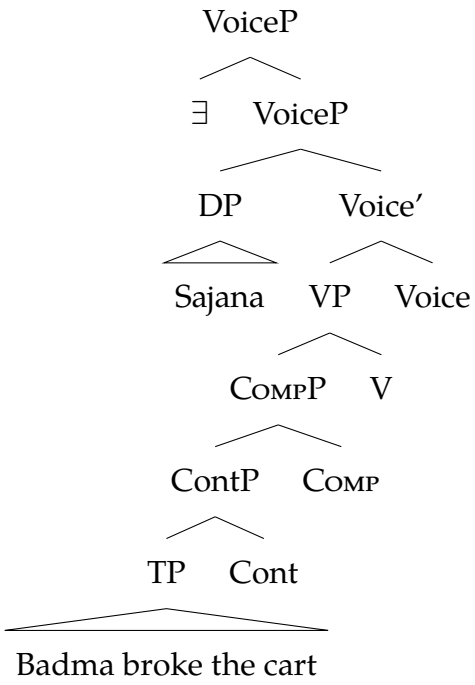
[62] The issue of presupposition projection from quantificational sentences is quite complex (see Heim 1983, Beaver 2001, Chierchia 1995, Chemla 2009, Charlow 2009, Fox 2013, a.o.) In Bondarenko 2020 I address the issue of how exactly the pre-existence presupposition projects in sentences with *hanaxa*. Ensuring correct presupposition projection requires either a view that the nominalizations at hand are not generalized quantifiers over individuals but just predicates of individuals (and thus Θ_{About} takes a predicate of individuals as its second argument), or a view that the null indefinite determiner in these nominalizations comes with a presupposition that its restrictor is not empty (see appendix B of the paper for more details).

ing the cart in the situation of evaluation, which started existing before the time at which the matrix verb is evaluated. Note that the factive component of the inference arises due to a combination of two factors: (i) Θ_{About} requires that the individual it takes as an argument is part of the situation of evaluation, (ii) the nominalized Sit-CP denotes a predicate of exemplifying situations. Only when taken together, these two conditions lead to the inference that Badma broke the cart.[63]

When *hanaxa* combines with a bare CP, no Θ_{About} is present in the syntactic structure. A sentence in (174) will thus have the VoiceP with the structure in (175).

(174) Sajana [Badm-i:n tərgə əmdəl-ə: gə-žə] han-a:.
Sajana.NOM Badma-GEN cart break-PST say-CVB think-PST
'Sajana thought that Badma broke the cart.'

(175)



The sentence in (174) will have the truth conditions in (176): it will be true iff at some prior time there is a thinking situation, whose attitude holder is Sajana, and whose propositional content is *"Badma broke the cart"*.

(176) $[\![$*Sajana hanaxa* [Comp Cont *Badma break the cart*]$]\!]^{s,t,g} = 1$ iff

[63] For discussion of how the right boundary of the situation described by the nominalized Sit-CP can be placed, and how that depends on the aspect within the nominalization, see Bondarenko 2020.

$\exists t' < t, \exists s'[^{\Vdash_e}\text{think}(s')_{s,t'} \wedge \textsc{Holder}(s')=\text{Sajana}$
$\wedge\ ^{\Vdash_e}\textsc{Cont}(s')=\{s\text{: Badma broke the cart in } s\}]$

Thus, on my proposal the factivity alternation that we observe is a consequence of how bare and nominalized CPs can be incorporated with the verb. Bare CPs combine by modifying the situation argument. Nominalized CPs combine via argument-introducing heads like Θ_{About}. The two paths will give rise to two distinct interpretations (what the thinking is about vs. what is the content of thinking), and to different inferences, because different presuppositions could be introduced about the situation argument and the About-argument. In Buryat we see the pre-existence presupposition only in sentences with nominal arguments, because this presupposition is placed on the About-argument, and only nominalized clauses and ordinary DPs, but not bare CPs, can describe the About-argument.

Here is some additional evidence that nominalized clauses do not describe the content of the attitude holder's mental state. Consider (177):

(177) **Context:** Badma, Darima and I were in the car. Darima was behind the wheel. Darima was driving way over the speed limit. I was scared the whole trip. I talked after some time to Badma about that trip, and although he generally remembers the trip, he has a different recollection of how fast Darima drove.

Badma [Darim-i:n dɵn türgö:r mašina:r jab-a:š-i:jɵ] hana-na,
Badma Darima-GEN too.much quickly by.car go-PART-ACC think-PRS
xarin Badma [(Darima) dɵn türgö:r mašina:r jab-a: gɵžɵ]
but Badma (Darima) too.much quickly by.car go-PST COMP
hana-na-güj.
think-PRS-NEG

Paraphrase: 'Badma remembers an event of Darima's driving too quickly, but he doesn't think that Darima drove too quickly.'

In (177) there are two clauses with the verb *hanaxa* and the same attitude holder; in the first clause the verb combines with a nominalized Sit-CP, and in the second clause it combines with a bare CP with the lexical material identical to that of the nominalization. If the nominalized clause described Badma's mental state, then this sentence would have been contradictory due to the fact that the second use of *hanaxa*

is under negation. But (177) is felicitous. The description of a situation denoted by the nominalization 'Darima's driving too quickly' is the speaker's description, not Badma's: while Badma recalls something *about* an event of Darima's driving too quickly, his thoughts actually are that she didn't drive too quickly.

Another piece of evidence comes from the inability of nominalized clauses to report false memories. In the context in (178), a bare CP can be used with *hanaxa* to describe Darima's false memory, but the nominalized clause cannot:

(178) **Context:** Darima recalled a situation that happened recently. She heard some unexpected noise in the back yard while she was alone at home. She was afraid to look who it was. Now she is convinced that it was a thief entering the house, but I know for a fact that it was just her brother coming home earlier than expected from Kurumkan.

a. Darima [gər-tə xulgaišan or-o: gəžə] hana-na, xarin
Darima.NOM house-DAT thief.NOM enter-PST COMP think-PRS but
tərə axa-n' Xurumxan-ha: jərə-hən bai-ga:.
that brother-3.NOM Kurumkan-ABL come-PFCT be-PST
'Darima thinks that a thief entered the house, but it was her brother coming back from Kurumkan.'

b. # Darima [gər-tə xulgaišan-ai or-o:š-i:jə] hana-na,
Darima.NOM house-DAT thief-GEN enter-PART-ACC think-PRS
xarin tərə axa-n' Xurumxan-ha: jərə-hən bai-ga:.
but that brother-3.NOM Kurumkan-ABL come-PFCT be-PST
Intended: 'Darima thinks that a thief entered the house, but it was her brother coming back from Kurumkan.'

If nominalized clauses were able to describe content of thinking events, (178b) should have been felicitous.

A nominalized clause describing the ABOUT-argument and a bare CP can co-occur in one sentence: in (179) we see that a nominalized Sit-CP describes a situation that Sajana recalled, and the bare CP describes the content of her thoughts.

(179) **Context:** Last night Badma returned from Kurumkan and made a lot of noise in the middle of the night. Sajana heard the noise and was convinced that a burglar entered the house. She later recalled this event when

I spoke with her.
Sajana [Badm-i:n Xurumxa:n-ha: jər-ə:d bai-ga:š-i:jə-n']
Sajana Badma-GEN Kurumkan-ABL come-CVB2 be-PART-ACC-3
[gər-tə xulgaišan or-o: gəžə] han-a:.
house-DAT burglar go.in-PST COMP think-PST
'Sajana recalled the/an event of Badma returning from Kurumkan, (thinking) that a burglar entered the house.'

Note that it is impossible to swap the interpretations of clauses in (179): (179) does not have a reading where Sajana recalled a situation of a burglar entering the house, thinking about it that Badma returned from Kurumkan.

So far we have only compared sentences in which *hanaxa* combines with bare clauses to sentences in which *hanaxa* combines with nominalized Sit-CPs. Let us consider cases where *hanaxa* combines with nominalized Cont-CPs. My proposal predicts that such sentences should be presuppositional: nominalized Cont-CPs, as other nominalized clauses, will have to combine via the argument-introducing head Θ_{About}. However, the inference that we predict to get is not factive. Cont-CPs range over individuals with propositional content, so we predict that the sentence will presuppose that there is an individual with propositional content described by the embedded clause that exists in the situation of evaluation and whose life span starts before the time at which *hanaxa* is evaluated. This prediction is borne out.

First of all, *gə:šə*-clauses are not factive when they occur with *hanaxa*, as can be illustrated by felicity of sentences like (180).

(180) **Context:**
The cat didn't eat the fish, but someone made a false claim that it did.
Dugar [mi:sgəi-n zagaha əbj-ə: g-ə:š-i:jə] han-a:, xarin mi:sgəi
Dugar cat-GEN fish eat-PST say-PART-ACC think-PST but cat
zagaha əbj-ə:-güi.
fish eat-PST-NEG
'Dugar remembered (the claim) that the cat ate the fish, but the cat didn't eat the fish.'

However, they do exhibit the pre-existence presupposition. As we see in (181), it is infelicitous to use a nominalized Cont-CP with *hanaxa* in a context where we explicitly deny existence of any prior entities with the relevant propositional content.

(181) # Mi:sgəi zagaha ədj-ə: gə-žə xən-šjə xəzə:-šjə han-a:-güi,
cat fish eat-PST say-CVB who-PTCL when-PTCL think-PST-NEG
(xarin) Dugar [mi:sgəi-n zagaha ədj-ə: g-ə:š-i:jə] han-a:.
(but) Dugar cat-GEN fish eat-PST say-PART-ACC think-PST
#'No one has ever thought that the cat ate the fish, (but) Dugar remembered (the claim) that the cat ate the fish.'

The contrast in (182) is another illustration of the presupposition (modeled after Korean examples with nominalized Cont-CPs in Bogal-Allbritten & Moulton 2018):

(182) **Context:** Bair was in the geography class, where the teacher was discussing capitals of different cities. He was not paying attention and thinks that London is an American city.

Bair [London Amərik-i:n xoto gə-žə /#g-ə:š-i:jə] hana-na.
Bair London America-GEN city say-CVB /say-PART-ACC think-PRS

'Bair thinks that London is an American city.'

If nominalized Cont-CPs could just modify the situation argument of the verb and provide the content of thoughts, (182) with a *gə:šə*-clause should have been felicitous, but it isn't. Since a *gə:šə*-clause can only describe the individual that Bair's thinking is about, and that individual has to pre-exist Bair's thinking, it is infelicitous in a context where there hasn't been an individual with propositional content *"London is an American city"* introduced into the context.

To sum up, in this section we have seen that nominalized clauses can denote ABOUT-arguments, but bare CPs cannot. Furthermore, we have seen that different paths of composition that are available for bare and nominalized clauses can be the source of factivity alternations: when there is a presupposition that is associated with an individual argument of the verb, but not with its situation argument, we will observe the presupposition if a clause combines via the individual argument, but not when a clause combines via the situation argument. While in Buryat the path that a clause combines by is reflected in the morphological appearance of the clause, this is not always the case, and so sometimes we will observe factivity alternations of the same kind with clauses that have identical appearance. For example, verbs like *ob"jasnit'* 'explain' in Russian often introduce presuppositions about their THEME arguments, but not about their situation arguments:

(183) Lena ob"jasnila [$_{CP}$ čto v škafu net xleba].
Lena explained COMP in cupboard no bread
'Lena explained that there's no bread in the cupboard.'

a. **THEME:** ⇒ there is no bread in the cupboard.
If *there is no bread* was explained, it has to be a fact.

b. **CONTENT-OF-UTTERANCE:** ⇏ there is no bread in the cupboard.
If *"There is no bread"* was said as an explanation of some other fact, then it could be a false statement. For example, Lena was mistaken, gave an incorrect explanation.

Whether a sentence with *ob"jasnit'* 'explain' in (183) will presuppose that there is no bread in the cupboard depends on how the clause is integrated with the verb and what interpretation it receives. If a clause is nominalized and it combines as the THEME argument, we will get the factive inference: the interpretation of Θ_{Theme} that combines with *ob"jasnit'* 'explain' will require that the argument that it introduces is a fact. If however the clause remains bare and combines by modifying the situation argument, there will be no presupposition about there being no bread in the cupboard, as the verb does not introduce a presupposition that the content associated with its situation argument has to be true in the situation of evaluation.[64]

[64]Most verbs of speech that exhibit argument structure alternations similar to 'explain' do not introduce factive presuppositions, but are nevertheless presuppositional on their THEME argument: they seem to require that this argument exists prior to the situation described by the verb. Consider, for example, *kommentirovat'* 'comment' under the THEME reading of the clause:

(i) Lena ne kommentirovala čto ona spisala test.
Lena NEG commented COMP she cheated test
'Lena didn't comment on (the claim) that she cheated.'

a. **THEME**, SCENARIO 1:
OK: It's common ground that the accusations of Lena cheating are false.

b. **THEME**, SCENARIO 2: #No one claimed that Lena cheated.
Presupposition: There is a claim/opinion that Lena cheated.

The fact that the verb in (i) is negated ensures that any inferences we observe are presuppositions. (i) can be uttered in the context where it is common knowledge among the participants of the conversation that Lena didn't cheat on the test, which shows that *kommentirovat'* 'comment' does not have a factive presupposition. However, it would be very odd to utter (i) in a context where no one has made a claim or thought that Lena cheated on the test. Thus, it seems that this verb comes with a presupposition that the object of the comment has to pre-exist the commenting.

4.5 Bare CPs are verbal modifiers, nominalized CPs aren't

What we have seen so far is that nominalized clauses and bare clauses do not receive the same interpretations when they combine with attitude and speech verbs:

(184) a. Nominalized CPs ⇔ DP Θ-roles (Causer, About, Theme)
b. Bare CPs ⇔ describes Content

This tight syntax-semantics mapping is not a logical necessity. For example, we could imagine a system in which constituents that are syntactically just bare CPs would denote Causers, Themes and About-arguments, because semantically they denote individuals. We could also imagine a system where nominalized CPs would describe the content of mental or speech events, but that again doesn't happen.

On my proposal, this tight correspondence arises because embedded clauses are predicates, and I assume that they cannot be just semantically type-shifted to individual-type meanings. Being predicates, clauses can either combine with nominal heads, and thus become constituents inside phrases that denote individuals or generalized quantifiers over individuals, or they can combine directly by modifying the situation argument of the verb. In the former case, clauses will have to combine via argument-introducing heads, and thus they will receive the interpretations that such heads provide (Causer, About, Theme). In the latter case, the relationship between the embedded proposition and the situation argument of the matrix verb will have to be coming from the meaning of the embedded clause itself. Hence, with verbs like *think*, only Cont-CPs will be able to combine via this path, and all such clauses will be describing the content associated with the matrix situation.

In this section I discuss some additional evidence that supports the hypothesis that bare CPs are modifiers of verbs, and not just a different type of argument. As mentioned before (section 2.2.2), the diagnostics that I will be considering for the argument/modifier status of clauses are only heuristics.

4.5.1 Interpretation

Since arguments are introduced by functional heads, their interpretation will be determined by the kind of Θ-head that they will combine with. Modifiers, on the other hand, are usually assumed to have an independent, constant semantic interpretation across their uses. As we have seen, interpretations of nominalized clauses

vary depending on the configuration into which they are inserted in the same way as interpretations of DPs do, which suggests that they are arguments introduced by Θ-heads. Bare CPs on the other hand have a constant semantic contribution: they describe propositional content associated with mental or speech situations.

In all of the cases where we saw bare CPs, they described the propositional content of the situation argument of the verb: e.g., content of saying, thinking, explaining situations (185).

(185) *say/think/explain that it is raining,* ***attested:***

a. $\lambda s.\ ^{\Vdash_e}\text{say}(s) \wedge \text{Content}(s) = \{s\text{: it is raining in s}\}$

b. $\lambda s.\ ^{\Vdash_e}\text{think}(s) \wedge \text{Content}(s) = \{s\text{: it is raining in s}\}$

c. $\lambda s.\ ^{\Vdash_e}\text{explain}(s) \wedge \text{Content}(s) = \{s\text{: it is raining in s}\}$

If bare CPs were arguments, we would have expected to see a lot more variety in the interpretations that they receive when they combine with verbs. For example, here are some possible interpretations that we do not seem to find:

(186) ***non-attested meanings of bare CPs:***

a. $\lambda s.\ ^{\Vdash_e}\text{say}(s) \wedge \text{Interrupt-s.o.-saying}(s) = \{s\text{: it is raining in s}\}$
s is a saying situation that was an interruption of someone else saying *"It is raining"*

b. $\lambda s.\ ^{\Vdash_e}\text{think}(s) \wedge \text{Response-to-statement}(s) = \{s\text{: it is raining in s}\}$
s is a thinking situation that arose as a response to the attitude holder encountering the statement "It is raining"

c. $\lambda s.\ ^{\Vdash_e}\text{explain}(s) \wedge \text{To-explain-statement}(s) = \{s\text{: it is raining in s}\}$
s is an explaining situation, in which the attitude holder was trying to explain the statement "It is raining"

The non-attested verb in (186a) would be a predicate of saying situations, where saying is an interruption of someone else saying *"It is raining"*. The verb (186b) would be a predicate of thinking situations that arose as a response to the attitude holder encountering the claim *"It is raining"*. For example, if someone heard *"It is raining"*, and had a thought *"That's a lie"*, we could have said *"They think*$_{(186b)}$ *that it is raining"* with the verb in (186b). We could also imagine a verb like 'explain', but with which the clause would describe some statement that the attitude holder is trying to explain (186c). That reading is possible with nominalized Cont-CPs,

but not with bare CPs, but if bare CPs were arguments of verbs, we could imagine having such readings with them as well.

Thus, the fact that we don't find variation in how bare CPs are interpreted suggests that they are not arguments verbs, but modifiers. Bare CPs with verbs like *think* describe propositional content because the Content function is part of the meanings of these clauses, and clauses not containing this function (Sit-CPs) would not be able to combine by Predicate Modification with these verbs (see section 4.2).

4.5.2 Distribution

If embedded clauses that combine with verbs are predicates, we expect them to share distributional properties with other predicates in the language. For example, we expect them to occur in predicational copular constructions, but not be able to occur as subjects or complements of prepositions. We have already seen that Russian bare CPs cannot occur in predicational copular constructions (see section 2.2.2.3 for discussion), (187), and they also cannot occur as sentential subjects, (65), repeated here as (188). (189) shows that bare CPs also cannot occur as complements of prepositions: they have to be overtly nominalized.

(187) a. Ideja byla [(*to) čto Petja otrpavitsja v Moskvu].
idea was (DEM) COMP Petya will.head.off to Moscow
'The idea was that Petya will head off to Moscow.'

b. Na prošloj nedele byl slučaj [(*to) čto belki s"eli vse orexi].
on last week was event (DEM) COMP squirrels ate all nuts
'Last week there was an event of squirrels eating all the nuts.'

(188) [***(To)** čto ix komanda propustila gol] opredelilo
DEM.NOM COMP their team missed goal determined.3SG
[isxod igry].
outcome.ACC game.GEN
'That their team missed a goal determined the outcome of the game.'

(189) Ira govorila o *(tom) čto Petja otrpavitsja v Moskvu].
Ira talked about (DEM) COMP Petya will.head.off to Moscow
'Ira talked about Petya going to Moscow.'

In section 4.4.2 we also discussed that bare CPs with verbs like *ob"jasnit'* 'explain' cannot undergo movement. This immobility might be expected if movement of bare predicates is generally more constrained compared to movement of expressions that denote individuals or generalized quantifiers over individuals.

If proforms are sensitive to the type of the constituent that they substitute for, then we also might expect bare CPs to be substituted by the same proform as other predicates if they themselves are predicates. In table 4.6 we see that Buryat has different proforms for DPs, adjectival phrases and adverbal/verbal phrases.

Proform	What it can substitute for
tərə 'that'	DPs
ti:-mə 'such'	AdjPs
ti:-zə 'so'	AdvPs, some VPs

Table 4.6: Buryat proforms

As we see in (190), only a proform that can be used for adverbial and verbal phrases can substitute for Buryat bare CPs. This suggests that Buryat *gəžə*-clauses are predicates of situations, just like adverbial and verbal phrases.

(190) Badma [Sajana bulj-a: gə-žə] han-a:, Ojuna baha ti:-žə
Badma Sajana win-PST say-CVB think-PST Ojuna also do.so-CVB
/*ti:-mə /*tərən-i:jə han-a:.
/do.so-ADJ /that-ACC think-PST
'Badma thought that Sajana won, Ojuna also thought so.'

Buryat nominalized CPs on the other hand have to be substituted by proforms that can substitute for nominal expressions:[65]

(191) Badma [Sajana bulj-a: g-ə:š-i:jə] han-a:, Ojuna baha *ti:-žə
Badma Sajana win-PST say-PART-ACC think-PST Ojuna also do.so-CVB
/*ti:-mə /tərən-i:jə han-a:.
/do.so-ADJ /that-ACC think-PST
'Badma thought that Sajana won, Ojuna also thought that.'

[65]See section 4.3.1 for the discussion of differences in proform substitution between nominalized Sit-CPs and Cont-CPs. While nominalized Cont-CPs can both be substituted by a DP proform *tərə* 'that', and a different proform with nominal distribution *ti:-gə:š-i:jə* 'do.so-PART-ACC', nominalized Sit-CPs can only be substituted by this latter proform *ti:-gə:š-i:jə* 'do.so-PART-ACC'.

In section 4.3.3 we also saw that Russian bare CPs with verbs like 'explain' cannot be substituted by the proform *èto* that has nominal distribution, suggesting that they are not able to denote individuals.

Thus, if distribution of clauses and the type of proforms that can substitute for them are suggestive of what kind of semantic object they denote, then we have some reason to think that bare CPs that combine with verbs are predicates of situations.

4.5.3 Ordering

Recall that the ordering heuristic (introduced in 2, section 2.2.2.4), says that arguments have to combine with heads before modifiers, and thus the expectation is that modifiers should not be able to occur closer to heads than arguments. This logic has been appealed to to explain contrasts like in (192), where *of Parliament* (argument) has to be closer to *member* and precede *with gray hair* (modifier).

(192) a. a member [of Parliament] [with gray hair]
b. *a member [with gray hair] [of Parliament]
(Schütze 1995: p. 107)

Note that if it is indeed the case that all arguments have to combine before modifiers, currently nothing in our system enforces that: we could imagine a Θ-head combining with the verb first, or some modifier combining with the verb first—nothing would semantically go wrong either way. So if we want to capture ordering restrictions in a neo-Davidsonian system, we need to introduce some additional syntactic restrictions. For example, we could say that Θ-heads like Θ_{Theme} and Θ_{About} not only semantically select for a predicate situations as their first argument, but also syntactically select for a lexical verb (V).

With such a constraint in place, we would expect that if there is both an argument and a modifier that a verb combines with, it will always combine with the argument first. We do in fact see ordering effects when it comes to bare CPs: in sentences in which some verb combines both with an argument DP and a bare CP, it seems that the clause always combines second.

For example, consider Buryat example in (193). Here we see a verb combine with with a direct object DP, and then with a CP describing the content of the writing. Note that it is not possible to analyze the clause in (193) as modifying the noun

phrase, because with verbs that are not predicates of situations with content, like *unaga:xa* 'drop', it is not possible to have such a CP together with the noun (194).

(193) Bi Tumən-də [Badma jər-ə: gə-žə] [bəšəg-i:ə] bəš-ə:-b.
I Tumen-DAT Badma come-PST say-CVB letter-ACC write-PST-1SG
'I wrote Tumen a letter (saying) that Badma arrived.'

(194) Bi (*Badma jər-ə: gə-žə) [bəšəg-i:ə] unaga:-ga:-b.
I (Badma come-PST say-CVB) letter-ACC drop-PST-1SG
'I dropped a letter (*that Badma arrived).'

In (195) we see that the reverse word order is not possible: it is not possible to first combine an embedded clause with the verb, and then combine a DP.

(195) *Bi Tumən-də [bəšəg-i:ə] [Badma jər-ə: gə-žə] bəš-ə:-b.
I Tumen-DAT letter-ACC Badma come-PST say-CVB write-PST-1SG
'I wrote Tumen a letter (saying) that Badma arrived.'

This is expected if DPs are arguments and have to be merged before any modifiers are combined. The same ordering restriction arises with emotive causatives (196)–(197): we see that the individual that is caused to feel anger has to combine with the verb before the clause that describes what Tumen said to make Sajana angry.

(196) Tumen [Badma tərgə əmdəl-ə: gə-žə] [Sajan-i:jə]
Tumen Badma cart break-PST say-CVB Sajana-ACC
ga:r-u:l-a:.
come.outside-CAUS-PST
'Tumen made Sajana angry (saying) that Badma broke the cart.'

(197) *Tumen [Sajan-i:jə] [Badma tərgə əmdəl-ə: gə-žə]
Tumen Sajana-ACC Badma cart break-PST say-CVB
ga:r-u:l-a:.
come.outside-CAUS-PST
'Tumen made Sajana angry (saying) that Badma broke the cart.'

Note that even in cases where in principle the sentence could be ambiguous between the structure in which the clause combines with a verbal phrase and the structure in which the clause combines directly with a content noun, (198a), the

word order Subject—Object—CP—V is not possible, (198b).

(198) a. Badma [Bair tərgə ɘmdəl-hən gə-žə] [zuga:] hana-na.
Badma Bair cart break-PFCT say-CVB rumor think-PRS
'Badma recalls the rumor that Bair broke the cart.'
b. *Badma [zuga:] [Bair tərgə ɘmdəl-hən gə-žə] hana-na.
Badma rumor Bair cart break-PFCT say-CVB think-PRS
'Badma recalls the rumor that Bair broke the cart.'

This suggests that it is also not possible to have a derivation where a clause restricts an individual argument of the verb (e.g., by a principle like *Restrict* (Chung & Ladusaw 2003), see ft. 9), and then a DP argument saturates that argument.

While Russian has a relatively free word order, we also see ordering restrictions in out-of-the-blue contexts in it. For example, the verb *ugovorit'* 'convince' takes both an obligatory DP argument and an obligatory bare CP (evidenced by the impossibility of the demonstrative), but DP still has to combine with the verb first if we don't make any special manipulations with prosody and information structure:

(199) Ljoša ugovoril [vsex studentov],
Lyosha convinced all students.ACC
[(*to) čto stoit perenesti èkzamen].
(DEM) COMP it.is.worth.it reschedule.INF exam
'L. convinced all the students that it's a good idea to reschedule the exam.'

(200) ??Ljoša ugovoril, [(*to) čto stoit perenesti èkzamen],
Lyosha convinced (DEM) COMP it.is.worth.it reschedule.INF exam
[vsex studentov].
all students.ACC
'L. convinced all the students that it's a good idea to reschedule the exam.'

When CPs are nominalized, they can be the first thing that combines with the verb in the presence of another obligatory DP argument, (201), suggesting they are arguments themselves in such cases.[66]

[66]They do not have to be the first argument though:

(i) Mitja pokazal [vsem studentam], [(to) čto prostyx čisel beskonečno mnogo].
Mitya showed all students.DAT (DEM) COMP prime numbers infinite many
'Mitya showed to all students that there are infinitely many prime numbers.'

(201) Mitja pokazal, [(to) čto prostyx čisel beskonečno mnogo],
Mitya showed (DEM) COMP prime numbers infinite many
[vsem studentam].
all students.DAT
'M. showed to all students that there are infinitely many prime numbers.'

Thus, in both Buryat and Russian, we see that bare CPs, unlike nominalized clauses, have to "wait" before the verb combines with its obligatory arguments, suggesting that such CPs are modifiers. There is an alternative to this conclusion: it could be that bare CPs are arguments, but they are never first arguments of the verb. I do not know how we could exclude such a hypothesis, but it raises the question of why such a restriction would hold.

4.5.4 Other heuristics: obligatoriness and stacking

We have seen some evidence from interpretation, distribution and ordering heuristics that while nominalized CPs behave like arguments, bare CPs seem to behave modifiers. In this section I will briefly discuss the heuristics of obligatoriness and stacking, which are also often appealed to in the literature.

As discussed in section 2.2.2.5, obligatoriness heuristic says that that modifiers tend to be optional, but arguments tend to be obligatory. The issue with using this heuristic is that it has been claimed in the literature that there also exist optional arguments and obligatory modifiers (Jackendoff 1977, Levin 1993), (85)–(86), repeated here as (202)–(203), making it unclear how to apply this heuristic.

(202) *Optional argument*
a. Helen ate an apple.
b. Helen ate.

(203) *Obligatory modifier*
a. They worded the letter carefully.
b. *They worded the letter.

Embedded clauses that combine with verbs can be both obligatory and optional, and this is independent of whether a verb also combines with a DP argument or not. I illustrate this with the four Russian verbs in table 4.7.

	Obligatory	Optional
can't take DP	*obmolvit'sja* 'mention'	*vyskazat'sja* 'make a claim'
must take DP	*ugorovit'* 'convince s.o.'	*obradovat'* 'make s.o. happy'

Table 4.7: Russian clause-embedding verbs with different requirements

With the Russian verb *ugovorit'* 'convince', which combines with a DP and a bare CP, the clause cannot be omitted outside of elliptical contexts:

(204) Ljoša ugovoril [vsex studentov],
Lyosha convinced all students.ACC
*([čto stoit perenesti èkzamen]).
(DEM) COMP it.is.worth.it reschedule.INF exam
'L. convinced all the students that it's a good idea to reschedule the exam.'

With the Russian verb *obradovat'* 'make happy', which also combines with a DP and a bare CP, the embedded clause is optional:

(205) Ljoša obradoval [vsex studentov],
Lyosha made.happy all students.ACC
([čto èkzamen perenositsja]).
COMP exam is.being.rescheduled
'L. made all the students happy (that the exam is being rescheduled).'

Intransitive verbs also can combine with optional and obligatory embedded clauses. *Vyskazat'sja* 'make a claim, statement', which cannot take DPs, (206b), does not require an embedded clause for a well-formed sentence, (206a).

(206) a. Maša vy-skazala-s', ([čto nam stoit priglasit' Petju]).
Masha PFV-say-INTR COMP we should invite Petya.ACC
'Masha made a statement (that we should invite Petya).'
b. *Maša vy-skazala-s' predpoloženie.
Masha PFV-say-INTR hypothesis
Intended: 'Masha stated a hypothesis.'

Another intransitive verb of speech, *obmolvit'sja* 'mention' cannot stand on its own in a sentence, (207a), and it also cannot take a direct object, (207b).

(207) a. *Ira ob-molvila-s'.
Ira PFV-report-INTR
Intended: 'Ira said/mentioned (something).'
b. *Ira ob-molvila-s' predpoloženie.
Ira PFV-report-INTR hypothesis.ACC
'Ira mentioned a hypothesis.'

With an embedded clause, which describes the content of the utterance, the sentence with *obmolvit'sja* 'mention' becomes grammatical:

(208) Ira ob-molvila-s', [čto Katja navestit Vanju].
Ira PFV-report-INTR COMP Katya visit Vanya.ACC
'Ira mentioned that Katya will visit Vanya.'

Curiously though, even this CP is only somewhat obligatory: we also get a grammatical sentence by using a phrase describing the length of Ira's utterance, (209a), or a PP describing the topic of the utterance (209b).

(209) a. Ira ob-molvila-s' [paroj slov].
Ira PFV-report-INTR few words.INSTR
'Ira mentioned (something) in a few words.'
b. Ira ob-molvila-s' [o poezdke].
Ira PFV-report-INTR about trip
'Ira mentioned (something) about a trip.'

Thus, sometimes it is not clear whether some clauses should be considered obligatory or optional: it seems that while some verbs need to combine with something to make a well-formed sentence, it does not have to necessarily be an embedded CP.

Another pattern where determining optionality/obligatoriness is problematic is with verbs like Buryat *hanaxa*. In section 4.4.3 we have seen that *hanaxa* can combine just with a DP (= ABOUT-argument), or just with a content-describing bare CP, or with both DP and a bare CP at the same time. Not combining this verb with any constituent though is not possible:

(210) ??Sajana hana-a:.
Sajana think-PST
'Sajana thought/remembered.'

This pattern raises questions: should the DP be considered optional/obligatory? Should the CP be considered optional/obligatory?

To sum up, whether embedded clauses are optional or not is far from a straightforward matter even when we're looking at a single predicate. We have seen that clauses are always optional with nouns, but with verbs the picture is different: some verbs require the presence of an embedded clause, but some seem to require combining *with something*, but are not very picky about what exactly to combine with.

There are at least two possible hypothesis as to what could give rise to the latter pattern. First, it could be that some verbs have a property like EPP, which requires merge of some syntactic phrase to them. Second, it could be that rules of mapping from event structure to syntax determine how the participants of the eventuality have to be realized in the syntactic representation, and the rules of this mapping might allow for some flexibility, giving rise to predicates that need to realize something about their eventuality in syntax, but do not impose restrictions on what exactly that something needs to be (cf. Grimshaw & Vikner 1993, who argue that all subevents in the event structure must be 'identified' by some syntactic constituent for the resulting sentence to be well-formed). Thus, I conclude that at this point we cannot use the obligatoriness to determine if bare CPs are modifiers; more research is needed to figure out how properties like obligatoriness arise in the first place.

The stacking heuristic says that modifiers can be stacked, but arguments cannot. Bare CPs that combine with verbs however can't be stacked in any language I know of; (211)–(214) illustrate this for Buryat, Korean, Russian and English.

(211) *Sajana [hain ularil togto-bo gɵ-žɵ] [üxibü:-d xada-ru:
Sajana good weather settle-PST say-CVB child-PL mountain-to
zaixaja: ošo-bo gɵ-žɵ] han-a:.
walk.ACC.REFL go-PST say-CVB think-PST
'Sajana thought that the weather became good and thought that the children went for a walk to the mountain.'

(212) *Mina-nun [Swuna-ka nolayha-ss-ta-ko] [Hani-ka
Mina-TOP Swuna-NOM sing-PST-DECL-COMP Hani-NOM
chwumchwu-ss-ta-ko] nollaweha-n-ta.
dance-PST-DECL-COMP be.surprised-PRS-DECL
'Mina is surprised that Swuna sang and that Hani danced.'

(213) *Olja dumaet [čto Vanja uexal] [čto Ira prišla].
Olya thought COMP Vanya went.away COMP Ira came
'Olya thinks that Vanya went away and thinks that Ira came.'

(214) *Lily thought [that it is raining] [that it is cloudy].

However, I would like to suggest that bare CPs cannot be stacked not because they are arguments, but due to their semantics (see also Moulton 2009, Elliott 2020, Bassi & Bondarenko 2021). When we try to combine for example the two clauses in (214) with the verb by Predicate Modification, we get the truth-conditions in (215).

(215) $[\![$Lily thought [that it is raining] [that it is cloudy].$]\!]^{s,g,t} = 1$ iff
$\exists t' < t$ [$\exists s'$ [$^{\Vdash_e}$think$(s')_{s,t}$ $\wedge$ $^{\Vdash_e}$CONT(s')={s: it is raining in s}
$\wedge$ $^{\Vdash_e}$CONT(s')={s: it is cloudy in s}]]
always false, hence ungrammatical

Since CONT is a function, it cannot take the same situation s' as its argument and return two different propositions. Hence, the sentence in (215) will always be false, and hence, due to L-analyticity, ungrammatical (for more discussion, see chapters 2 and 3). Thus, we cannot use the stacking heuristic because there is independent reason why two bare CPs should not be able to be stacked.

To sum up, there are some heuristics that suggest that bare CPs that combine with verbs should be considered their modifiers, and we have seen no evidence to the contrary. This is expected under my proposal, according to which bare CPs always combine by modifying the situation argument of the matrix verb.

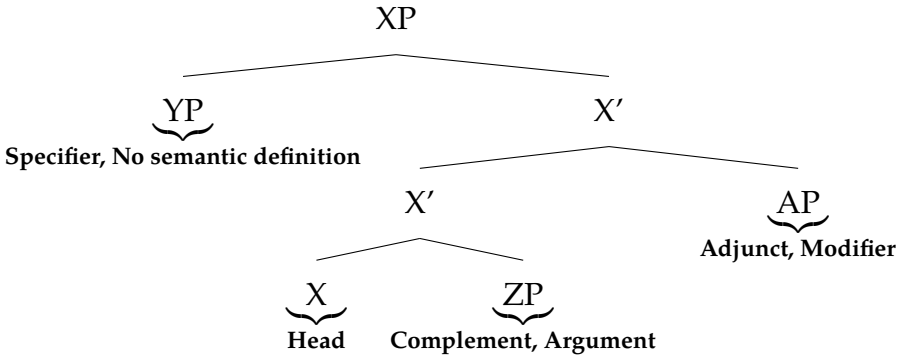
4.6 Extraction from embedded clauses

In this section I would like to discuss the question of whether the path of semantic composition has consequences for the structural integration of the verb and the embedded clause. I.e., we can ask: how does being semantically a modifier (bare CPs) or an argument (nominalized CPs) influence possible structural relations between verbs and clauses? How does this affect syntactic operations that these clauses can participate in? Here I try to address these issues focusing on data from extraction.

Recall that I am assuming Bare Phrase Structure (Chomsky 1995b, see discussion in chapter 1, section 1.2.1), which is a derivational model that got rid of non-

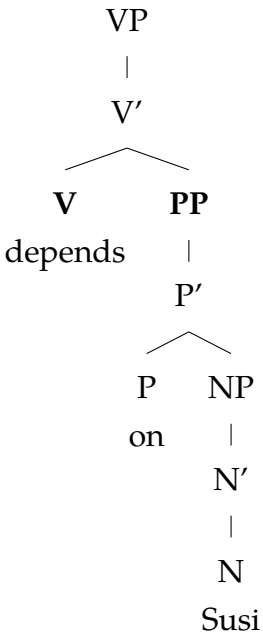
branching nodes and bar-level projections, and thus makes different assumptions about the structural relations between heads and phrases than X-bar theory (Chomsky 1970, Jackendoff 1977), for example. In X-bar Theory, the semantic distinction between arguments and modifiers was assumed to correspond to a structural distinction (barring specifiers): all adjuncts in that system were modifiers, and all complements were arguments. This is schematized in (216).

(216)

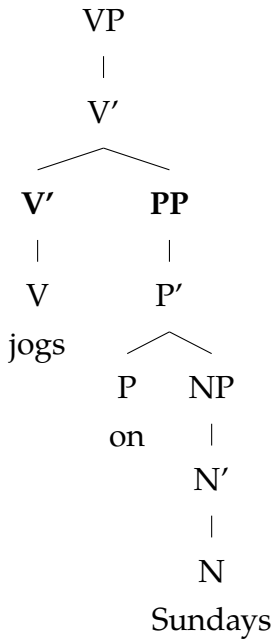


For example, if we think that in phrases *depends on Susi* and *jogs on Sundays* the prepositional phrase bears a different semantic relationship to the verb (argument in the former case, modifier in the latter case), in X-bar theory we would also assume different structural representations of such verbal phrases:

(217) *Argument PP in X-bar Theory*

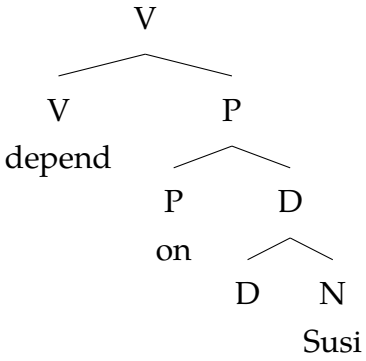


(218) *Modifier PP in X-bar Theory*

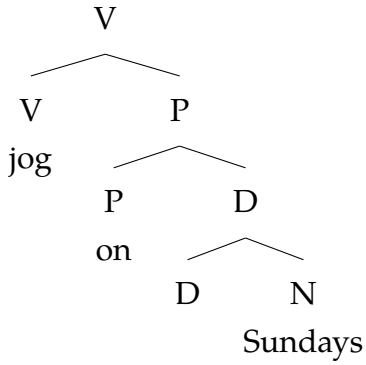


As discussed in section 1.2.1, in Bare Phrase Structure (BPS) this correspondence is lost: since there is no separate bar-level, structurally the two PPs are indistinguishable, even though the semantic relationship to the verb might be different.

(219) *Argument PP in BPS*



(220) *Modifier PP in BPS*



In both (219) and (220) the PP is structurally a complement to the verb, as it is merged with a head rather than with a phrase. Recall from section 1.2.1 that adjuncts are defined negatively in BPS, as phrases that combine with some projecting head X that are neither its complement nor its specifier. *On Sundays* is not an *adjunct* of V in (220), because it satisfies the definition of a *complement*: it is the sister of the V head, and the result of merging V and PP has the label of V.

This shift to Bare Phrase Structure raises a question of how restrictions on movement that made reference to the structural status of a phrase that is being moved out of should be redefined. The Adjunct Condition (Huang 1982) is such a constraint. It prohibits movement out of participial adjunct clauses in (221), which in X-bar theory would be classified as adjuncts, since they are modifiers.

(221) *I know [which song]$_1$ you [[cleaned the room] [whispering t_1]].

But in the Bare Phrase Structure, where not all modifiers are structurally adjuncts, the Adjunct Condition needs to be reformulated, and there are two possible options that can be pursued: attribute the ungrammaticality of sentences like (221) to the semantic status of the participial clause as a modifier, (222), or attribute the ungrammaticality of sentences like (221) to the structural status of the clause (223). Note that the participial clause in (221) could be regarded an adjunct or a specifier in BPS depending on whether we think the subject originates in Spec,VP or in a specifier of a higher projection. In either case, the second view proposes that it is

something about the structural status of the clause that prevents movement.

(222) **Modifiers cannot be extracted out of.**
Modifiers combine in special syntactic/semantic ways, which prevent extraction from them.

(223) **Specifiers/Adjuncts cannot be extracted out of.**
The structural configuration in which specifiers/adjuncts find themselves prevents extraction from them.

Both hypotheses have been pursued in the literature. *Modifier accounts* (222) claim that there is something special about how modifiers are incorporated either at the semantic level (Truswell 2007, 2011, Bošković 2017, a.o.), or in syntax (Stepanov 2007, Hunter 2010), and that makes extraction out of them impossible. *Configurational accounts* (223), (Uriagereka 1999, Nunes & Uriagereka 2000, Johnson 2003, Sheehan 2010, Privoznov 2022, a.o.), argue that it is the structural configuration that makes extraction out of certain constituents impossible: while complements merge with a head, specifiers and adjuncts merge with phrases, and this difference is the reason why extraction is not possible out of the latter constituents.[67]

One kind of evidence that could be viewed as an argument in favor of the configurational accounts is that extraction out of modifiers is sometimes possible:

(224) I know [which song]$_1$ you [came in [whispering t_1]].

In (224) we see extraction out of the same kind of participial adjunct clause as in the ungrammatical (221), but the sentence is well-formed. One difference between the two sentences is that in (221) the verb of the clause exited by movement is transitive, but in (224) it is intransitive. On a configurational account, we could say that the gerundive clause is always semantically a modifier, but in (221) it combines with a phrase, whereas in (224) it combines with a head, i.e. it is structurally a

[67]The difference between the *syntactic modifier accounts* and *configurational accounts* is that the former accounts make reference to the modifier status of a constituent and postulate that such constituents are subject to special syntactic operations. For example, Stepanov (2007) proposes that all modifiers are merged counter-cyclically, Chomsky (2004) assumes that modifiers are integrated via a special Pair-Merge rule, and Hunter (2010) suggests that modifiers cannot combine via Merge, as arguments do, but have to exploit a special syntactic operation Insert. Configurational accounts on the other hand do not introduce any special rules of syntactic composition for constituents that are semantically modifiers, but propose that it is the structural position within the built structure that determines whether a certain constituent is transparent for extraction.

complement, and this difference determines whether extraction is possible or not. To explain the difference between (221) and (224) on the modifier approach to adjunct islands, one would need to posit that modifiers are not uniform in whether they ban extraction, and postulate some difference between the modifiers in (221) and (224) (e.g., see the Single Event Condition in Truswell 2011).

Here I will adopt a version of the configurational account proposed in (Privoznov 2022), as it works well for the data that don't have to do with complement clauses in the languages we will be considering.[68] According to Privoznov (2022), modifiers are transparent in two cases: when they are merged with a head, or when their sister is spelled out (225). Here we will only need the first condition.

(225) **Conditions for modifiers being transparent:**

a. A modifier is transparent if it is merged with a head (it is a complement).

b. A modifier is transparent if its sister is spelled out. (Privoznov 2021: 44)

Let us illustrate the condition in (225a) with the data from Russian conditional and temporal clauses. In (226) we see an example in which relativization out of a conditional clause is impossible. In (227) however such relativization is fine.

(226) *Èto — pros'ba, [**kotoruju** on [[menja pozovët],
this.is request **REL** he I.ACC will.call

[68]Comparing modifier accounts like the one proposed by Truswell (2011) to configurational accounts encounters the following issue. If the event structure of predicates is always reflected in the syntactic representation (e.g., see the proposal about such mapping in Ramchand 2008), then we will never be able to find cases that would adjudicate between the hypothesis that possibility of extraction is determined by the event structure of the matrix predicate and the hypothesis that possibility of extraction is determined by the properties of the syntactic structure. For example, if whenever Truswell's Single Event Condition is met the modifier is structurally the complement of the verb and whenever the modifier is structurally the complement of the verb the Single Event Condition is met, we will not be able to distinguish which condition determines the possibility of extraction, as the two will always make the same predictions.

Kai von Fintel (p.c.) suggested to me that while the two kinds of approaches might make the same predictions, they might still be able to be distinguished with respect to how explanatory they are. It is difficult to evaluate the explanatory power of these theories without conducting a more thorough comparison between them, but the questions that we would need to see how they address, a.o., are, respectively, (i) Why would extraction be sensitive to the event structural properties of predicates?, and (ii) Why would extraction be sensitive to the structural environment of constituents?

[esli ty ne vypolniš' $\mathbf{t}_1$]].
if you NEG will.fulfill
'This is the request$_1$ that he will call me if you don't fulfill __$_1$.'
(Privoznov 2022: 103, ex. (111))

(227) Èto — pros'ba, [**kotoruju** on [ogorčitsja,
this.is request **REL** he will.be.upset
[esli ty ne vypolniš' $\mathbf{t}_1$]]].
if you NEG will.fulfill
'This is the request$_1$ that he will be upset if you don't fulfill __$_1$.'
(Paducheva & Zaliznyak 1979: p. 100)

The difference between (226) and (227) is that in the former case the verb that the conditional clause modifiers is transitive, but in the latter case it is intransitive. Thus, while in (226) the *esli*-clause combines with a phrase, in (227) it combines with a head and is structurally a complement. On Privoznov's theory, this difference explains why (227), unlike (226), is grammatical.

We see the same contrast with the temporal clauses in (228)-(229):

(228) *U menja est' [novost']$_1$,
by me exists news
[**kotoruju** on [[menja pozovët], [kogda uznaet $\mathbf{t}_1$]]].
REL he I.ACC will.call when finds.out
'I have news$_1$ [that he will call me when he learns t_1].'
(Privoznov 2022: 104, ex. (113))

(229) U menja est' [novost']$_1$,
by me exists news
[**kotoruju** on udivitsja, [kogda uznaet $\mathbf{t}_1$]]].
REL he will.be.surprised when finds.out
'I have news$_1$ [that he will be surprised when he learns t_1].'
(Paducheva & Zaliznyak 1979: p. 100)

Whether the verb combines with a direct object or not matters for whether it is possible to relativize out of *kogda*-clauses. Only when the temporal clause combines directly with the verbal head the extraction is permitted.

Now let us consider what predictions the configurational account makes for extraction out of complement clauses. If an embedded clause is semantically a modifier, whether it is transparent or opaque for extraction should depend on how the clause is structurally integrated: if it combines directly with the verbal head, extraction should be possible, if it combines with a verbal phrase, extraction should be banned. If an embedded clause is semantically an argument, we also expect dependence on the structural configuration: CPs that are complements and arguments should be transparent for extraction, CPs that are arguments but combine with phrases—e.g., originate as specifiers, should be opaque.

Note that theories of adjunct and subject islands do not tell us anything about how presence vs. absence of nominalization should factor in: it is an additional factor that could influence whether extraction is possible (see section 4.6.2).

4.6.1 Extraction from bare CPs

In both Russian and Buryat, extraction from bare CPs behaves just like extraction from other verbal modifiers: when these clauses are the first thing that the verb combines with, bare CPs are transparent for extraction, but when these clauses combine already with a verbal phrase, they are opaque for extraction.

For example, consider the Russian emotive verb 'be/make happy': it does not take nominalized CPs, and has both intransitive and transitive forms, (230)–(231).[69]

(230) Petja obradoval-sja,
Petya got.happy-INTR
[(*to) čto ego druz'ja priglasili Lenu v gosti].
(DEM) COMP his friends invited Lena to guests
'Petya got happy that his friends invited Lena for a visit.'

(231) Petja obradoval Katju
Petja made.happy Katja.ACC
[(*to) čto ego druz'ja priglasili Lenu v gosti].
(DEM) COMP his friends invited Lena to guests
'Petja made Katja happy that his friends invited Lena for a visit.'

[69] In this case the bare CP specifies the propositional content of Petya's mental state, which has a happy, joyful emotional tone to it. See appendix A (section 4.8), p. 353-355, for further discussion.

With the intransitive version of this verb, the CP combines as a structural complement, and extraction out of it is possible:

(232) **Kogo**$_1$ Petja obradoval-sja,
who.ACC Petja got.happy-INTR
[čto ego druz'ja priglasili **t**$_1$ v gosti]?
COMP his friends invited to guests
'**Who**$_1$ did Petja get happy that his friends invited **t**$_1$ for a visit?'

With the transitive version of this verb, the CP combines with a verbal phrase, and extraction out of it is impossible:

(233) ***Kogo**$_1$ Petja obradoval Katju,
who.ACC Petja made.happy Katya.ACC
[čto ego druz'ja priglasili **t**$_1$ v gosti]?
COMP his friends invited to guests
'**Who**$_1$ did Petja make Katya happy that his friends invited **t**$_1$ for a visit?'

With verbs like *ob"jasnit'* 'explain' we also see that bare CPs that are structurally complements are transparent for extraction. As we see in (234)–(236), whether extraction and relativization are possible out of clauses with verbs like *ob"jasnit'* 'explain' depends on their interpretation: if the clause is understood as describing the content of utterance, extraction and relativization is possible, but if it describes the THEME, extraction and relativization are bad.

(234) Kogo$_k$ Lena ob"jasnila/argumentirovala, [čto Zenit legko odoleet t_k]?
whom Lena explained/argued COMP Zenit easily beat
'Who did Lena explain/argue that Zenit will easily defeat?'
a. **THEME:** *'Who is *x* such that Lena explained the fact/argued for the position that Zenit will easily defeat *x*?'
b. **CONTENT-OF-UTTERANCE:** 'Who is *x* such that Lena explained some fact/argued for some position by saying *"Zenit will easily defeat x"*?'

(235) Kogo Lena utočnila, [čto Vitja obidel]?
whom Lena clarified COMP Vitya offended
'Who did Lena clarify that Vitya offended?'

a. **Theme:**
*'Who is x such that Lena clarified the claim that Vitya offended x?'
b. **Content-of-Utterance:** 'Who is x such that Lena clarified some claim by saying that Vitya offended x?'

(236) Vot [tot čelovek]$_k$, kotorogo Lena ob"jasnila /prokommentirovala,
here that person REL Lena explained /commented
[čto Olja uvolila t_k].
COMP Olya fired
'Here's the person that Lena explained/commented that Olya fired.'
a. **Theme:** *'Here's the person x such that Lena explained/commented-on the fact that Olya fired x.'
b. **Content-of-Utterance:** 'Here's the person x such that Lena explained /commented-on some fact by saying *"Olya fired x"*.'

Content-of-Utterance CPs in examples like (234)–(236) are not nominalized (e.g., they cannot occur with demonstratives, see section 4.4.2). Thus, we see that bare CPs that combine directly with the verb allow extraction.

As was mentioned in section 4.4.2, there are speakers for whom some verbs of speech can have a Theme-DP and a Content-CP co-existing within one sentence:

(237) **Context:**
In the soccer championship, Zenit has been playing really well.

Lena [dannuju situaciju] prokommentirovala,
Lena this situation commented
[(*to) čto Zenit legko odoleet Spartak].
(DEM) COMP Zenit easily will.beat Spartak

'Lena commented on this situation [= that Zenit has been playing well] (saying) that Zenit will easily beat Spartak.'

Interestingly, extraction out of bare CPs in such construction is impossible:

(238) **Context:**
In the soccer championship, Zenit has been playing really well.

***Kogo**$_1$ Lena [dannuju situaciju] prokommentirovala,
who.ACC Lena this situation commented

[čto Zenit legko odoleet $\mathbf{t}_1$]?
COMP Zenit easily will.beat

'**Who**$_1$ did Lena comment on this situation [= that Zenit has been playing well] (saying) that Zenit will easily beat $\mathbf{t}_1$?'

The embedded clauses in (234) and (238) are interpreted in exactly the same way: they provide the content of what Lena said as her comment. The difference in extraction is however expected under the configurational approach: in (234) the clause combines with the verbal head directly, but in (238) it combines with a verbal phrase consisting of the verb and the direct object.

In section 4.2 I suggested that verbs like *slučat'sja* 'occur' and *byvat'* 'happen' in Russian can combine with bare Sit-CPs as their modifiers. In (239) we see that it is possible to *wh*-extract out of such bare CPs:

(239) Kogo slučalos' /byvalo, čto Maša priglašala?
who.ACC occured /happened COMP Masha invited
'Who did it happen/occur that Masha invited?'

This is an expected result, given that the bare clauses that combine with these verbs are structurally complements.

In Buryat, just like in Russian, whether bare CPs are transparent for movement depends on the structural configuration. (240) shows that bare CPs that are structurally complements can be extracted out of: scrambling is possible out of them.

(240) [Tumən-i:jə]$_1$ Badma [Sajana t_1 xara-xa gə-žə] han-a:.
Tumen-ACC Badma Sajana see-POT say-CVB think-PST
'Badma thought that Sajana will see Tumen.'

In (241) and (242) bare embedded clauses combine not with verbal heads directly, but with verbal phrases, and the extraction is impossible, as is expected.

(241) *Bi Badm-i:jə$_1$ Tumən-də [Səsəg t_1 zur-a: gə-žə] [bəšəg-i:jə
I Badma-ACC Tumen-DAT Seseg draw-PST say-CVB letter-ACC
bəš]-ə:-b.
write-PST-1SG
'I wrote a letter to Tumen, (saying) that Seseg drew Badma.'

(242) *Badm-i:jə$_1$ Tumən [Səsəg t$_1$ zur-a: gə-žə] [Sajan-i:jə
Badma-ACC Tumen-.NOM Seseg draw-PST say-CVB Sajanar-ACC
ga:r-u:l]-a:.
go.out-CAUS-PST
'Tumen made Sajana angry (saying) that Seseg drew Badma.'

To sum up, bare CPs behave just like other verbal modifiers when it comes to extraction. Being modifiers, these clauses can in principle attach at different places within the structure, and so sometimes they are complements of verbs, but other times they are not. This flexibility results in bare CPs being islands for extraction only in some cases: only when they combine with phrases as opposed to heads.

4.6.2 Extraction from nominalized CPs

The constraint on movement out of constituents that merge with phrases will not be sufficient to account for all the restrictions on extraction from nominalized clauses that we see. But data on extraction from nominalized clauses does not contradict the configurational approach to subject and adjunct islands: i.e., to my knowledge, there are no cases when nominalized clauses combine with a phrase and extraction is possible from them. For example, consider (243).

(243) *Kogo$_1$ [ego nevinovnost'] dokazalo [to čto on priglasil t$_1$]?
whom his innocence.ACC proved DEM.NOM COMP he invited
'Who is *x* such that the fact that he invited *x* proved his innocence?'

In this example we see an O–V–S order: the object 'his innocence' occurs before the verb, but the sentential subject occurs after the verb. As discussed in section 4.4.1, in Russian OVS the subject remains in its base generation position in Spec,*v*P. Thus, (243) shows us that it is not possible to extract from a nominalized clause that combines with a verbal phrase and does not undergo any further movement (see chapter 3 of Privoznov 2022 for discussion of the Subject Condition in Russian).

However, not in all cases when nominalized clauses are structural complements they are transparent for extraction.[70] The internal structure of the nominalized clause seems to determine whether movement will be permitted. In both Russian

[70] I assume that the combination of the lexical verb and a Θ-head is a complex head. Thus, nominals that combine with [V+Θ] are structurally complements.

and Buryat, nominalized Cont-CPs do not allow extraction.

We saw in (234)–(236) above that it is not possible to extract out of Theme-denoting embedded clauses with verbs like *ob"jasnit'* 'explain'. In all of these examples extraction from Theme-denoting clauses without an overt determiner patterns with extraction from clauses with an overt determiner: (244)–(246).

(244) *Kogo$_k$ Lena ob"jasnila/argumentirovala, [**to čto** Zenit odoleet t_k]?
whom Lena explained/argued **dem comp** Zenit will.beat
'Who did Lena explain/argue that Zenit will defeat?'

(245) *Kogo Lena utočnila, [**to čto** Vitja obidel]?
whom Lena clarified **dem comp** Vitya offended
'Who did Lena clarify that Vitya offended?'

(246) *Vot [tot čelovek]$_k$, kotorogo Lena ob"jasnila /prokommentirovala,
here that person rel Lena explained /commented
[**to čto** Olja uvolila t_k].
dem comp Olya fired
'Here is the person that Lena explained/commented on (the fact) that Olya fired.'

This provides further support that such Theme-denoting clauses are nominalized. With some verbs of this class, Theme arguments have to be entities with propositional content. For example, *argumentirovat'* 'argue (for)' is such a verb: the entity that is being argued for has to be a position/an opinion/a hypothesis—something that has content; it cannot be an event or situation, (247).

(247) Lena argumentirovala ètu poziciju /èto mnenie
Lena argued this position /this opinion
/*ètu situaciju /*ètot slučaj.
/this situation /this event
'Lena argued for this position/this opinion/*this situation/*this event.'

Thus, if a nominalized clause combines with *argumentirovat'* 'argue (for)', it must be a nominalized Cont-CP. And as we saw, such clauses do not permit extraction:

(248) Kogo$_k$ Lena argumentirovala, [čto Zenit legko odoleet t_k]?
whom Lena argued COMP Zenit easily will.beat
'Who did Lena argue that Zenit will easily defeat?'
a. **THEME:** *'Who is *x* such that Lena explained the fact/argued for the position that Zenit will easily defeat *x*?'
b. **CONTENT-OF-UTTERANCE:** 'Who is *x* such that Lena explained some fact/argued for some position by saying *"Zenit will easily defeat x"*?'

Extraction is also banned from nominalized Cont-CPs in Buryat. As we see in (249), scrambling out of *gəːšə*-clauses is impossible.

(249) *[Moriːjə]$_1$ Sajana [Badma t$_1$ aba: g-əːš-iːjə] duːlaː.
horse.ACC Sajana Badma buy.PST say-PART-ACC hear-PST
'Sajana heard that Badma bought the horse.'

While both Russian and Buryat ban movement from nominalized Cont-CPs, the reasons for such a ban could be different. As we discussed in section 4.3, there is some evidence suggesting that Buryat nominalized Cont-CPs contain a null content noun in their structure. If that is the case, extraction from such clauses would be a violation of the Complex NP Constraint: a constraint that bans movement of elements contained in clauses that are dominated by an NP with a lexical head noun. In Russian on the other hand, we saw some evidence that there is no lexical noun in the structure. However, if the structure of Russian nominalized clauses contains a D head right on top of CompP, then extraction out of such clauses might violate anti-locality (Bošković 2005, Brillman & Hirsch 2016, Erlewine 2016, a.o.). *Anti-locality* is the idea that movement from the edge of a given phrase XP to the edge of a constituent YP that immediately dominates XP is too local, and thus is banned. Together with the assumptions that both DP and CompPs are phases, and that phrases need to move to phasal edges in order to escape phases, anti-locality predicts that it should be impossible to extract from the DP-CompP structure. Any XP vacating CompP will need to stop at the Spec,CompP position due to CompP being a phase, and then also to stop at Spec, DP position due to DP being a phase. But then it means that XP needs to move from Spec, CompP to Spec, DP, but such movement violates anti-locality, and is thus ungrammatical.

Movement from nominalized Sit-CPs is possible in Buryat, as is illustrated by

the possibility of scrambling in (250).

(250) Tumɔn-i:jɔ$_1$ Badma [Sajan-i:n t$_1$ xar-a:š-i:jɔ] han-a:.
Tumen-ACC Badma.NOM Sajana-GEN see-PART-ACC think-PST
'Badma remembered that Sajana saw Tumen.'

As discussed in section 4.3, nominalized Sit-CPs in Buryat do not seem to contain a lexical noun, thus movement from them does not violate the Complex NP Constraint. If these nominalizations however contained just a DP on top of the CompP, we would expect movement like in (250) to not be possible due to the violation of anti-locality. Given that (250) is grammatical, it might be the case that the nominal projection on top of Buryat Sit-CPs is not DP, but for example a nominalizing *n*P layer. It is also possible that the nominalizing projection in Buryat Sit-CPs is DP, but there is more nominal structure between the DP and CompP projections, allowing anti-locality to be circumvented. Adjudicating between these possibilities requires further research of the nominal structure on top of Buryat Sit-CPs.

Whether it is possible to extract out of Russian nominalized Sit-CPs seems to vary. It seems that whenever an overt determiner is present, extraction is banned. So for example if a verb assigns oblique case to its nominalized clause, and thus the determiner is obligatory, extraction will be always impossible. This is illustrated with the verb *dobit'sja* 'obtain, ensure some state of affairs' in (251) below.

(251) ***Kogo**$_1$ Lena dobilas',
who.ACC Lena obtained
[**togo**, **čto** oni pozvali **t**$_1$ na prazdnik]?
DEM.GEN DEM.GEN they invited to party
'**Who**$_1$ did Lena succeed in ensuring (lit. 'obtained') that they invited **t**$_1$ to the party?'

There are however some cases when a nominalized Sit-CP without an overt determiner (a clause that's an ACC complement to V[71]) allows extraction. Subjunctive complements of verbs like *pomnit'* 'remember', when possible, have to be interpreted as Sit-CPs that combine via the DP argument path (see chapter 5 for a de-

[71]Recall from sections 4.3.3 and 4.4.2 that when nominalized clauses in Russian occur as accusative complements to verbs, the overt expression of nominalization (presence of *takoe* 'such' or *to* 'that') is optional. Thus, (252) shows us that the absence of an overt determiner on top of a nominalized clause in such configurations makes extraction out of it acceptable.

tailed discussion). Movement out of such clauses is not possible when *takoe* 'such' or *to* 'that' are present on top of the clause, but it is possible if they are absent:

(252) Kogo Katja ne pomnit (*takogo /*togo), čto-by Ira
who.ACC Katya NEG remembers (such /DEM) COMP-SUBJ Ira
priglašala?
invited
'Who does Katya not remember Ira inviting?'

Note that this cannot be attributed just to a definiteness effect. It has been observed that in some cases possibility of extraction out of nominals depends on their definiteness, as for example in (253).

(253) a. Who were the Phillies hoping for a victory/some victories over __?
b. *Who were the Phillies hoping for the/that victory over __?
(Davies & Dubinsky 2003: ex. (32))

But as we saw in section 4.3.3, Russian *to čto*-clauses can be indefinite, and *takoe čto* clauses must be indefinite. Thus, the effect in (252) is not really parallel to (253).

Another effect that (252) could be reminiscent of is the complementizer-trace effect: an effect where long-distance subject extraction requires a particular variant of embedded complementizer morphology, e.g. null exponent in English (254).

(254) Who did he say [$_{CP}$ (*that) ___ hid the rutabaga]?
(Perlmutter 1968: p. 214)

Erlewine (2016) argues that complementizer-trace effects arise due to anti-locality. Movement from Spec,TP to Spec,CP violates anti-locality, hence the ungrammaticality of the sentence with the complementizer *that*. According to Erlewine, the sentence with a null complementizer involves bundling of C and T into a single head, CT. If there is only one head in the structure, it will be a phase head. The subject will occupy its specifier and, being at the edge of the phase, will be able to be extracted into the matrix clause.

If it is possible to bundle D and Comp in the same way, and expone them just as *čto*, then this would explain the possibility of movement without overt determiners in sentences like (252): moving out of a nominalized clause with a bundled D–Comp would involve only a single step of stopping in the specifier position

of D–Comp, and thus anti-locality will not be violated. Note however that if such bundling is in principle possible, there is a question of why it is unavailable in nominalized Cont-CPs like in (248), where even in the absence of an overt determiner movement out of the nominalized clause is banned. I leave this issue open.

To sum up, extraction out of nominalized clauses shows more restrictions compared to extraction out of bare CPs. When nominalized clauses merge with a phrase, movement out of them is not possible, as predicted. But even when nominalized clauses are structurally complements, their internal structure imposes additional restrictions on extraction. Table 4.8 summarizes the extraction patterns we saw in clauses that combine directly with verbal heads.

	Type of embedded clause			
	via DP argument (*nominalized*)		*via Situation* (*bare*)	
Language	CONT-CP	SIT-CP	CONT-CP	SIT-CP
Russian	✗	✗ with overt D, ✓ without (ACC)	✓	✓
Buryat	✗	✓	✓	no data

Table 4.8: Extraction out of embedded CPs when they are structurally complements

Bare CPs combine by modifying the situation argument of the verb, and when they are structurally complements, they are transparent for extraction. Nominalized clauses that combine as complements however show additional restrictions. I have suggested that there are at least two constraints that result in bans on extraction from nominalized CPs: Complex NP Constraint and *Anti-locality*. They make extraction out of nominalized Cont-CPs in Buryat and Russian, as well as extraction from some nominalized Sit-CPs in Russian, impossible.

4.7 Concluding remarks

In this chapter I have argued that there are two paths of how embedded clauses can combine with verbs. Clauses that combine *via the Situation argument* are bare (= non-nominalized) clauses that combine with the verb by Predicate Modification. Given the semantics of attitude and speech verbs, only Cont-CPs will be able to combine by modifying the verb's situation argument. All such clauses will describe the propositional content associated with the situation described by the verb. With

verbs like *slučat'sja* 'occur' and *byvat'* 'happen', however, it is possible to have bare Sit-CPs combining as verbal modifiers and describing the situation that took place.

Clauses that combine *via the DP argument* must be nominalized. Clauses in these cases are nominal predicates that either combine with determiners directly (e.g., like in Russian), or first intersectively combine with a lexical noun prior to combining with a determiner (e.g., like in Korean). The resulting DP combines with the verb via the functional heads like $\Theta_{Theme}/\Theta_{About}/\Theta_{Causer}$ etc. If the DP at hand denotes an individual, it will saturate the argument introduced by the Θ-head. If the DP is a generalized quantifier, it will undergo QR, and its trace will saturate the argument introduced by the Θ-head. The interpretation of nominalized clauses will be determined by the Θ-head via which they combine with the verb.

I have argued that the choice of the integration path has consequences for the properties of embedded clauses that we will observe. First, it can influence whether we will get factive inferences or other presuppositions. Since bare and nominalized CPs combine via different arguments of the verb, and verbs can have different presuppositions associated with these arguments, which path the clause combines by will determine what presuppositions we observe. Thus, factivity alternations like the one in Buryat that we discussed in section 4.4.3 can arise due to different integration of clauses with embedding verbs. Second, we have seen that the choice of the integration path influences the possibility of extraction out of embedded clauses. Being modifiers, bare CPs can attach at different places, and whether extraction is possible out of them is determined, like with other verbal modifiers, by whether they compose directly with a verbal head or with a verbal phrase. For nominalized CPs, being structurally a complement is often not enough for allowing extraction. The nominal structure on top of the clause sometimes leads to violations of the Complex NP Constraint and *Anti-locality*, which make extraction impossible.

4.8 Appendix A: Apparent exceptions to the distribution of *to* on CPs

The distribution of the demonstrative *-to* on top of Russian CPs has been summarized in the table 4.4, repeated here as table 4.9.

	Path of composition		
	via the DP argument		*via the Situation*
Meaning	ACC	NOM,OBLIQUE	*of verbs like think*
Cont-CP	(to) čto	to čto	čto
Sit-CP	(to) čto	to čto	✗

Table 4.9: Distribution of the demonstrative on Russian CPs

Let us review the data for the generalization in table 4.9. First, Russian has bare CPs with which the demonstrative *-to* is not possible:

(255) a. *Lena dumala /somnevalas' /vyskazalas' /obmolvilas' ètu
Lena thought /doubted /stated /mentioned this
ideju.
idea.ACC
'Lena thought/doubted/stated/mentioned this idea.'

b. Lena dumala /somnevalas' /vyskazalas' /obmolvilas'
Lena thought /doubted /stated /mentioned
[(*to) čto ona nevinovna].
(DEM) COMP she innocent
'Lena thought/doubted/stated/mentioned that she is innocent.'

Such CPs occur with verbs that do not take internal DP arguments, and describe the propositional content associated with the situation argument of the verb (barring Sit-CPs that modify verbs like *byvat'* 'happen' and *slučat'sja* 'occur').

Second, Russian has nominalized clauses. With such clauses the demonstrative on top of the CP is obligatory if the CP occurs in a position where it receives nominative case (256), or oblique cases, such as genitive, (257), dative, (258), or instrumental, (259).[72]

[72]It is difficult to ensure that this generalization is true both of Cont-CPs and Sit-CPs, as Cont has null exponence in Russian, so many of the clauses could in principle be ambiguous. But at least for CPs in subject positions, we can show that both kinds of CPs need to occur with a determiner:

(i) [***(To)** čto ix komanda propustila gol] — lož'.
DEM.NOM COMP their team missed goal lie
'That their team missed a goal is a lie.'

(ii) [**??(Takoe)** čto Maša prixodila domoj pozdno], slučalos' nečasto.
such.NOM COMP Masha came home late happened not.often
'It was rare that Masha came home late.'

(256) [***(To)** čto ix komanda propustila gol] opredelilo
DEM.NOM COMP their team missed goal determined.3SG
[isxod igry].
outcome.ACC game.GEN
'That their team missed a goal determined the outcome of the game.'

(257) a. Lena dobilas' podedy /*pobedu.
Lena obtained victory.**GEN** /victory.ACC
'Lena obtained the victory.'

b. Lena dobilas' [**togo**, **čto** /*to, čto /*čto oni prigotovili
Lena obtain **DEM.GEN COMP** /DEM.ACC COMP /COMP they prepared
obed vovremja].
lunch on.time
'Lena succeeded in ensuring (lit. 'obtained') that they cooked lunch on time.'

(258) a. Ira sodejstvovala ix razvitiju /*razvitie.
Ira assisted their development.**DAT** /development.ACC
'Ira assisted their development.'

b. Ira sodejstvovala [**tomu**, **čto** /*to, čto /*čto den'gi
Ira assisted **DEM.DAT COMP** /DEM.ACC COMP /COMP money
propadali iz kassy].
disappeared from register
'Ira assisted with the money disappearing from the register.'
(E.g., someone stole money from the register, and Ira helped them in some way to do this).

(259) a. Artëm pol'zovalsja našimi dannymi /*naši dannye.
Artyom used our.INSTR data.**INSTR** /our.ACC data.ACC
'Artyom used our data.'

b. Artëm pol'zovalsja [**tem,** **čto** /*to, čto /*čto
Artyom used **DEM.INSTR COMP** /DEM.ACC COMP /COMP

The CP in (i) has to be a Cont-CP, because situations without propositional content cannot be said to be lies, and CP in (ii) has to be a Sit-CP, as it occurs with the verb *slučat'sja* 'occur'.

lektor ne otmečal poseščaemost'].
lecturer NEG noted attendance
'Artyom took advantage (lit. 'used') of the fact that the lecturer didn't take attendance.'

But, as argued in section 4.4.2, nominalized clauses in accusative positions can, but do not have to combine with an overt demonstrative. Note that this is the case even when the subject of the verb is inanimate, and thus is not an attitude holder:

(260) a. Èto dokazyvaet /ob"jasnjaet /oprovergaet, [ètu gipotezu].
this proves /explains /falsifies this hypothesis.ACC
'This proves/explains/falsifies this hypothesis.'

b. Èto dokazyvaet /ob"jasnjaet /oprovergaet,
this proves /explains /falsifies
[(to) čto ona nevinovna].
(DEM.ACC) COMP she innocent
'This proves/explains/falsifies that she is innocent.'

There are two kinds of apparent exceptions to the aforementioned generalizations. The first exception comes from post-verbal "subjects" of causative predicates like *obradovat'* 'make happy', and the second exception comes from bare CPs with verbs that assign oblique cases. I would like to argue that both exceptions instantiate the following scenario: bare CP combining with a verb that takes DP arguments but combining via the situation argument.

Let us start with the first exception. There are post-verbal CPs that seem to receive the same interpretation as nominative DPs, but with which *-to* is optional:[73]

(261) a. Menja obradoval [$_{DP}$ eë priezd].
I.ACC made.happy her arrival.NOM
'Her arrival made me happy.'

b. Menja obradovalo, [$_{DP}$ (to) [$_{CP}$ čto ona priexala]].
I.ACC made.happy DEM.NOM COMP she arrived
'That she arrived made me happy.'

[73] According to Hartman (2012), presence of the demonstrative in examples like (261b) is degraded, but I was unable to confirm this judgement with native speakers.

Data like (261b) made Hartman conclude that that if the clause stays in *v*P, it does not have to be nominalized to be interpreted as a CAUSER. I would like to argue against this conclusion, and suggest that bare CPs and CPs with overt demonstratives in (261b) do not receive the same interpretation: the overtly nominalized DP is indeed a CAUSER, but the bare CP is interpreted as describing propositional content of the mental state. There are two arguments in favor of this view.

First, post-verbal bare CPs like in (261b) can co-occur with post-verbal CAUSER DPs, suggesting they are not themselves CAUSERS. Consider (262)-(263).

(262) Maša obradovala menja [(*to) čto Ira priexala]].
Masha.NOM made.happy I.ACC (DEM) COMP Ira arrived
'Masha made me happy that Ira arrived.'

(263) Menja obradovala Maša [(*to) čto Ira priexala]].
I.ACC made.happy Masha.NOM (DEM) COMP Ira arrived
'Masha made me happy that Ira arrived.'

The CAUSER with verbs like *obradovat'* 'make happy' can occur before the verb (262) or after the verb (263). In both cases the embedded clause can also be present in the sentence, but the optionality of the demonstrative disappears: it must be absent. This makes sense under the hypothesis that CPs with and without demonstratives in (261b) actually do not play the same role in the argument structure of the verb: if only the overtly nominalized CP denotes a CAUSER, then it is expected that only it will be incompatible with an overt CAUSER DP.

The question that arises then is: how is the bare CP integrated with the verb? If it does not describe the CAUSER, what interpretation does it receive? To approach this question, I would like to observe that predicates describing mental/emotional states in Russian are sometimes intransitive verbs taking accusative arguments, (264a)–(265a). Such predicates can optionally combine with CPs, (264b)-(265b).

(264) a. Menja tošnit.
I.ACC be.sick.3SG
'I am sick.'
b. Menja tošnit,
I.ACC be.sick.3SG

[čto sud'i zasčitali gol "PSŽ" iz ofsaida].
COMP judges counted.in goal PSŽ from offside
'I hate it that the judges accepted Paris Saint-Germain's goal from offside.' (from https://www.dailyadvent.com/, page no longer exists)

(265) a. Eë përlo.
she.ACC press.forward.3SG
'She was thrilled.'
b. ...eë përlo,
she.ACC press.forward.3SG
[čto raby eë ljubjat i bogotvorjat.] <Link>
COMP slaves she.ACC love and worship
'...she was thrilled that the slaves love and worship her.'

Such embedded clauses must be bare: adding a demonstrative leads to ungrammaticality, as we see in (266a)–(266b).

(266) a. *Menja tošnit,
I.ACC be.sick.3SG
[to čto sud'i zasčitali gol "PSŽ" iz ofsaida].
DEM COMP judges counted.in goal PSŽ from offside
'I hate it (lit. 'I am sick') that the judges accepted Paris Saint-Germain's goal from offside.'
b. *...eë përlo,
she.ACC press.forward.3SG
[to čto raby eë ljubjat i bogotvorjat.]
DEM COMP slaves she.ACC love and worship
'...she was thrilled that the slaves love and worship her.'

I hypothesize that the structure with a non-nominalized CP as in (261b) is the same as with predicates like *tošnit'* 'be sick' and *peret'* 'be thrilled', albeit the difference in the obligatoriness of the clause. I suggest that the clauses in (264b)–(265b) are not interpreted as CAUSERS, but that they just describe the content of a mental state: e.g., for (265b) we could imagine the following truth-conditions:

(267) $[\![$Daenerys was thrilled that the slaves love and worship her$]\!]^{s,g,t}$ = 1 iff

$\exists s'[^{\Vdash}{}_{e}$mental-state(s')$_{s,t}$ $\wedge$ Holder(s')= Daenerys $\wedge$ Emotion(s')=thrill
$^{\Vdash}{}_{e}$Cont(s') = {s: the slaves love and worship Daenerys in s}]

For (267) to be true of a situation *s*, it has to contain a mental state whose holder is Daenerys, this mental state must have emotional coloring/tone characterized as "thrill", and the propositional content associated with it must be the proposition {s: the slaves love and worship Daenerys in s}. In other words, (267) says that Daenerys thought *"Slaves love and worship me"* and felt thrill. This interpretation is not that easy to distinguish from an interpretation according to which the fact that her slaves love and worship her is the Causer of Daenerys's thrill.

Here is where the second argument comes in. If post-verbal bare CPs in sentences like (261b) are Causers, it should not matter whether we have an attitude holder present in the sentence: Causers should be able to cause not only emotions of animate individuals, but many other things. If however post-verbal bare CPs describe propositional content of a mental state, as I propose, their presence should be contingent on existence of an attitude holder to whom having a mental state with this content could be ascribed. Consider (268)–(269), repeated from section 4.4.1:

(268) [*(To) čto on èto skazal] dokazalo /podtverdilo /oproverglo
dem comp he this said proved /confirmed /falsified
[ego nevinovnost'].
his innocence.acc
'(The fact) that he said this proved/confirmed/falsified his innocence.'

(269) [Ego nevinovnost'] dokazalo /podtverdilo /oproverglo
his innocence.acc proved /confirmed /falsified
[*(to) čto on èto skazal].
dem comp he this said
'(The fact) that he said this proved/confirmed/falsified his innocence.'

In (268) the clause describes the fact that caused a state of affairs that his innocence is proven/confirmed/falsified. The clause is in this case in the pre-verbal subject position, and the demonstrative is obligatory. We see that nothing changes if the object precedes the verb and the clause occupies the post-verbal position: overt nominalization is still obligatory. This example is different from (261b) in that it doesn't contain an attitude holder to whom thoughts can be attributed. This, I ar-

gue, is the reason why a bare post-verbal CP is not possible in (269): bare CPs cannot be CAUSERS, they can only describe content of mental states of attitude holders, but in (269) there is no attitude holder whose mental state the CP could describe. Hence, only a nominalized clause denoting a CAUSER is possible in this case.

Now let us consider the second exception to the generalizations in table 4.9. According to table 4.9, when nominalized CPs occur in oblique case positions, they must obligatorily have an overt *-to*. There are cases that look like exceptions to this rule, e.g. (270), whether the demonstrative in instrumental case seems optional.

(270) Maša xvastalas' /gordilas', (tem) čto Dima poxvalil eë.
Masha boasted /was.proud (DEM.INSTR) COMP Dima praised her
'Masha boasted/was.proud that Dima praised her.'

Again, I would like to propose that the optionality is only apparent: these verbs can combine both with nominalized phrases and with bare CPs, but these do not receive the same interpretations. The clause with a demonstrative in (270) is interpreted as what Masha was boasting about or as the object of the pride, whereas the bare CP is interpreted as the content of what Masha said (while boasting) or thought (while feeling proud).

The first argument in favor of this proposal comes again from sentences without attitude holders. Recall that in (257)–(259) we saw examples in which the demonstrative was obligatory with verbs that assign oblique cases. So we could ask: how are these different from (270)? I suggest that the difference is that the subjects in (257)–(259) are not experiencers/holders of a mental state. For example, in (271) Artyom is not an EXPERIENCER, he is an AGENT who makes use of the fact that the lecturer didn't take attendance; nothing is said about Artyom's mental state.

(271) Artëm pol'zovalsja **tem,** **čto** /*čto lektor ne otmečal
Artyom used **DEM.INSTR COMP** /COMP lecturer NEG noted
poseščaemost'.
attendance
'Artyom took advantage (lit. 'used') of the fact that the lecturer didn't take attendance.'

Put differently, *pol'zovat'sja* 'use' is not a predicate of situations with propositional content, whereas verbs like *xvastat'sja* 'boast' and *gordit'sja* have situations with

propositional content in their extension. Thus, a bare CP can modify latter verbs, but not the former. If on the other hand we think that the bare CP in (270) has the same interpretation as the nominalized clause, the observation that verbs that assign oblique cases have "optional" *-to* on embedded clauses only if an expericener /attitude holder is introduced in the sentence remains unexplained.

The second argument is distributional: if CPs with and without the demonstrative were the same kind of a clause with the same interpretation (e.g., what boasting is about, what the object of the pride is), they should not be able to co-occur with nominals receiving the same interpretation. However, sometimes it is possible for an OBLIQUE DP to co-exist with a bare CP. Here is a naturally occuring example (with the ungrammaticality of *-to* being the judgement of my consultants):

(272) **Preceding context:** "I had an acquaintance in the 90s, who had several shops and liked to send tax collectors and other examining organizations to the neighbor shops." <Link>

...často xvastalsja [ètim],
often boasted this.INSTR
(*tem) čto kak kruto on rešaet voprosy.
(DEM.INSTR) COMP how cool he solves issues

'(He) often boasted about this [= sending examining organizations to neighbor shops], (saying) that he is so cool at solving issues.'

In (272) the pronoun *ètim* in the instrumental case is referring to the speaker's acquaintance sending examining organizations to the neighboring shops. The speaker says that the acquaintance used to boast about engaging in this activity, and we understand that the propositional content associated with boasting was "How cool I'm solving the issues!". Note that in this case it is not possible to add a demonstrative on top of the CP: the role of the object of boasting is occupied by the instrumental DP, so a nominalized CP could not co-occur with it, and a nominalized CP cannot describe the content of boasting — a bare CP must be used to do this.

Thus, I conclude that both types of exceptions to the generalizations made above are only apparent: both exceptions represent cases where a clause could either be nominalized and combine via the DP argument path, or a clause could remain bare and combine by providing the propositional content associated with the situation argument of the verb. In the former case the demonstrative is obligatory, in the

latter case the demonstrative is impossible. It's just that the availability of the two paths of integration with these verbs produces the appearance of optionality.

4.9 Appendix B: Aspect & lexical decomposition of verbs like 'explain'

We have seen that at least some of the verbs of speech in Russian do not allow expression of the THEME argument and of the content of utterance at the same time:

(273) *Lena ob"jasnila [(to) čto xleba net]$_{Theme}$
Lena explained (DEM) COMP bread no
[čto Katja delala buterbrody nočju]$_{Content}$.
COMP Katya made sandwiches at.night
Intended: 'Lena explained (the fact) that there's no bread (by saying) *"Katya made sandwiches last night"*.'

I would like to suggest that this ban on co-occurence is a consequence of structural ambiguity: while the meanings of the verbal root and the embedded clauses are the same, the structure into which they are inserted is not. That we are dealing with ambiguity receives support from examples like (274):

(274) Nadja ob"jasnila, [čto programma A ne rabotaet], a Miša —
Nadya explained COMP program A NEG works and Misha
[čto programma B ne rabotaet].
COMP program B NEG works
'Nadya explained that the program A doesn't work, and Misha ~~explained~~ that the program B doesn't work.'

a. ✓ [THEME that program A doesn't work] + [THEME that program B doesn't work]
b. ✓ [CONTENT that program A doesn't work] + [CONTENT that program B doesn't work]
c. ✗ [THEME that program A doesn't work] + [CONTENT that program B doesn't work]
d. ✗ [CONTENT that program A doesn't work] + [THEME that program B doesn't work]

In (274) we see a coordination with the gapped verb in the second conjunct. Given that ellipsis requires semantic identity, we expect that the interpretations of the two CPs in (274) will be independent of each other if they arise due to vagueness of underspecification, but we expect them to obligatorily match if the two readings arise due to ambiguity. As we see, the two CPs must be interpreted in the same way: either both describe the fact that the Agent explained (274a), or both describe what the Agent said in order to explain some other fact (274b), but the non-matching interpretations are not possible, (274c)-(274d). This suggests that we are dealing with ambiguity, but does not determine the type of ambiguity involved: both lexical and structural ambiguity would require the interpretations of CPs to match, cf. sentences in (275) and (276).

(275) Susi saw a bat, and Jill did too. *lexical ambiguity*

a. ✓ Susi saw a bat (the animal), and Jill saw a bat (the animal).
b. ✓ Susi saw a baseball bat, and Jill saw a baseball bat.
c. ✗ Susi saw a bat (the animal), and Jill saw a baseball bat.
d. ✗ Susi saw a baseball bat, and Jill saw a bat (the animal).

(276) Mary saw a boy with the binoculars, and Jill did too.[74] *structural ambiguity*

a. ✓ M. saw a boy that had binoculars, J. saw a boy that had binoculars.
b. ✓ M. saw a boy using binoculars, J. saw a boy using binoculars.
c. ✗ M. saw a boy that had binoculars, J. saw a boy using binoculars.
d. ✗ M. saw a boy using binoculars, J. saw a boy that had binoculars.

I cannot conclusively exclude lexical ambiguity analysis for sentences with verbs like *ob"jasnit'* 'explain', but I would like to suggest that it is implausible. We expect lexical ambiguity to be accidental and non-systematic in nature, e.g. *bank* (*of the river*) vs *bank* (*financial institution*), but we have seen that the ambiguity of the embedded clauses with verbs of speech is systematic: there is a whole class of verbs of speech that are ambiguous in the same way.

[74] Roger Schwarzschild (p.c.) asks whether the preposition *with* has the same meaning in phrases *see with the binoculars* and *boy with the binoculars*. I assume that *with* has a single meaning and the only difference between the two interpretations of the sentence *Mary saw a boy with the binoculars* is in the position of attachment of the *with*-PP. It could however be the case that *with* has more than one alloseme, and the choice between its allosemes is determined by the syntactic constituent that *with* combines with. Hence, we could get different (though perhaps related) interpretations of *with* when it combines with a verbal phrase and when it combines with a noun.

If the ambiguity is structural, the question is: how do the syntactic structures with THEME arguments and with Content-of-Utterance CPs differ, and why would they differ? I would like to suggest that the answer might lie in how event structure of predicates is mapped to syntax. Sentences with THEME arguments and with Content-of-Utterance CPs differ in their aktionsart, and also in the properties of their event structure. If these differences are reflected in the syntactic structures of verbal phrases, then we will get two different representations for sentences with THEME arguments and with Content-of-Utterance CPs.

Let me first illustrate the difference in the lexical aspect. Sentences with THEME arguments are accomplishments, but sentences with Content-of-Utterance CPs are achievements. This can be illustrated with two diagnostics: the *in*-adverbial test and the *take-time* test. *In*-adverbials that describe the time within which the eventuality took place are compatible only with telic predicates that have some duration, and thus can be used with accomplishments but are odd with achievements. In (277) we see that an in-adverbial with *ob"jasnit'* 'explain' can describe the time within which the explanation took place, but this is not a possible interpretation of the Content-of-Utterance CP. In this respect sentences with Content-of-Utterance CPs pattern with sentences with *skazat'* 'say'.

(277) Lena ob"jasnila [čto v škafu net xleba] za dve sekundy.
Lena explained COMP in cupboard no bread in two seconds
'Lena explained that there is no bread in the cupboard.'

a. **THEME:** Lena explained the fact that there is no bread in the cupboard in two seconds (the explanation took two seconds).

b. **CONTENT-OF-UTTERANCE:** ??Lena explained some fact by saying "there is no bread in the cupboard", which took her two seconds (only possible: two seconds preceded saying).

(278) ??Lena skazala [čto v škafu net xleba] za dve sekundy.
Lena said COMP in cupboard no bread in two seconds
'Lena said that there's no bread in two seconds.'
(only possible: two seconds preceded saying)

In both (277b) and (278) *za dve sekundy* 'in two seconds' can only be interpreted as describing the time that Lena was preparing to perform the saying event, but can-

not describe the duration of the saying. This suggests that sentences with Content-of-Utterance CPs are achievements.

The second diagnostics is illustrated in (279). Here we again see that sentences with THEME arguments and with Content-of-Utterance CPs are interpreted differently: in the former *5 minutes* is the duration of Lena's explaining /clarifying /commenting, while in the latter 5 minutes is the time that Lena prepared to say *"The process of admission to the university has changed"*.

(279) Lene potrebovalos' 5 minut čtoby ob"jasnit' /utočnit'
Lena.DAT took 5 minutes COMP.SUBJ explain.INF /clarify.INF
/prokommentirovat' [čto process postuplenija v universitet
/comment.INF COMP process of.admission in university
izmenilsja].
changed
'It took 5 minutes for Lena to explain/clarify/comment (on) that the process of admission to the university changed.'

a. **Theme:** The duration of Lena's explaining/clarifying/commenting (on) the fact that the process of admission to the university changed was 5 minutes.

b. **Content-of-Utterance:**
The time that Lena hesitated before saying *"The process of admission to the university changed"* (as an explanation/clarification of some fact /comment on some claim) was 5 minutes.

This supports the conclusion that predicates in sentences with clauses that describe THEMES are accomplishments, and predicates in sentences with clauses that describe the content of the utterance are achievements.

In addition to aktionsart, sentences with THEME-CPs and Content-of-Utterance-CPs differ in the number of subevents that their predicates describe. I illustrate this with negation and decomposition adverbs like *počti* 'almost' and *opjat'* 'again'. We could think of the verbs of speech like *ob"jasnit'* 'explain' as complex events involving two components: a subevent of causation (perhaps, by speech) and a subevent denoting the result state of that causation (280).

(280) **e_1 caused e_2**:

a. e_1 is an event of causation by the subject

b. e_2 is the result state that the THEME (fact/claim/opinion) finds itself in after the completion of the event (the state of being explained /justified/argued for)

This bi-eventive structure seems to be indeed what we find with sentences with clauses that describe THEME arguments. However, sentences with CPs that describe the content of the utterance seem to lack any indication of the resulting state being present—it cannot be targeted by adverbs like *počti* 'almost' and *opjat'* 'again', and denying the attainment of the result state is not sufficient for the negated sentence with such clauses to be true. Consider the sentence containing negation in (281).

(281) Lena ne obosnovala [$_{CP}$ čto nam stoit predpočest' ètot variant].
Lena NEG justified COMP to.us is.worth prefer.INF this option
'Lena didn't justify that we should choose this option.'

a. *THEME-CP reading:* 2 *subevents* (*causing* + *state of being justified*)

(i) ✓ $\neg(e_1 + e_2)$:
Lena didn't do anything to justify (the position) that we should prefer this option.

(ii) ✓ $\neg(e_2)$ Lena said something, but that did not justify (the position) that we should prefer this option.

b. *CONTENT-CP reading: 1 subevent* (*of saying in order to justify*)

(i) ✓ $\neg(e_1 + e_2)$
Nothing happened: L. didn't say *"We should choose this option"*.

(ii) *$\neg(e_2)$ Lena said *"We should choose this option"*, but that did not successfully justify some position.

If we interpret the embedded clause as denoting the THEME argument, this sentence is compatible with two scenarios: it could be that Lena didn't do anything at all, or it could be that she tried to justify the claim that we should prefer this option, but failed at justifying it. The reading we get under the first scenario entails the reading we get under the second scenario: if nothing happened, then of course the result state has not been attained either. However, what is interesting is that denying the attainment of the result state is sufficient for (281) to be true under the THEME-CP

reading. This is expected if existence of the result state e_2 is a conjunct in the truth-conditions of the positive sentence with a Theme-CP. Then negating the existence of e_2 would entail the negation of the whole sentence (282).

(282) $\neg\exists e_2[\mathrm{q}(e_2)] \Rightarrow \neg\,[\exists e_1[\mathrm{p}(e_1)] \wedge \exists e_2[\mathrm{q}(e_2)]]$ (for any p and q)

If, on the other hand, we consider the Content-of-Utterance reading of the embedded clause, the sentence becomes compatible only with one scenario: it has to be the case that Lena didn't say anything. If the result state was part of the conjunctive meaning of a sentence with a Content-of-Utterance CP, then we would expect negating it to provide sufficient conditions for (281) to be true, however we see that this is not the case: whether Lena was successful in her justification or not is not relevant under the Content-of-Utterance reading, only whether she uttered *"We should choose this option"* is. This is the first piece of evidence that predicates in sentences with content-describing CPs do not have a result state as their subevent.

Other evidence comes from decomposition adverbs *počti* 'almost' and *opjat'* 'again'. These adverbs can receive at least two readings in sentences with accomplishments like *open*. For example, in (283) it is either the whole event of Susi opening the door that was repeated, or only the result state of the door being open.

(283) Susi opened the door again.

a. $again(e_1 + e_2)$:
Susi opened the door before, and she opened the door now.

b. $again(e_2)$: The door was open before, and Susi opened the door now.

The existence of such ambiguity and its sensitivity to the syntactic structure have been claimed to provide an argument for the lexical decomposition of predicates in syntax (McCawley 1972, Dowty 1979, von Stechow 1995, 1996, Rapp & Von Stechow 1999, Beck 2005, 2006, Alexiadou, Anagnostopoulou & Lechner 2014, Lechner et al. 2015): verbs like *open* are decomposed into the causing subevent and the result state, and decomposition adverbs can either scope above the whole predicate, or just above the constituent denoting the result state.[75] Thus, adverbs like *počti* 'almost' and *opjat'* 'again' can tell us whether the predicates in sentences with

[75]The two subevents are glued together by a principle of semantic composition (Principle R, see (von Stechow 1996, Beck 2005)) that "inserts" the cause and become components and links with their help two predicates of events (one true of the causing event, one true of the result state).

Theme-CPs and Content-of-Utterance CPs are decomposed into a causing subevent and the result state or not. Consider the sentence in (284).

(284) Lena opjat' ob"jasnila [$_{CP}$ čto v škafu net xleba].
Lena again explained comp in cupboard no bread
'Lena explained that there is no bread in the cupboard again.'

a. *Theme-CP reading: 2 subevents* (*causing + state of being explained*)
   (i) *again*($e_1 + e_2$):
   ✓ Lena explained that there's no bread before.
   (ii) *again*(e_2):
   ✓ There already existed an explanation for why there's no bread before. Lena caused the state of affairs that again there's an explanation of this fact.

b. *Content-CP reading: 1 subevent* (*saying in order to explain*)
   (i) *again*($e_1 + e_2$): ✓ Lena already said *''There is no bread"* as an explanation of some other fact (e.g., of the fact that she sent Petya to the grocery store).
   (ii) *again*(e_2): ✗There already was an explanation of some fact. Lena said *"There's no bread"* and thus caused again there to be an explanation of this fact.

Under the Theme-CP reading, there are two possible interpretations of *opjat'* 'again'. *Opjat'* 'again' can take wide scope with respect to the causing subevent: Lena explained the fact that there is no bread before, and she explained the fact that there is no bread now. The adverb can also take the scope only over the result state: Lena has never explained this fact before, but some explanation for absence of the bread existed; now Lena caused there to be an explanation of this fact again. This supports the conclusion that the predicate with Theme-CPs is bi-eventive. If we interpret the clause as providing the content of utterance however, only one reading is available: Lena said *"There is no bread"* in order to explain something before, and she did the same thing now. It is completely impossible to understand (284) as saying that there was some explanation of some fact before, and now Lena is saying *"There is no bread"* in order to attain the same result state of this fact being explained.

The same difference between sentences with Theme-CPs and Content-CPs is ob-

served with *počti* 'almost': 3 out of 4 logically possible readings are available (285).

(285) Maša počti ob"jasnila [$_{CP}$ čto v klasse nikogo net].
Masha almost explained COMP in class nobody no
'Masha almost explained that there is no one in the class.'

a. *THEME-CP reading:*
   (i) *almost*($e_1 + e_2$):
   ✓'Masha almost started explaining the fact that there's no one in class, but changed her mind and did not do anything.'
   (ii) *almost*(e_2):
   ✓ 'Masha was explaining the fact that there's no one in class for a while, and almost succeeded, but did not.'

b. *CONTENT-CP reading:*
   (i) *almost*($e_1 + e_2$):
   ✓ 'Masha almost uttered *"There's no one in class"* as an explanation of some fact, but changed her mind and did nothing.'
   (ii) *almost*(e_2): ✗ 'Masha said *"There's no one in class"*, which almost explained some fact, but did not.'

Under both interpretations of the CP it is possible to understand the sentence as saying that the whole event was close to occurring, but did not actually happen. However, under the THEME reading we also get the interpretation where the event did in fact start, and came close to culmination, but didn't culminate. This reading is absent with clauses that describe the content of the utterance: it's not possible to understand (285) as saying that Masha said *"There's no one in the class"* and came close to explaining some fact, but didn't reach the state of that fact being explained.

Thus, the data from the decomposition adverbs suggests that the event structure of the predicates involved in sentences with THEME-CPs and Content-of-Utternace CPs is not the same: the former are bi-eventive accomplishments, the latter are achievements that do not have causing events and result states as their proper parts. If predicates are lexically decomposed in syntax, then the different event properties of these sentences would have to correspond to different syntactic representations.

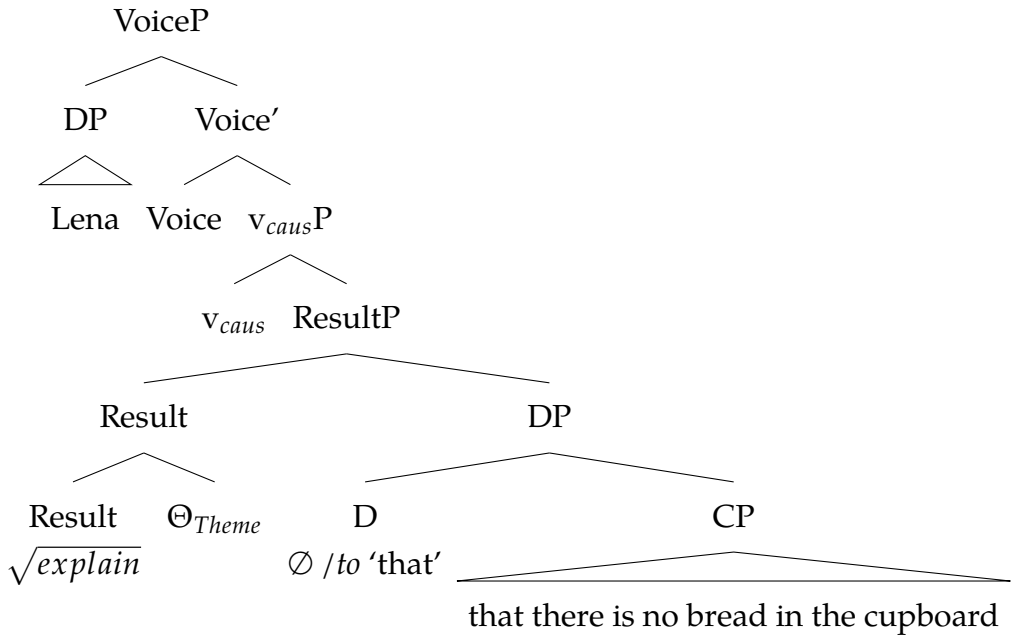
Here is a proposal about how such decomposition could proceed. Let us assume that verbal roots of verbs of speech like 'explain' denote result states:

(286) a. $[\![\sqrt{explain}]\!]^{s,g,t} = \lambda s'.\ ^{\Vdash_e}$be-clear$(s')_{s,t}$
b. $[\![\sqrt{argue}]\!]^{s,g,t} = \lambda s'.\ ^{\Vdash_e}$be-argued-for$(s')_{s,t}$.
c. $[\![\sqrt{interpret}]\!]^{s,g,t} = \lambda s'.\ ^{\Vdash_e}$be-interpreted$(s')_{s,t}$.
d. $[\![\sqrt{comment.on}]\!]^{s,g,t} = \lambda s'.\ ^{\Vdash_e}$be-commented-on$(s')_{s,t}$.
e. ...

For example, $\sqrt{explain}$ denotes a set of result states of something being clear, explained. Let us now illustrate the two structures into which such roots could be inserted with the example in (287). I propose the structure in (288) for interpretation of (287) according to which the clause describes the Theme argument.

(287) Lena ob"jasnila, [$_{CP}$ čto v škafu net xleba].
Lena explained comp in cupboard no bread
'Lena explained that there's no bread in the cupboard.'
a. **Theme**: Lena explained the fact that there's no bread in the cupboard.
b. **Content-of-Utterance**: Lena said *"There's no bread in the cupboard"* to explain some other fact.

(288)



In (288) the predicate is decomposed into several syntactic heads: Result and v$_{caus}$ introduce the result state and the causing subevent, and Θ_{Theme} and Voice introduce the undergoer of the result state and the Causer respectively. The embed-

ded clause is a constituent inside the THEME DP argument: it denotes a predicate that the determiner takes as its argument. The THEME argument denotes a contextually salient individual whose content is *"There is no bread in the cupboard"*, (289).

(289) $[\![\text{DP}]\!]^{s,g,t} = \iota x(^{\Vdash_e}\textsc{Cont}(x)=\{s: \text{there is no bread in the cupboard in } s\})$

The verbal root combines with Θ_{Theme}, (290), and then combines with the DP as its argument, giving us the ResultP with the denotation in (291).

(290) $[\![\sqrt{explain}\ \Theta_{Theme}]\!]^{s,g,t} = \lambda x.\lambda s'.\ ^{\Vdash_e}\text{be-clear}(s')_{s,t} \wedge \textsc{Theme}(s')=x.$

(291) $[\![\text{ResultP}]\!]^{s,g,t} = \lambda s'.\ ^{\Vdash_e}\text{be-clear}(s')_{s,t} \wedge \textsc{Theme}(s') = \iota x(^{\Vdash_e}\textsc{Cont}(x)=\{s: \text{there is no bread in the cupboard in } s\})$

v_{caus}, which has the denotation in (292), then takes the predicate of situations denoted by ResultP as its argument. After Voice introduces the external argument, existential closuer closes off the situation argument, and tense combines, we will get the truth-conditions in (293).

(292) $[\![v_{caus}]\!]^{s,g,t} = \lambda f: f \in D_{ist}.\lambda s'.\ \exists s'',t'' \subseteq t\ [f(t'')(s'') \wedge \textsc{caus}(s'')(s')_{s,t}]$

(293) $[\![\text{Lena ob''jasnila } [_{Theme}\ \emptyset/to \text{ što v škafu net xleba}]]\!]^{s,g,t} =$
$\exists t' < t\ [\exists s',s'',t'' \subseteq t'\ [\textsc{Causer}(s')=\text{Lena} \wedge \textsc{caus}(s'')(s')_{s,t'} \wedge\ ^{\Vdash_e}\text{be-clear}(s'')_{s,t''}$
$\wedge \textsc{Theme}(s'')=\iota x(^{\Vdash_e}\textsc{Cont}(x)=\{s: \text{there's no bread in the cupboard in } s\})]]$

'Lena explained that there is no bread in the cupboard' is true under the this reading iff there is a causing situation, whose CAUSER is Lena, and whose result state is the state of being clear that holds of the salient individual with the propositional content *"There is no bread in the cupboard"*. One consequence of analyzing sentences with THEME-CPs as causative constructions is that we do not necessarily expect the external arguments to be animate. And it is indeed the case that some of the verbs in the class under consideration allow inanimate CAUSERS, for example *ob''jasnit'* 'explain' and *utočnit'* 'clarify' do (294)-(295).

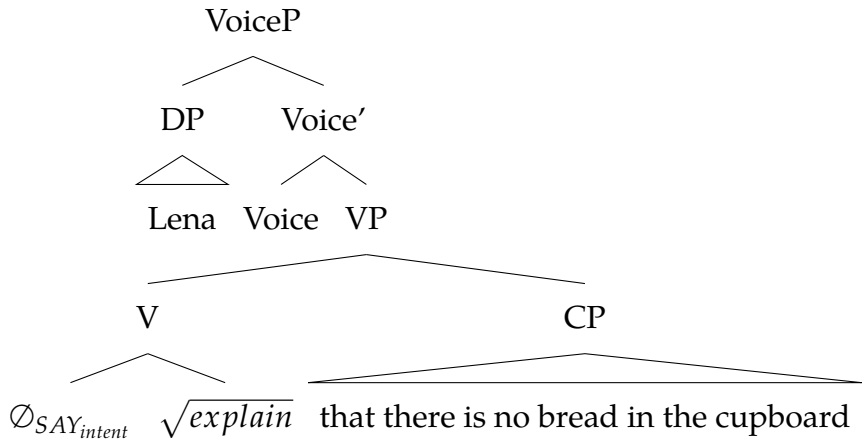
(294) [To, što Lena ušla], (*šëpotom) ob''jasnjaet, što Petja grustit.
DEM COMP Lena left (with.whisper) explains COMP Petja is.sad
'That Lena left explains that Petja is being sad.'

(295) Èti testy (*šëpotom) utočnjajut, čto algoritm ne rabotaet v
these tests (with.whisper) clarify COMP algorithm not work in
dvux slučajax.
two cases
'These tests clarify that the algorithm doesn't work in two cases.'

The ungrammaticality of the adverb *šëpotom* 'with whispering' confirms that there is no implicit AGENT in (294)-(295). Some other verbs in this class however do require external arguments to be animate (e.g., *prokommentirovat'* 'comment', *prointerpretirovat'* 'interpret'). This would have to be an additional requirement on the CAUSERS of events that bring about states denoted by these verbal roots.

I propose the structure in (296) for the interpretation of (287) according to which the clause describes the content of the utterance.

(296)



In this structure there is a silent verb $\emptyset_{SAY_{intent}}$ 'say with intent to X' that takes the verbal root as its argument.

(297) $[\![\emptyset_{SAY_{intent}}]\!]^{s,g,t}$ =
$\lambda f\colon f \in D_{isst}.\lambda s'.\ {}^{\Vdash_e}say(s')_{s,t} \wedge \forall s''$ [in s'' AGENT(s') succeeds in their intentions in s' $\Rightarrow \exists s''',t'' \subseteq t[f(t'')(s'')(s''')=1 \wedge CAUS(s''')(\kappa(s'))_{s'',t}]$

This silent verb takes a function from times to situations to properties of situations as its argument, and it returns a predicate of saying situations of a certain sort. Let us consider what meaning we will get if we combine $\emptyset_{SAY_{intent}}$ with $\sqrt{explain}$:[76]

[76] We need to add another clause to the Intensional Functional Application rule to combine them:

(298) $[\![\varnothing_{SAY_{intent}}\ \sqrt{explain}]\!]^{s,g,t} =$
$\lambda s'.\ {}^{\Vdash_e}say(s')_{s,t} \wedge \forall s''$ [in s'' AGENT(s') succeeds in their intentions in s'
$\Rightarrow \exists s''',t'' \subseteq t[{}^{\Vdash_e}be\text{-}clear(s''')_{s'',t''} \wedge CAUS(s''')(\kappa(s'))_{s'',t}]$

(298) denotes a predicate of situations of ***saying with intent to explain something***: it is a predicate of saying situations such that in all situations s'' in which the AGENT of saying succeeds in their intentions, the counterpart of the saying situation causes there to be a result state of something being clear. A bare embedded clause can then combine with this complex verb by Predicate Modification and provide the content of the saying event, (299).

(299) $[\![\varnothing_{SAY_{intent}}\ \sqrt{explain}$ čto v škafu net xleba$]\!]^{s,g,t} =$
$\lambda s'.\ {}^{\Vdash_e}say(s')_{s,t} \wedge {}^{\Vdash_e}CONT(s') =$ {s: there is no bread in the cupboard in s}
$\wedge \forall s''$ [in s'' AGENT(s') succeeds in their intentions in s' $\Rightarrow \exists s''',t'' \subseteq t$
$[{}^{\Vdash_e}be\text{-}clear(s''')_{s'',t''} \wedge CAUS(s''')(\kappa(s'))_{s'',t}]$

After the AGENT is introduced by Voice, existential closure applies, and tense is merged, we will get the truth-conditions for the sentence in (300).

(300) $[\![$Lena $\varnothing_{SAY_{intent}}\ \sqrt{explain}$ čto v škafu net xleba$]\!]^{s,g,t} =$
$\exists t' < t$ [$\exists s'[{}^{\Vdash_e}say(s')_{s,t'} \wedge CAUSER(s')$=Lena $\wedge {}^{\Vdash_e}CONT(s')$={s: there is no bread in the cupboard in s} $\wedge \forall s''$[in s'' AGENT(s') succeeds in their intentions in s' $\Rightarrow \exists s''',t'' \subseteq t'[{}^{\Vdash_e}be\text{-}clear(s''')_{s'',t''} \wedge CAUS(s''')(\kappa(s'))_{s'',t'}]]]$

The sentence in (287) under the Content-of-Utterance interpretation of the CP can be paraphrased as "Lena said *"There is no bread in the cupboard"*, and by doing this she was trying to explain something. One thing to note about this derivation is that it does not on its own predict that the Content-of-Utterance CP should be obligatory, since it treats the CP as a modifier. Thus, something additional is needed to ensure the ungrammaticality of a sentence where the verb does not combine with anything but the AGENT **Lena ob"jasnila* 'Lena explained' (see section 4.5.4).

To sum up, if we think that event structure is represented in syntax in the way

(i) *Addition to Intensional Functional Application* (*IFA*)
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are and $[\![\beta]\!]^{s,g,t}$ is a function whose domain contains λt: t $\in D_i$. λs: s $\in D_s$.$[\![\gamma]\!]^{s,g,t}$.
In this case, $[\![\alpha]\!]^{s,g,t} = [\![\beta]\!]^{s,g,t}(\lambda t.\lambda s.[\![\gamma]\!]^{s,g,t})$.

I suggested, the ban on co-occurence arises because the two interpretations of embedded clauses correspond to different structural configurations. A structure with a Content-of-Utterance CP involves creation of a complex verb 'say with intent to X', and there is no place for adding a Theme argument in this structure: if $\sqrt{explain}$ combined with Θ_{Theme}, it would no longer be able to compose with $\varnothing_{SAY_{intent}}$.

A structure with a Theme argument on the other hand is a causative construction. The only possible way for a bare CP to combine within that structure is by modifying the causing subevent. However, it doesn't seem that any arbitrary causing subevent could be attributed propositional content. For example, consider an example with the causative construction in (301).

(301) a. Mary made this fact clear.
b. *Mary made [this fact] clear [that John came].
'Mary made this fact clear by saying *"John came"*.'

It could have been the case that Mary made this fact clear by saying *"John came"*. But it is not possible to add an embedded clause into the causative construction to express that. However this restriction comes about, I suggest that in the causative structure of verbs like *ob"jasnit'* 'explain' we see the same incompatibility of the causing subevent and the clause that describes propositional content, making adding a Content-of-Utterance CP into such structure impossible.

One hypothesis could be that only verbs whose causing subevents *must* have propositional content associated with them can combine with content-describing CPs. This would explain why *prokommentirovat'* 'comment on' seems to be able to take both a Theme and a Content-of-Utterance CP at the same time, (150), repeated here as (302), unlike *ob"jasnit'* 'explain'. Situations that cause something to be commented on need to be situations of speaking or communicating in some other manner, and so they must have content. Situations that cause something to be clear however could be some actions that do not have propositional content associated with them. I leave further exploration of this hypothesis for future research.

(302) **Context:** The speaker was told at the hospital desk that they could see the doctor, but it turned out that the doctor doesn't admit patients. Maria is a hospital manager.

Maria [dannuju situaciju]$_{Theme}$ prokommentirovala,
Maria this situation commented.on
[čto ona tut ni pri čëm]$_{Content}$.
COMP she here not by something
'Maria commented on this situation [that the speaker was booked an appointment for a day when a doctor doesn't admit patients] [by saying] that it's not her fault.' <Link>

Part III

The Role of the Environment

Chapter 5

Polarity-sensitivity in Clausal Embedding

5.1 Introduction

This chapter aims to contribute to the following question: Can the bigger environment in which the verb and the embedded clause occur influence clausal selection, and if yes, how can such environment-sensitivity arise?

The standard view of clausal selection, according to which selection amounts to restrictions that verbs place on clausal arguments (restrictions on category, Bresnan 1972, Chomsky 1973 a.o., or on semantic type Grimshaw 1979, Pesetsky 1982, 1991, a.o.), does not expect the bigger environment to be able to influence what kind of clauses a verb can combine with. However, some cases of environment-sensitivity of clausal selection have been observed in the literature. For example, *believe* is unable to combine with questions in sentences like (1a), but when the verb occurs in the context of negation and the ability modal *can*, it permits interrogative complements (1b), (T. Roberts 2019, 2021).

(1) a. *Susan believes which town was obliterated by the meteor.
(T. Roberts 2019: 665, ex. (1b))
b. Susan can't believe which town was obliterated by the meteor.
(T. Roberts 2019: 666, ex. (2))

Adger & Quer (2001) discuss another case of environment-sensitivity: some En-

glish verbs (e.g. *admit, hear, say*) can combine with *if*-clauses (2a) only in some environments, for example in questions or under negation (2).[1,2]

(2) a. # Julie admitted/heared/said if the bartender was happy.
b. Did Julie admit/hear/say if the bartender was happy?
(Adger & Quer 2001: 110, ex. (12a))
c. Julie didn't admit/hear/say if the bartender was happy.
(Adger & Quer 2001: 110, ex. (12b))

Both phenomena are not restricted to English, but exist in a variety of languages (see T. Roberts 2021 and Adger & Quer 2001 for discussion). This is puzzling for the standard view of selection: e.g., if a verb wants its complement to bear a [+declarative] feature, or semantically selects for a proposition, how could operators higher in the clause change that? Thus, data like in (1)–(2) raise the question of what the causes of environment-sensitivity of clausal embedding are.

In this chapter I will investigate a case of environment-sensitivity in Russian that has to do with the mood of the embedded clause: the phenomenon of so-called polarity subjunctives (Rivero 1971, Farkas 1992, Stowell 1993, Brugger & D'Angelo 1995, Giannakidou 1995, Giannakidou & Quer 1997, Quer 1998, Siegel 2009, Quer 2009, Giannakidou 2011, a.o.). *Polarity subjunctive* is a descriptive term for embedded clauses with subjunctive morphology that occur with a class of verbs only in certain environments—e.g., under negation, in questions, in antecedents of conditionals. For example, consider 'remember' in Catalan (Quer 1998). In the absence of additional operators, this verb is compatible only with indicative clauses:

(3) a. Recordo que en Miquel treballa.
remember.PRS.1SG that the Miquel work.**IND**.PRS.3SG
'I remember that Miquel works.' (Quer 1998: 35, ex. (3d))

[1]Judgements for this sentence come from me consulting with a few English speakers. Adger & Quer (2001) don't provide the minimal pair to (2b)-(2c), but illustrate the judgement with (i):

(i) # *The bartender told me if I was drunk.* (Adger & Quer 2001: 109, ex. (11))

[2]It seems that verum focus is another factor that improves *if*-clauses with some of these verbs:

(i) Julie DID say/hear if Anna won the election. But I'm not telling you what she said/heard!

b. * Recordo que en Miquel treballi.
remember.PRS.1SG that the Miquel work.**SUBJ**.PRS.3SG
'I remember that Miquel works.' (Quer 1998: 35, ex. (3c))

However some changes in the environment, for example introduction of negation, enable the verb to combine with subjunctive complements too:[3]

(4) a. No recorda que en Miquel treballa.
NEG remember.PRS.3SG that the Miquel work.**IND**.PRS.3SG
'S/he does not remember that Miquel works.' (Quer 1998: 36, ex. (6a))
b. No recorda que en Miquel treballi.
NEG remember.PRS.3SG that the Miquel work.**SUBJ**.PRS.3SG
'S/he does not remember that Miquel works.' (Quer 1998: 34, ex. (3a))

Under the view that embedding verbs select for the mood of their complements (e.g., see (Picallo 1984, 1985, Raposo 1985-1986)), this pattern is surprising: how can addition of negation reverse such selection? While perhaps unexpected, the existence of verbs that take subjunctives only in some environments seems to be a cross-linguistically pervasive feature of languages with overt indicative/subjunctive distinctions: polarity subjunctives have been claimed in the literature to exist at least in Bulgarian (Siegel 2009), Catalan (Quer 1998), French (Farkas 1992), Italian (Brugger & D'Angelo 1995), Modern Greek (Philippaki-Warburton 1994, Giannakidou 1995, Siegel 2009), Romanian (Farkas 1992), and Spanish (Rivero 1971). Thus, polarity subjunctives seem to offer an excellent test case for probing the question of how the broader environment can affect clausal selection.

In this chapter I will investigate polarity subjunctives in Russian, and focus on the question in (5), which has not yet received much attention in the literature.

(5) **Key Question:** With what kinds of verbs does availability of subjunctive complements depend on the environment? Why only with these verbs?

[3]When both kinds of complements are possible, the sentences with indicative and with subjunctive clauses are often claimed to differ in meaning. For example, Quer (1998) claims that in sentences like (4a)-(4b) subjunctive has narrow scope with respect to negation and indicative takes wide scope, and in the latter case there is a presupposition that the complement is true from the point of view of the speaker. I will argue in section 5.3.3 that, at least for Russian, the picture is more nuanced: while subjunctive clauses indeed always take narrow scope, there is more than one LF available for sentences with indicative complements, not all of which lead to factive inferences.

I will argue that the answer to this question has to do with parameters of clausal embedding that I have argued for in previous chapters on different empirical grounds: the meaning of the embedded clause (see chapters 2-3) and the argument structure of the embedding verb (see chapter 4).

This chapter is structured as follows. The section 5.2 is devoted to clauses that behave like weak NPIs. I will argue that such clauses have to be Sit-CPs (subsection 5.2.2), and make a proposal that accounts for this restriction, as well as for their polarity-sensitivity (subsection 5.2.3). Section 5.3 investigates some of the predictions that my proposal put forward in the section 5.2 makes: predictions about subjunctives in relative clauses (subsection 5.3.1), about licensing of pronominal weak NPIs in different kinds of clauses (subsection 5.3.2), and about factivity (subsection 5.3.3). In section 5.4 I discuss clauses that behave like strong NPIs in Russian, and sketch some ideas towards a possible analysis of this phenomenon. Section 5.5 concludes the chapter, and section 5.6 contains some supplementary materials.

5.2 Clauses as Weak NPIs

5.2.1 Weak NPI Subjunctives in Russian

Subjunctive clauses that behave like weak NPIs occur in Russian with verbs like *pomnit'* 'remember', *zamečat'* 'notice', *videt'* 'see', *slyšat'* 'hear', and potentially also with *čuvstvovat'* 'feel'[4] and *obnaruživat'*.[5] With these verbs, subjunctive comple-

[4]My consultants had mixed judgments about the possibility of subjunctives with *čuvstvovat'* 'feel'. One does however find quite a few naturally occurring examples with this verb, for example:

(i) Ja ne čuvstvovala, čto-**by** mne xot' kto-to soperežival.
I NEG feel.PST COMP-**SUBJ** I.DAT at.least who-SPEC empathize.PST
'I did not feel anyone empathizing with me.' <Link-to-source>

[5]The verb *obnaruživat'* 'discover' is quite unusual in that it seems to require a plural expression inside of the embedded clause (i). I do not have an explanation for why such a pattern should arise.

(i) a. Ty obnaružival, čto-by **student-y** kurili na kryl'ce?
you discover.PST COMP-SUBJ **student-PL** smoke.PST.PL on porch
'Have you been discovering students smoking on the porch?'
(Different students at different times)
b. ??Ty obnaružival, čto-by **student** kuril na kryl'ce?
you discover.PST COMP-SUBJ **student.SG** smoke.PST.SG on porch
'Have you been discovering the student smoking on the porch?'
(Good only if the addressee is known to have constant memory loss.)

ments are possible in all those environments in which pronominal weak NPIs are licensed in Russian. I will call such polarity subjunctives *weak NPI subjunctives*. Sentences in (6)–(7) provide an example: the subjunctive embedded clause cannot occur in a "positive" context, but is possible under negation.

(6) Mitja pomnit čto /*čto-**by** Nastja kurila.
Mitya remembers COMP /COMP-SUBJ Nastya smoke.PST
'Mitya remembers that Nastya smoked.'

(7) Mitja ne pomnit čto /čto-**by** Nastja kurila.
Mitya NEG remembers COMP /COMP-SUBJ Nastya smoke.PST
'Mitya doesn't remember that Nastya smoked.'

Let us briefly discuss the morphosyntactic appearance of these clauses. Subjunctive embedded clauses in Russian have a particle *by* attached to the complementizer, while indicative clauses lack this particle. The particle *by* has a variety of uses in the grammar, many of which are described in the supplementary section 5.6.1. *By* is always accompanied by *X-marking* (von Fintel & Iatridou To appear): the clause it occurs in exhibits fake past tense morphology. For example, while the verb of the embedded clause in (7) is morphologically in the past tense, the sentence could be understood as saying that Mitya doesn't remember Nastya currently being a smoker.[6] Another example of the fake past with *by* is in (8).

(8) Esli **by** **zavtra** **vy**-pal sneg, my **by** byli rady.
if **SUBJ** **tomorrow** **PFV**-fall.down.**PST** snow we **SUBJ** be.**PST** happy
'If the snow fell tomorrow, we would be happy.'

Note that while the tense is fake in (8), the aspect is not: e.g., the predicate in the antecedent is interpreted as perfective, in line with its morphology.

In addition to the fake past tense which accompanies all uses of *by*, weak NPI subjunctives show several other restrictions on tense and aspect. First, the subjunctive clause cannot receive a future interpretation (cf. (8)):

(9) Tol'ko Vasja pomnit, čto-**by** Maša **včera** /***zavtra**
only Vasya remembers COMP-**SUBJ** Masha **yesterday /tomorrow**

[6]The sentence in (7) is also compatible with the past tense interpretation.

prinosila pizzu.
bring.PST pizza
a. ✓'Only Vasya remembers that Masha brought pizza yesterday'.
b. * 'Only Vasya remembers that Masha will bring pizza tomorrow.'

While habitual present tense eventualities are good, as we have seen in (7), episodic present tense eventualities are slightly degraded, (10).

(10) ? Ja ne pomnju, čto-**by** Maša **sejčas** xodila po baram.
I NEG remember COMP-**SUBJ** Masha **now** go.PST to bars
'I don't remember that Masha is bar-hopping now.'

The problems with (9) and (10) seem to stem from the incompatibility of verbs like 'remember' with situations that have not yet taken place: the thing that one attempts to remember has to pre-exist the remembering eventuality (cf. the presupposition of Buryat's *hanaxa* from section 4.4.3). One cannot generally perceive a situation that is not yet taking place. However it is possible to construct a context where ability of such perception is granted. Consider (11).

(11) **Context:** Vasya is a psychic and has the ability to perceive future events.
Tol'ko Vasja pomnit, čto-**by** **v sledujuščem godu** gorod
only Vasya remembers COMP-**SUBJ** **in next** **year** city
stradal ot navodnenij.
suffer.PST from floods
'Only Vasya remembers the city suffering from floods next year.'

In this context Vasja is a psychic, so he is able to see future events, and then recall what he saw. (11) is a fine sentence in this context, and it tells us that other psychics either didn't see the floods happening next year, or don't recall what they've seen.

Another restriction that weak NPI subjunctives show has to do with aspect: the verb in the embedded clause has to bear imperfective morphology (12).

(12) Tol'ko Vasja pomnit, čto-**by** Maša **prinosila**
only Vasya remembers COMP-**SUBJ** Masha **brought.IPFV.PST**
/***prinesla** pizzu.
/**brought.PFV.PST** brought pizza
'Only Vasya remembers that Masha brought/was bringing pizza.'

This seems to be a fake imperfective. The embedded verb can be interpreted both perfectively and imperfectively, as is illustrated in (13).

(13) Tol'ko Vasja pomnit, [čto-**by** kogda my prixodili, Maša
only Vasya remembers COMP-**SUBJ** when we come.IPFV.PST Masha
prinosila pizzu].
brought.IPFV.PST brought pizza
a. 'Only Vasya remembers that when we came, Masha brought pizza.'
b. 'Only Vasya remembers that when we came, Masha was bringing pizza.'

The sentence in (13) is compatible with two readings. On the imperfective reading (13b), the event of Masha bringing pizza includes the event of us coming. On the perfective reading (13a), the event of Masha bringing pizza follows the event of us coming. Compare this to the unembedded sentences in (14)-(15).

(14) Kogda my prišli, Maša **prinosila** pizzu.
when we come.PFV.PST Masha **brought.IPFV.PST** brought pizza
a. *'When we came, Masha brought pizza.'
b. 'When we came, Masha was bringing pizza.'

(15) Kogda my prišli, Maša **prinesla** pizzu.
when we come.PFV.PST Masha **brought.PFV.PST** brought pizza
a. 'When we came, Masha brought pizza.'
b. *'When we came, Masha was bringing pizza.'

In (14)-(15) we see that in unembedded contexts the interpretation where the event of Masha bringing pizza follows the event described by the *when*-clause requires perfective aspect. The fact that this interpretation is available in (13) suggests that the imperfective there is not receiving its usual interpretation. I will leave the fake

imperfective in weak NPI subjunctives as a puzzle.[7,8] One thing that I would like to note is that fake imperfective in weak NPI subjunctives seems to be a Russian-specific phenomenon. Other languages that have weak NPI subjunctives allow perfective forms of the embedded verb. For example, consider Italian (16)-(17).

(16) Gianni non ricorda che, quando siamo arrivati, Maria
Gianni NEG remembered COMP when we.are.IND arrived.PART Maria
stesse **disegnando** montagne.
AUX.SUBJ.IMPF **draw.GER** mountains
'Gianni didn't remember that when we arrived,
Maria was drawing the mountains.'
✓ τ(our arrival) $\subset$ τ(Maria's drawing the mountains)
✗ τ(our arrival) $<_T$ τ(Maria's drawing the mountains)

(17) Gianni non ricorda che, quando siamo arrivati, Maria
Gianni NEG remembered COMP when we.are.IND arrived.PART Maria
abbia **disegnato** montagne.
have.SUBJ.PRS **drawn** mountains
'G. didn't remember that when we arrived, Maria drew the mountains.'
✗ τ(our arrival) $\subset$ τ(Maria's drawing the mountains)
✓ τ(our arrival) $<_T$ τ(Maria's drawing the mountains)

[7]The fakeness of imperfective in weak NPI subjunctives might be related to the fake imperfective in sentences with expressions that seem to quantify over times. Consider (i).

(i) Kogda my prixodili /každyj raz Maša **prinosila** **/*prinesla** pizzu.
when we come.IPFV.PST /every time Masha **brought.IPFV.PST** /**brought.PFV.PST** pizza
a. 'When(ever) we came/every time Masha brought pizza.'
b. 'When(ever) we came/every time Masha was bringing pizza.'

Under expressions like 'whenever we came' or 'every time' the verb has to occur in the imprefective form. However the sentence is ambiguous between imperfective and perfective readings: the event of Masha bringing pizza might follow our arrival or include our arrival in (i).

[8]Some speakers that I worked with have a preference for imperfective aspect on the matrix verb as well (i). It is not clear to me at this point how robust this contrast is.

(i) Tol'ko Vasja **zamečal** **/?zametil**, čto-**by** Maša prinosila pizzu.
only Vasya **notice.IPFV.PST** /**notice.PFV.PST** COMP-**SUBJ** Masha brought.IPFV.PST pizza
'Only Vasya noticed that Masha brought/was bringing pizza.'

Italian has several subjunctive forms, which differ in tense/aspect specifications. In (16) we see an imperfective subjunctive in the embedded clause (*"Congiuntivo imperfetto"*): the runtime of the event described by the *when*-clause has to be included in the runtime of the event of Maria drawing the mountains (cf. the ambiguity of the Russian (13)). In (17) we see a perfective subjunctive form (*"Congiuntivo passato"*): the event of Maria drawing the mountains in this case has to temporally follow the event of us arriving. Thus, we see that there is no ban on having perfective forms in Weak NPI subjunctive clauses in Italian, and imperfective forms in the embedded clause are not "fake" like in Russian.[9]

To sum up, here are the ingredients that make up a subjunctive clause that behaves like a weak NPI in Russian:

(18) *Ingredients of a Weak NPI Subjunctive:*

a. the particle *by*
b. fake past
c. fake imperfective
d. past tense or habitual present tense interpretation
(likely just a verb's restriction on its arguments)

In the discussion to follow, I will make a simplifying assumption that the particle *by* is responsible for the semantics of weak NPI subjunctive clauses. But it in fact remains an open question whether the semantic contribution should be distributed between the different ingredients that we see in (18).

In the next sections, I discuss the distribution of weak NPI subjunctives and propose that they are licensed in Strawson-Downward Entailing environments (Fauconnier 1975, 1979, Ladusaw 1979, 1980a,b, Hoeksema 1986, Kadmon & Landman 1993, von Fintel 1999, a.o.), just like pronominal weak NPIs.

5.2.1.1 The Distribution

As we see in (19)-(25), weak NPI subjunctives can't occur in upward-entailing contexts (19), but they become possible with the verbs of this class in many contexts: under negation (20), in the scope of *tol'ko* 'only' (21), *malo* 'few' (22) and in the restrictor of *každyj* 'every' (24), in questions (23) and conditional antecedents (25).

[9] Vincent Rouillard (p.c.) reports that French weak NPI subjunctives have "real" aspect as well, with perfective forms and interpretations of embedded predicates available.

(19) *"Positive" context*
Mitja zamečal /videl /slyšal čto / *čto-**by** Lena smotrela futbol.
Mitya noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST soccer
'Mitya noticed/saw/heard that Lena watched soccer.'

(20) *Under negation*
Mitja ne zamečal /videl /slyšal čto / čto-**by** Lena smotrela
Mitya NEG noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST
futbol.
soccer
'Mitya didn't notice/see/hear that Lena watched soccer.'

(21) *Scope of tol'ko 'only'*
Tol'ko Mitja zamečal /videl /slyšal čto / čto-**by** Lena smotrela
only Mitya noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST
futbol.
soccer
'Only Mitya noticed/saw/heard that Lena watched soccer.'

(22) *Scope of malo 'few'*
Malo kto zamečal/videl/slyšal čto/čto-**by** Lena smotrela futbol.
few who noticed/saw/heard COMP/COMP-**SUBJ** Lena watch.PST soccer
'Few noticed/saw/heard that Lena watched soccer.'

(23) *Question*
Mitja zamečal /videl /slyšal čto / čto-**by** Lena smotrela futbol?
Mitya noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST soccer
'Did Mitya notice/see/hear that Lena watched soccer?'

(24) *Restrictor of každyj 'every'*
Každyj kto zamečal /videl /slyšal čto / čto-**by** Lena smotrela
every who noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST
futbol govoril mne ob ètom.
soccer told me about it
'Everyone who noticed/saw/heard that Lena watched soccer
told me about it.'

(25) *Antecedent of a conditional*

Esli Mitja zamečal /videl /slyšal čto / čto-**by** Lena smotrela
If Mitya noticed /saw /heard COMP / COMP-**SUBJ** Lena watch.PST
futbol, on mne ob ètom skažet.
soccer he me about this will.tell
'If M. noticed/saw/heard that L. watched soccer, he will tell me about it.'

Notice that in sentences like (20)-(25) we observe optionality: both indicative and subjunctive complements are possible in these cases. In sections that follow I will argue that the two kinds of complements are not completely synonymous: the subjunctive complement has only one out of several interpretations that the indicative complement can have.

While polarity subjunctives overall show considerable cross-linguistic variation, it seems that the class of verbs that permit weak NPI subjunctives might be quite stable cross-linguistically. For example, 'remember' in Italian and French can combine with subjunctive clauses in the same set of environments as in Russian (table 5.1, see the data in section 5.6.2 of the supplementary materials).

Context	**Italian**	**French**	**Russian**
"Positive"	—	—	—
Under negation	+	+	+
Scope of *Only*	+	+	+
Scope of *Few*	+	+	+
Question	+	+ for formal, — otherwise	+
Restrictor of *Every*	+	+	+
Antecedent of Conditional	+	+	+

Table 5.1: 'remember' with subjunctive complements

There is a number of environments in which cross-linguistically some weak NPIs can occur (e.g., English *any*), but in which Russian weak NPI subjunctives are not licensed: in imperatives (26), under existential modals (27), under future tense (28), under desire predicates like 'want' (29).[10]

[10]Two of my consultants said that they might allow (29) with 'remember' under the interpretation that the speaker wants Mitya to remember a requirement placed on Anya, according to which she must come home after midnight.

(26) *Imperatives*

* Pomni /zamečaj čto-**by** Lena smotrela futbol!
remember.IMP /notice.IMP COMP-**SUBJ** Lena watch.PST soccer
'Remember/notice that Lena is watching soccer!'

(27) *Existential modals* (*e.g. 'possible'*)

* Možno videt' čto-**by** Ira smešivala neskol'ko židkostej v probirke.
possible to.see COMP-**SUBJ** Ira mixed several fluids in test.tube
'It's possible to see that Ira mixed several fluids in a test tube.'

(28) *Future*

* Mitja budet zamečat' /videt' /slyšat' čto-**by** Lena smotrela futbol.
Mitya will notice /see /hear COMP-**SUBJ** Lena watch.PST soccer
'Mitya will notice/see/hear Lena watching soccer.'

(29) *Under desire predicates like 'want'*

* Ja xoču čto-by Mitja pomnil /zamečal čto-**by** Anja
I want COMP-SUBJ Mitya remember.PST /notice.PST COMP-**SUBJ** Anya
prixodila domoj posle polunoči.
came home after midnight
'I want Mitya to remember/notice Anya coming home after midnight.'

Let us now compare the distribution of weak NPI subjunctives to the distribution of some indefinite pronouns sensitive to the properties of the environment. Russian has several series of indefinite pronouns, many of which are built by attaching particles to *wh*-words (see Pereltsvaig 2000, 2004, Partee 2005, Paducheva 2011, Eremina 2012, Paducheva 2015, 2018 a.o.). Table 5.2 lists some of them.[11]

[11] I do not discuss here several series of pronominal expressions that are not relevant for discussion of negative polarity items. For example, Russian also has bare indefinites (e.g., *kto* 'who' can sometimes mean 'someone') and two kinds of specific indefinites (built with particles *-to* and *koe-*, e.g., *kto-to* 'someone' and *koe-kto* 'someone'). See (Paducheva 1985, Yanovich 2005, Eremina 2012) for discussion and possible analyses of Russian indefinites of different kinds.

Pronoun (series)	**Description**
ni-wh	negative concord items (NCIs)
wh-*libo*	weak NPI # 1
wh ***by*** *to ni bylo*	weak NPI # 2
wh-*nidub'*	non-specific (low scope) indefinite
ljuboj	free choice item (FCI)

Table 5.2: Some series of pronouns in Russian

Negative concord items are formed by attaching the particle *ni* to *wh*-words, for example in (30) we see it attaching to 'what' and forming the word for 'anything'.

(30) *Negative Concord Item*

Ja ne kupila **ni-čego** v ètom magazine.
I NEG bought **NCI-what.GEN** in this shop

'I didn't buy anything in this shop.'

Russian has two pronominal series of weak NPIs. One is formed by attaching the suffix *-libo* to *wh*-words, (31), while the other involves *wh*-words attaching a set of several particles (32): the subjunctive morpheme *by*, followed by a specificity marker *to*, negative particle *ni*, and the past form of the verb 'be'.

(31) *Libo Weak NPI*

Tol'ko Ira kupila **čto-libo** v ètom magazine.
only Ira bought **what-LIBO** in this shop

'Only Ira bought anything in this shop.'

(32) *By To Ni Bylo Weak NPI*

Malo kto kupil **[čto by to ni bylo]** v ètom magazine.
few who bought **what SUBJ SPEC NEG be.PST** in this shop

'Few bought anything in this shop.'

Russian also has a series of pronouns which are formed by attaching the particle *-nibud'* to *wh*-words (33). The indefinites that are formed this way are restricted in what kinds of sentences they can occur: according to (Yanovich 2005), *nibud'*-indefinites need to be in the scope of at least one quantificational operator.

(33) *Nibud' Indefinite*
Každyj kto kupil **čto-nibud'** v ètom magazine byl sčastliv.
every who bought **what-NIBUD'** in this shop was happy
'Everyone who bought something in this store was happy.'

Finally, Russian also has a free choice pronoun *ljuboj* 'any', (34), which syntactically behaves like an adjective and doesn't have counterparts of other categories.

(34) *Free Choice Indefinite*
Mne razrešeno kupit' **ljubuju** knigu v ètom magazine.
I.DAT is.allowed buy.INF **FCI** book in this shop
'I am allowed to buy any book in this shop.'

The distribution of different kinds of pronouns is summarized in table 5.3 (columns 1, 2, 4 and 5), and it is compared to clauses that behave like weak NPIs (column 3).[12]

Context	**NCI**	**weak NPIs**	***čto-by* as weak NPI**	**wh-*nibud'***	**FCI**
episodic UE context	*	*	*	*	*
clausemate negation	✓	*	✓	*	*
scope of *only*	*	✓	✓	?✓	*
scope of *few*	*	✓	✓	?✓	*
polar questions	*	✓	✓	?✓	*
restrictor of *every*	*	✓	✓	?✓	*
conditional antecedent	*	✓	✓	?✓	*
imperatives	*	*	*	✓	✓
modals (*may*)	*	*	*	✓	✓
future	*	*	*	✓	✓
desire predicates	*	*	*	✓	✓

Table 5.3: Comparison of contexts in which indefinites of different kinds & polarity subjunctives can appear (most of the information about indefinites is taken from (Pereltsvaig 2000, 2004, Paducheva 2011, 2015, 2018))

[12]The data illustrating the distribution of NCIs, two kinds of weak NPIs, *-nibud'*-indefinites and the FCI is available in the section 5.6.3 of the supplementary materials. The judgment "?✓" should be read as "generally seems possible, but there is some variation among speakers". This speaker variation has been reported in (Pereltsvaig 2000). Yanovich (2005) makes a different generalization: he claims that wh-*nibud'* items are licensed in quantificational structures. In section 5.6.3, I provide examples with wh-*nibud'* items which are either claimed to be grammatical in the literature, or have been found naturally occurring, or have been judged as grammatical by my consultants.

As we can see, the distribution of weak NPI subjunctives is very similar to the distribution of pronominal weak NPIs: wh-*libo* pronouns and wh-*by to ni bylo* pronouns. Both are impossible in episodic Upward-Entailing contexts and in non-monotone contexts like in imperatives, under modals, under future, under desire predicates. Both weak NPI subjunctives and pronominal weak NPIs are allowed in environments like in the scope of *tol'ko* 'only', *malo* 'few', in polar questions, in the restrictor of *každyj* 'every', in conditional antecedents. The only difference between them is that weak NPI subjunctives are good under clausemate negation, but pronominal weak NPIs are degraded.

We could imagine two possible sources of this difference. First, it could be that the licensing conditions of weak NPI subjunctives and pronominal weak NPIs are different: e.g., they are licensed in environments with different entailment properties. Second, it could be that the semantic condition for these polarity-sensitive items is the same, but pronominal weak NPIs are blocked under clausemate negation for some additional reasons. I will follow Pereltsvaig (2004), who argues that the second hypothesis is correct. Russian is one of the languages with the so-called *Bagel Problem*: it has negative concord items, which must be used under clausemate negation, and pronominal weak NPIs are disallowed in the same environment. Pereltsvaig argues that this ban is the result of morphological blocking and not the lack of semantic licensing under negation. She observes that in environments which have the same entailment properties as under negation (*anti-morphic environments*) but do not allow NCIs, weak NPIs are grammatical, which suggests that it is the competition with NCIs that makes the use of weak NPIs bad under negation. See section 5.6.4 of the supplementary materials for a more detailed discussion of the Bagel Problem in Russian.

Note that weak NPI subjunctives do not have the same competition that pronominal weak NPIs face: there are no negative concord items that could attach to the complementizer and form an NCI embedded clause. Thus, the morphological blocking solution to the Bagel Problem predicts that weak NPI subjunctives should be good under clausemate negation, which is what we observe.

To sum up, once we adopt Pereltsvaig (2004)'s proposal that pronominal weak NPIs in Russian are not good under negation due to morphological blocking by NCIs, we reach the conclusion that weak NPI subjunctives and pronominal weak NPIs should be semantically licensed in the same set of environments.

5.2.1.2 The Licensing Condition

So what is the right semantic characterization of the set of environments in which weak NPI subjunctives and pronominal weak NPIs are licensed? I would like to argue that weak NPIs in Russian are licensed in Strawson-Downward Entailing environments (von Fintel 1999, see Fauconnier 1975, 1979, Ladusaw 1979, 1980a,b, Hoeksema 1986, Kadmon & Landman 1993, a.o., for the general proposal that downward entailingness is the right property for NPI licensing). Thus, I will be following (Pereltsvaig 2000), who argued that a monotonicity-based approach to Russian weak NPIs fairs better compared to veridicality-based approaches (Zwarts 1995, Giannakidou 1997, 1998, Peres 1998).

The general intuition behind the monotonicity-based approaches to NPI licensing is that the entailment properties of the sentence determine whether NPIs are grammatical in the sentence or not. In particular, Fauconnier and Ladusaw proposed that NPIs are licensed in environments that are *downward entailing* (Fauconnier 1975, 1979, Ladusaw 1979, 1980a,b). In order to illustrate this idea, we will need to define what it means to be *downward entailing* and *upward entailing*. I will be assuming the notion of entailment in (35).

(35) **Entailment** ($\Rightarrow$)

a. For any p, q of type t: $p \Rightarrow q$ iff $p = 0$ or $q = 1$.

b. For any f, g of type $(\sigma\tau)$, $f \Rightarrow g$ iff for every x of type σ, $f(x) \Rightarrow g(x)$.

For example, according to this definition the predicate 'strawberry ice-cream' (type <e,t>) stands in entailment relation ($\Rightarrow$) to the predicate 'ice-cream' (type <e,t>): for any individual x of type e, if x is a strawberry ice-cream, then x is an ice-cream. Given this notion of entailment, we can define what it means to be *upward-entailing* and *downward-entailing* as in (36) and (37) respectively.

(36) A constituent S is *Upward-Entailing* with respect to a subconstituent X iff for every X' such that $[\![X]\!] \Rightarrow [\![X']\!]$, it holds that $[\![S]\!] \Rightarrow [\![S[X/X']]\!]$
(where S[X/X'] is identical to S except that X' replaces X)

(37) A constituent S is *Downward-Entailing* with respect to a subconstituent X iff for every X' such that $[\![X']\!] \Rightarrow [\![X]\!]$, it holds that $[\![S]\!] \Rightarrow [\![S[X/X']]\!]$
(where S[X/X'] is identical to S except that X' replaces X)

Note that *upward-entailing* and *downward-entailing*, as formulated above, are properties of syntactic constituents with respect to some subconstituents of theirs. Let's illustrate this with the example in (38), where the constituent S that we will be evaluating is the whole sentence, and the subconstituent that we will be evaluating S with respect to is the restrictor of the indefinite determiner (X).

(38) $[_S$ Anya ate a $\underline{[_X$ (strawberry) ice-cream$]}]$.

As we see in (39)-(40), S in (38) is upward-entailing with respect to X, and not downward-entailing with respect to X.

(39) *S is Upward Entailing wrt. the indefinite's Restrictor*

a. Anya ate a strawberry ice-cream.

b. $\Rightarrow$ Anya ate an ice-cream.

(40) *S is not Downward Entailing wrt. the indefinite's Restrictor*

a. Anya ate an ice-cream.

b. $\not\Rightarrow$ Anya ate a strawberry ice-cream.

The sentence is upward-entailing with respect to the restrictor 'strawberry ice-cream', because for any predicate ⟦X'⟧ that is entailed by 'strawberry ice-cream', the original sentence entails a sentence in which 'strawberry ice-cream' would have been susbsituted for ⟦X'⟧. In (39) we see this illustrated for ⟦X'⟧ = 'ice-cream'.

The sentence is not downward-entailing with respect to the indefinite's restrictor 'ice-cream' in (40), because we can find a predicate ⟦X'⟧ that entails 'ice-cream', such that the original sentence does not entail a sentence in which 'ice-cream' is substituted for ⟦X'⟧. One such predicate ⟦X'⟧ is 'strawberry ice-cream': Anya could have eaten an ice-cream without eating a strawberry ice-cream.

Adding different operators to the sentence will change entailment properties that it has with respect to the restrictor of an indefinite. For example, if we add negation and evaluate the new sentence S that contains it in (41) with respect to the indefinite's restrictor, we will see that it is not upward entailing (42) and is downward entailing (43).

(41) $[_S$ Anya did not eat a $\underline{[_X$ (strawberry) ice-cream$]}]$.

(42) *Not Upward Entailing wrt. the indefinite's Restrictor*

a. Anya didn't eat a strawberry ice-cream.

b. $\not\Rightarrow$ Anya didn't eat an ice-cream.

(43) *Downward Entailing wrt. the indefinite's Restrictor*

a. Anya didn't eat an ice-cream.

b. $\Rightarrow$ Anya didn't eat a strawberry ice-cream.

It has been proposed that NPIs like *any* are existential quantifiers, just like the indefinite determiner *a*, and the condition for their licensing is that the sentence that contains them has to be downward entailing with respect to the quantifier's restrictor. Given the discussion above, we would then expect *any* to be ungrammatical in "positive" sentences, which are upward entailing with respect to an indefinite's restrictor, but grammatical in sentences containing negation, which are downward entailing with respect to an indefinite's restrictor. This is indeed the case:

(44) a. *Anya ate any ice-cream.

b. Anya didn't eat any ice-cream.

The question that emerges at this point is whether downward entailingness generally picks out the correct set of contexts in which NPIs are licensed. This question is still a matter of debate. If we consider the environments besides negation from the table in 5.3, we can note two things. First, there is cross-linguistic variation in which contexts admit weak NPIs: e.g., distribution of Russian weak NPIs is not identical to the distribution of English *any*. For example, the latter has free choice readings (45), but the former does not, (46).

(45) *English any: Free Choice readings*
You may take any book.

(46) *Russian: no Free Choice readings*

a. *Vy možete vzjat' kakuju-libo knigu.
you may take.INF what.kind-LIBO book.ACC
'You may take any/some book.' (Pereltsvaig 2000: ex. (5a))

b. *Vy možete vzjat' [kakuju by to ni bylo] knigu.
you may take.INF what.kind SUBJ SPEC NEG be.PST book.ACC
'You may take any/some book.'

Imperatives, modals, future tense, and desire predicates do not create downward entailing environments. For example, the sentence in (47) is felicitous, but it shouldn't be if 'may buy an ice-cream' entailed 'may buy a Chocolate Caramel Pecan Cookie Crunch ice-cream'.

(47) You may buy an ice-cream, but it's not the case that you may buy a Chocolate Caramel Pecan Cookie Crunch ice-cream.

So the fact that English *any* is possible in at least some of such environments is potentially problematic for the claim that NPIs are licensed in downward entailing contexts (see, e.g., a modal analysis of the free choice use of *any* in Dayal 1998). The fact that Russian weak NPIs are impossible in such contexts fits well with downward entailingness as the condition of licensing NPIs.[13]

Second, while some contexts that admit weak NPIs in both Russian and English are clearly downward entailing, it is not obvious that this is true of some of the other contexts in which they are licensed in both languages. Examples of well-behaved contexts are the restrictor of a universal quantifier (48) and the scope of 'few' (49): in both cases the resulting sentence is downward entailing with respect to the restrictor of an indefinite that occurs in these environments, and NPIs are licensed in these environments as well.

(48) *Restrictor of 'every'*

a. Everyone who ate an ice-cream was happy.

b. ⇒ Everyone who ate a strawberry ice-cream was happy.

c. ✓ **NPI is licensed:** Everyone who ate any ice-cream was happy.

[13]The question about the nature of this cross-linguistic variation arises: is the condition for licensing weak NPIs different in the two languages, or is the condition the same, but the variation arises due to the differences in the inventory of lexical items? The second hypothesis could be pursued in at least two ways. First, it could be that both English and Russian have two distinct kinds of lexical items with uniform licensing conditions: weak NPIs and FCIs. But while Russian expones them with different morphology, they are homophonous in English. Second, it could be that the licensing condition for weak NPIs is always the same, and permits all the contexts in which English *any* is licensed. What is special about Russian is that there is an additional FC lexical item *ljuboj* which competes with weak NPIs in FC contexts and "wins" as a more specific candidate, making weak NPIs in such contexts ungrammatical. Weak NPI subjunctive might present a counter-argument to the second version of the hypothesis: there is no FCI complementizer in Russian, and so if weak NPI subjunctives are indeed weak NPIs, we might expect them to be allowed in FC contexts under the second version of the hypothesis, while in fact they are ungrammatical.

(49) *Scope of 'few'*

a. Few students ate ice-cream.

b. ⇒ Few students ate strawberry ice-cream.

c. ✓ **NPI is licensed:** Few students ate any ice-cream.

Questions, antecedents of conditionals and the scope of 'only' are contexts for which it is not obvious that they are downward-entailing, but which license NPIs. For example, in (50) the sentence seems to not be downward entailing with respect to the restrictor of an indefinite 'an ice-cream' that is in a conditional antecedent, but *any* can occur in the same context.

(50) a. If Anya bought an ice-cream, she is happy.

b. ⇏ If Anya bought an ice-cream that has gone bad, she is happy.

c. ✓ **NPI is licensed** If Anya bought any ice-cream, she is happy.

For questions and conditionals, I will assume that the downward entailingness can be maintained as the general condition, once we better understand semantics of questions and conditionals. For questions, this has been argued for by Nicolae (2015), building on observations from (Guerzoni & Sharvit 2014) that the strength of exhaustivity in questions correlates with the acceptability of NPIs (for an alternative view that the theory of NPI licensing needs to refer to questions separately see Kadmon & Landman 1990, Krifka 1995, van Rooy 2003, Schwarz 2017, a.o.). For discussion of monotonic analyses of conditionals and NPI licensing, see (Katz 1991, Kadmon & Landman 1993, von Fintel 1999, a.o.).

As for the scope of 'only', which is also a context that is not downward entailing despite the fact that it licenses NPIs (51), I will follow the proposal in (von Fintel 1999) and subsequent work in assuming that a shift to a different notion of entailment for NPI licensing is necessary.

(51) a. Only Anya ate any ice-cream.

b. ⇏ Only Anya ate any strawberry ice-cream.
(Anya might be the only one eating ice-cream, but not eat any strawberry ice-cream at all).
✓ **NPI is licensed:** Only Anya ate any ice-cream.

The new notion of entailment is Strawson entailment in (52), and the new defi-

nition of the downward entailigness based on this kind of entailment is in (53).

(52) **Strawson Entailment** ($\Rightarrow_s$)
(von Fintel 1999, here via Crnič 2019: p.2, (2))
a. For any p, q of type t: $p \Rightarrow_s q$ iff $p = 0$ or $q = 1$.
b. For any f, g of type $(\sigma\tau)$, $f \Rightarrow_s g$ iff for every x of type σ such that $g(x)$ is defined, $f(x) \Rightarrow_s g(x)$.

(53) **Strawson Downward-Entailing (SDE)** (from Crnič 2019: p.4, (7))[14]
A Constituent S is *Strawson Downward-Entailing* with respect to a subconstituent X iff for every X' such that $[\![X']\!] \Rightarrow_s [\![X]\!]$, it holds that $[\![S]\!] \Rightarrow_s [\![S[X/X']]\!]$ (where S[X/X'] is identical to S except that X' replaces X).

Strawson Entailment is different from our previous notion of entailment in (35) only in one respect: it requires that when we are evaluating entailment between two functions f and g, we assume that g is defined for all objects in its domain. In other words, when we will be evaluating entailment between two sentences, P and Q, we will be asking whether P entails Q *provided the presuppositions of Q are met*.

Let us now consider the scope of 'only' once again. While a sentence containing 'only' is not downward entailing with respect to the restrictor of an indefinite inside the scope of 'only' (51), it is Strawson Downward Entailing, (54).

(54) [$_P$ Only Anya [ate an ice-cream]]
$\Rightarrow_s$ [$_Q$ Only Anya [ate a strawberry ice-cream]].
a. *P is true:* Anya ate an ice-cream and no one else ate ice-cream.
b. *Presupposition of Q is true:* Anya ate a strawberry ice-cream.
c. $\Rightarrow$ No one else ate a strawberry ice-cream.

This is because 'only' has a presupposition that its prejacent is true. Thus, Q in (54) presupposes that Anya ate a strawberry ice-cream. From *Only Anya ate an ice-cream* and *Anya ate a strawberry ice-cream* we can conclude that *Only Anya ate a strawberry ice-cream*, and thus Strawson Entailment holds between *Only Anya ate an ice-cream* and *Only Anya ate a strawberry ice-cream*, making the sentence Strawson Downward

[14]Crnič calls this property *Strawson Entailment-Reversing*, but here I keep the 'downward entailing' in the name, as we will not be looking at any contexts of reversal from a downward-entailing environment to an upward-entailing environment.

Entailing with respect to the restrictor of the indefinite.

Given the discussion above, I would like to suggest the following condition for licensing of weak NPIs in Russian:

(55) **Condition for licensing weak NPIs**
A weak NPI is an indefnite that is acceptable only if it is dominated by a constituent that is Strawson Downward Entailing (SDE) with respect to its restrictor.

The table 5.4 compares the predictions of the condition in (55) with the distribution of weak pronominal NPIs and weak NPI subjunctives in Russian.

Context	**weak NPIs**	***čto-by* as weak NPI**	**(55)'s predictions**
episodic UE context	*	*	*
clausemate negation	*	✓	✓
scope of *only*	✓	✓	✓
scope of *few*	✓	✓	✓
polar questions	✓	✓	✓ (under certain theories)
restrictor of every	✓	✓	✓
conditional antecedent	✓	✓	✓ (under certain theories)
imperatives	*	*	*
modals (*may*)	*	*	*
future	*	*	*
desire predicates	*	*	*

Table 5.4: Comparison of the distribution of weak NPIs and weak NPI subjunctives in Russian to the predictions of the licensing condition in (55).

With the caveat that only some theories of questions and conditionals predict them to be Strawson Downward-Entailing environments, the licensing condition in (55) picks out exactly the class of contexts in which weak NPIs should be semantically licensed: under negation (where pronominal weak NPIs are morphologically blocked by NCIs), in the scope of 'only' and 'few', in questions, in the restrictor of

'every', and in conditional antecedents.[15,16]

Note that if the condition in (55) is correct for weak NPI subjunctives, they will have to be analyzed as indefinite descriptions. In section 5.2.3 I will propose that this is indeed the case: these clauses are existential quantifiers over situations, with the embedded proposition as the restrictor.

Having an SDE is necessary, but not a sufficient condition for embedding a subjunctive clause that behaves like a weak NPI. Many verbs, both factive (e.g. like *znat'* 'know'), and non-factive (e.g. *vyskazat'sja* 'state'), can never combine with subjunctive clauses, no matter what operators are present higher in the structure:

(56) *Lena ne znaet /vyskazalas', **čto-by** Mitja kuril.
Lena NEG knows /stated **COMP-SUBJ** Mitya smoked
'Lena doesn't know/didn't state that Mitya smoked.'

(57) *Tol'ko Lena znaet /vyskazalas', **čto-by** Mitja kuril.
only Lena knows /stated **COMP-SUBJ** Mitya smoked
'Only Lena knows/stated that Mitya smoked.'

This raises the main question that I would like to address, (58):

(58) **Q:** Which verbs take weak NPI subjunctives, and why only these verbs?

5.2.2 Weak NPI Subjunctives must be Sit-CPs

Recall our initial observation that weak NPI subjunctives occur with verbs like *pomnit'* 'remember', *zamečat'* 'notice', *videt'* 'see', *slyšat'* 'hear', and potentially also with

[15]There are some contexts in which weak NPIs are licensed in Russian that I have not discussed in this chapter: e.g., certain comparative constructions, complement of the preposition *bez* 'without', and a degree construction involving modifier *sliškom* 'too' (Pereltsvaig 2000). The hope would be that these other contexts are also SDE with respect to the domain of indefinites that occur in them, but investigating this issue is outside of the scope of this chapter.

[16]Section 5.6.5 of the supplementary materials discusses an apparent exception to the licensing condition, which is not reflected in the table above: the context of non-monotone quantifiers like 'exactly two'. The literature on English *any* has argued that *any* is at least sometimes licensed in the scope of non-monotone quantifiers, casting doubt on whether Strawson Downward Entailingness can be maintained as the condition for NPI licensing (Linebarger 1987, Rothschild 2006, Crnič 2014, 2019). We will see that cases of NPI licensing with such quantifiers can be found in Russian as well, but I will argue that the exception is only apparent: NPIs are licensed only if a presupposition that would make the context a SDE context is created.

čuvstvovat' 'feel'. I would like to suggest that what distinguishes these verbs from those that cannot take weak NPI subjunctives is that they can combine with Sit-CPs. Cont-CPs on the other hand cannot be weak NPI subjunctives:

	CONT-CP	SIT-CP
Indicative	✓	✓
Subjunctive	*	✓

Table 5.5: Complements of verbs like *pomnit'* 'remember'

First, let me show that with verbs like *pomnit'* 'remember', subjunctive complements can be Sit-CPs. Recall that verbs like *pomnit'* 'remember' can combine with both Sit-CPs and Cont-CPs when they combine with indicative clauses (section 2.5). For example, when *pomnit'* 'remember' combines with a (nominalized) Sit-CP, the clause describes the situation that is being remembered, and when it combines with a (nominalized) Cont-CP, the clause describes an individual with content that is being remembered.[17] Only in the former case the clause is able to combine with the determiner *takoe* 'such', and we perceive a direct perception inference. In (59) we see that when *pomnit'* 'remember' combines with a subjunctive clause, the determiner *takoe* 'such' is possible, and we get a direct perception inference:

(59) Tol'ko Mitja pomnit (takoe) čto-by Lena opazdyvala.
only Mitya remembers (such) COMP-SUBJ Lena was.late
'Only Mitya remembers Lena being late.'
⇒ Mitya directly perceived Lena being late.

This suggests that the CP *pomnit'* 'remember' combines with in (59) is a Sit-CP.

Now let us discuss the evidence that Cont-CPs cannot be weak NPI subjunctives. The evidence to be discussed is summarized in (60).

(60) **Evidence that weak NPI subjunctives cannot be Cont-CPs:**

1. Weak NPI subjunctive clauses can combine with Sit-NPs (like 'situation'), but not with Cont-NPs (like 'claim').
2. Weak NPI subjunctive clauses are referentially transparent.

[17] It is also possible that verbs like *pomnit'* 'remember' can combine with bare CPs, which describe not the object being remembered, but the content of the remembering event. Note that such bare CPs will not be able to be Sit-CPs, as that would cause a contradiction (see section 4.2 for discussion).

3. Weak NPI subjunctive clauses show the same restriction on individual-level predicates that Sit-CPs do.

4. If weak NPI subjunctives must be Sit-CPs, we make good predictions about their (im)possibility with other predicates.

First piece of evidence comes from nouns that occur as objects of verbs like *pomnit'* 'remember' in SDE environments. Verbs like *pomnit'* 'remember' can have both Sit-NPs and Cont-NPs as their objects, and these nouns can attach embedded clauses, as is illustrated in (61)–(62):

(61) Mitja pomnit utverždenie /slux,
Mitya remembers claim /rumor
čto grabitel' pytalsja proniknut' na sklad.
COMP robber tried get.in.INF on warehouse
'Mitya remembers a claim/rumor that the robber tried to get into the warehouse.'

(62) Mitja pomnit situaciju /slučaj,
Mitya remembers situation /event
čto grabitel' pytalsja proniknut' na sklad.
COMP robber tried get.inINF on warehouse
'Mitya remembers a situation/event of the robber trying to get into the warehouse.'

When we put such sentences in SDE environments, clauses that combine sith Sit-NP objects gain the ability to be subjunctive:

(63) *Complements to Sit-NPs can be subjunctive in SDE environments*

a. Mitja ne pomnit situacii, /slučaja **čto-(by)** grabitel'
Mitya NEG remembers situation /event **COMP-(SUBJ)** robber
pytalsja proniknut' na sklad.
tried get.in.INF on warehouse
'Mitya doesn't remember a situation/event of the robber trying to get into the warehouse.'

b. Tol'ko Mitja pomnit situaciju, /slučaj **čto-(by)** grabitel'
only Mitya remembers situation /event **COMP-(SUBJ)** robber

pytalsja proniknut' na sklad.
tried get.in.INF on warehouse
'Only Mitya remembers a situation/event of the robber trying to get into the warehouse.'

Clauses that combine with Cont-NPs on the other hand must remain indicative even if they occur under negation or in the scope of *only*:

(64) *Complements to Cont-NPs can not be subjunctive in SDE environments*

a. *Mitja ne pomnit utverždenija /sluxa, **čto-(*by)** grabitel'
Mitya NEG remembers claim /rumor **COMP-(SUBJ)** robber
pytalsja proniknut' na sklad.
tried get.in.INF on warehouse
'Mitya doesn't remember a claim/rumor that the robber tried to get into the warehouse.'

b. Tol'ko Mitja pomnit utverždenie /slux, **čto-(*by)** grabitel'
only Mitya remembers claim /rumor **COMP-(SUBJ)** robber
pytalsja proniknut' na sklad.
tried get.in.INF on warehouse
'Only Mitya remembers a claim/rumor that the robber tried to get into the warehouse.'

In other words, we see that clauses that combine with nouns can function as weak NPIs only if they combine with nouns like *situacija* 'situation' and thus are Sit-CPs, but not if they are Cont-CPs combining with nouns like *slux* 'rumor'.

Second piece of evidence comes from the referential transparency of weak NPI subjunctives. Recall that Sit-CPs are referentially transparent: their meanings do not create intensional contexts, and so all predicates within them have to be interpreted with respect to the matrix situation, making *de dicto* readings impossible. Consider the difference between (65a) and (65b).

(65) a. Nastja ne slyšala, **čto** ovcy na ètoj gore èto kozy.
Nastya NEG heared **COMP** sheep on this mountain COP goats
'Nastya didn't hear that the sheep on this mountain are goats.

b. # Nastja ne slyšala (takogo), **čto-by** ovcy na ètoj gore
Nastya NEG heared (such) **COMP-SUBJ** sheep on this mountain

byli kozy.
were goats
'Nastya didn't hear that the sheep on this mountain are goats.'
(ок only if animals can be sheep and goats at the same time)

The sentence in (65a) could be used in the following context. Imagine that someone is spreading a false rumor about the sheep on this mountain that they are goats. Then one could claim that Nastya haven't heard this rumor by saying (65a). It is not possible to use (65b) in this case. The only way to make (65b) felicitous is to assume that the same animal can be a sheep and a goat at the same time, and sheep-being-goats is a situation that can be perceived. In other words, the predicate 'be goats' in the embedded clause lacks a *de dicto* reading: it cannot be interpreted with respect to some situation distinct from the situation at which 'hear' is interpreted.

The sentences (66a)–(66b) below illustrate the same point.

(66) a. Tol'ko Lena pomnit /slyšala **čto** neopazdyvavšaja
only Lena remembers /heard **COMP** not.having.been.late
včera devočka včera opazdyvala.
yesterday girl yesterday was.late
'Only Lena remembers/heard that a girl who wasn't late yesterday was late yesterday.'

b. # Tol'ko Lena pomnit /slyšala (takoe), **čto-by**
only Lena remembers /heard (such) **COMP-SUBJ**
neopazdyvavšaja včera devočka včera opazdyvala.
not.having.been.late yesterday girl yesterday was.late
'Only Lena remembers/heard of a girl who wasn't late yesterday being late yesterday.' (*requires L. recalling/hearing impossible situations*)

Recall that *only* presupposes that its prejacent is true in the situation of evaluation. In (66a) we see that an indicative clause in the scope of *only* can have two incompatible predicates: 'the one who wasn't late yesterday' is interpreted *de re*, and 'was late yesterday' is interpreted *de dicto*, and thus the sentence does not contain a contradictory presupposition. The sentence in (66b) is however infelicitous, because it contains a presupposition that says that Lena remembers/heard of an

impossible situation: a situation of a girl who wasn't late yesterday being late yesterday. This infelicity shows that the embedded clause is referentially transparent, and the predicate 'was late yesterday' cannot be interpreted *de dicto*.

The third piece of evidence has to do with the restriction on the individual-level predicates. Clauses that combine with Sit-NPs like *situacija* 'situation' are infelicitous if they contain predicates that are perceived as denoting permanent properties: they are bad with mathematical statements, (67), and with individual-level predicates like 'have blue eyes', (68). This is true independent of whether the clause is indicative or subjunctive.

(67) #Vera ne pomnit situacii, **čto-(by)** dvaždy dva bylo četyre.
Vera NEG remembers situation **COMP-(SUBJ)** twice two was four
'Vera doesn't remember the situation of 2 x 2 being 4.'

(68) #Miša ne zamečal situacii, **čto-(by)** u Oli byli golubye glaza.
Misha NEG noticed situation **COMP-(SUBJ)** by Olya be.PST blue eyes
'Misha didn't notice a situation of Olya having blue eyes.'
(*possible only if Olya changes the color of her eyes*)

Whatever the nature of this restriction, we observe it with weak NPI subjunctive complements that combine with verbs as well, (69a) and (70a), which suggests that they are Sit-CPs. It is not present with indicative complements however, (69b) and (70b), suggesting that they do not have to be interpreted as Sit-CPs.

(69) a. #Vera ne pomnit (takogo), **čto-by** dvaždy dva bylo četyre.
Vera NEG remembers (such) **COMP-SUBJ** twice two was four
Intended: 'Vera doesn't remember that 2 x 2 is 4.'
(OK *if we lived in a world where the result of 2 x 2 could change*)

b. Vera ne pomnit, **čto** dvaždy dva četyre.
Vera NEG remember **COMP** twice two four
'Nastya doesn't remember that 2 x 2 is 4.'

(70) a. #Miša ne zamečal, **čto-by** u Oli byli golubye glaza.
Misha NEG noticed **COMP-SUBJ** by Olya be.PST blue eyes
'Misha didn't notice Olya having blue eyes.'
(*possible only if Olya changes the color of her eyes*)

b. Miša ne zamečal, **čto** u Oli golubye glaza.
Misha NEG noticed **COMP** by Olya blue eyes
'Misha didn't notice that Olya has blue eyes.'

Finally, weak NPI subjunctives being restricted to Sit-CPs makes good predictions about which other predicates should/should not be able to take weak NPI subjunctive clauses. Recall that while verbs like *pomnit'* 'remember' can combine both with Sit-CPs and Cont-CPs, there are verbs that are restricted to only one of the meanings of the embedded clause. If it is true that weak NPI subjunctives must be Sit-CPs, then we predict that verbs that combine exclusively with Cont-CPs should never take weak NPI subjunctives, and verbs that combine only with Sit-CPs should be able to take weak NPI subjunctives. These predictions seem to be borne out.

For example, verbs like *dumat'* 'think', *vyskazyvat'sja* 'state, make a statement', and *argumentirovat'* 'argue' are predicates that can only combine with Cont-CPs. *Dumat'* 'think', *vyskazyvat'sja* 'state, make a statement' do not take DP arguments, so the CPs that combine with them must be bare Cont-CPs combining by modifying the situation argument of the verb (see chapter 4). The verb *argumentirovat'* 'argue' is a speech verb that participates in the alternation discussed in chapter 4: it can either combine with a bare Cont-CP that would modify its situation argument, or with a nominalized Cont-CP that would denote its object—the entity with propositional content (e.g., *position, opinion*) that is being argued for.

The clauses that combine with these verbs cannot have the determiner *takoe* 'such' on top of them, and they cannot combine with direct perception complements with the complementizer *kak*, (71), which is expected if they cannot take a contentless situation as an internal argument.

(71) *Lena dumaet /vyskazalas' /argumentirovala {takoe čto} /{kak}
Lena thinks /stated /argued such COMP /COMP.DIR
Mitja kuril.
Mitya smoked
'Lena thinks/stated/argued that Mitya smoked.'[18]

The clauses that combine with these verbs are referentially opaque, as is illus-

[18]With the verb *dumat'* 'think', the sentence is grammatical under the manner reading of the word *kak* 'how': Lena is thinking about the manner in which Mitya smoked.

trated in (72). The sentence in (72) can be understood as saying that there are some sheep on this mountain, and Lena thinks/stated/argued about them that they are goats. With *argumentirovat'* 'argue', there is an additional reading when the clause combines via the THEME argument: we don't know what Lena said, but she argued for a position about the sheep on this mountain that they are goats.

(72) Lena dumaet /vyskazalas' /argumentirovala, [čto ovcy na ètoj
Lena thinks /stated /argued COMP sheep on this
gore ètо kozy].
mountain were goats
'Lena thinks/stated/argued that sheep on this mountain are goats.'

Thus, we have reasons to believe that these predicates combine only with Cont-CPs. As we see in (73) and (74), they cannot have subjunctive complements when they occur in SDE environments like in the scope of *only* or in questions:[19]

(73) *Tol'ko Lena dumaet /vyskazalas' /argumentirovala,
only Lena thinks /stated /argued
čto-by Mitja kuril.
COMP-SUBJ Mitya smoked
'Only Lena thinks/stated/argued that Mitya smoked.'

(74) *Lena dumaet /vyskazalas' /argumentirovala, **čto-by** Mitja kuril?
Lena thinks /stated /argued **COMP-SUBJ** Mitya smoked
'Did Lena think/state/argue that Mitya smoked?'

This is expected if weak NPI subjunctives are restricted to Sit-CPs.

As discussed in section 2.5, verbs like *byvat'* 'happen', *slučat'sja* 'occur', *proisxodit'* 'happen, take place' combine exclusively with Sit-CPs. Clauses that combine with these verbs can combine with the determiner *takoe* 'such' which cannot occur on Cont-CPs, (75), and they are referentially transparent, which leads to the infelicity of sentences like (76) containing two mutually incompatible predicates.

[19] As will be discussed in section 5.4, *dumat'* 'think' can take subjunctive complements when it occurs under negation, but it can't take subjunctive clauses in any other SDE environments. Thus, subjunctive clauses with 'think' behave like strong NPIs, not weak NPIs.

(75) Byvalo /slučalos' /proisxodilo (takoe) čto Maša ezdila na kone.
happened /occured /took.place (such) COMP Masha rides on horse
'It happened/occured/took place that Masha rode a horse.'

(76) # Byvaet /slučilos' /proizošlo (takoe) čto ovcy èto (byli) kozy.
happens /occured /took.place (such) COMP sheep COP (were) goats
lit. 'It happens/occured/took place that sheep are/were goats.'

In Upward-Entailing environments, clauses that combine with these verbs must be indicative, as is illustrated in (77)–(78).

(77) Byvalo /slučalos',
happened /occured
čto **/*čto-by** četyre gimnastki delili zolotuju medal'.
COMP **/COMP-BY** four gymnasts shared gold medal
'It happened/occurred that four gymnasts shared the gold medal.'

(78) Inogda proisxodilo takoe, **čto** **/*čto-by** nečego bylo rasskazat'.
sometimes took.place such **COMP** **/COMP-SUBJ** nothing were to.tell
'Sometimes it so happened that we had nothing to tell.'

In SDE environments like under negation, (79)–(80), or in questions, (81)–(82), these verbs can take subjunctive clauses.

(79) Ne byvalo /slučalos' takogo, **čto-by** četyre gimnastki delili
NEG happened /occurred such **COMP-BY** four gymnasts shared
zolotuju medal'.
gold medal
'It has not happened/occurred that four gymnasts shared the gold medal.'

(80) ...u nas poka ni razu ne proisxodilo takogo, **čto-by** nečego
by us yet not single.time NEG took.place such **COMP-SUBJ** nothing
bylo rasskazat'. <Link>
were to.tell
'...We have not yet had situations that we had nothing to tell.'

(81) Byvalo /slučalos' li,
happened /occured Q
čto-by četyre gimnastki delili zolotuju medal'?
COMP-BY four gymnasts shared gold medal
'Has it happened/occurred that four gymnasts shared the gold medal?'

(82) Proisxodilo li xot' raz takoe, **čto-by** nečego bylo rasskazat'?
took.place Q even once such **COMP-SUBJ** nothing were to.tell
'As it ever happened that you had nothing to tell?'

This is expected under our generalization: if what is required to behave like a weak NPI subjunctive clause is being a clause with a meaning of a Sit-CP, then verbs like *byvat'* 'happen' are expected to be able to combine with weak NPI subjunctives, and we see that they indeed can.[20,21]

To sum up, in this section I argued that whether a verb can combine with weak NPI subjunctives is determined by the meaning of the CPs it can combine with: only verbs that can combine with Sit-CPs can combine with clauses that behave like weak NPIs. This is something that we would like our proposal to capture (83).

(83) **Desideratum for our theory:** Only Sit-CPs can be weak NPI subjunctives.

[20]There are likely to be other verbs that can combine with Sit-CPs and thus with weak NPI subjunctives. At least one more verb that falls into this class is the modal verb *vozmožno* 'possible', which also cannot take subjunctive clauses in UE contexts, (i), but allows them in SDE contexts, (ii)–(iii). I leave the investigation of such other verbs with weak NPI subjunctives for future research.

(i) Vozmožno, **čto /*čto-by** Lena zabyla pro vstreču.
possible **COMP /COMP-SUBJ** Lena forgot about meeting
'It is possible that Lena forgot about the meeting.'

(ii) Ne-vozmožno, **čto-by** Lena zabyla pro vstreču.
NEG-possible **COMP-SUBJ** Lena forgot about meeting
'It is impossible that Lena forgot about the meeting.'

(iii) Vozmožno li, **čto-by** Lena zabyla pro vstreču?
possible Q **COMP-SUBJ** Lena forgot about meeting
'It is possible that Lena forgot about the meeting?'

[21]Recall that I have argued in section 4.3.3 that these verbs can take Sit-CPs both as their nominalized arguments and as their bare modifiers. Thus, with them we cannot tell whether the weak NPI subjunctive combines via THEME or via the situation argument (the two paths result in the same truth-conditions). As we will see, according to my proposal the path of composition with these verbs will not matter: I will predict subjunctive to be possible either way as long as the environment is SDE.

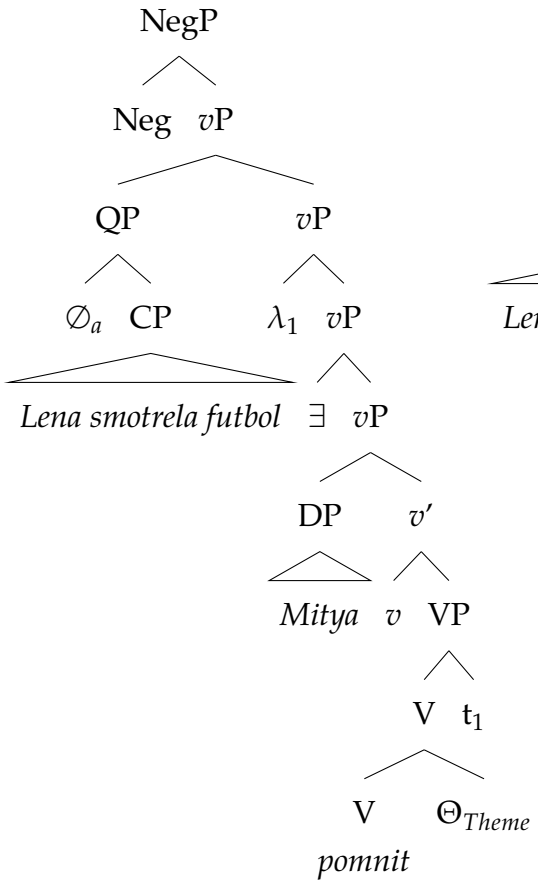
5.2.3 The Proposal

5.2.3.1 Clauses as existential quantifiers

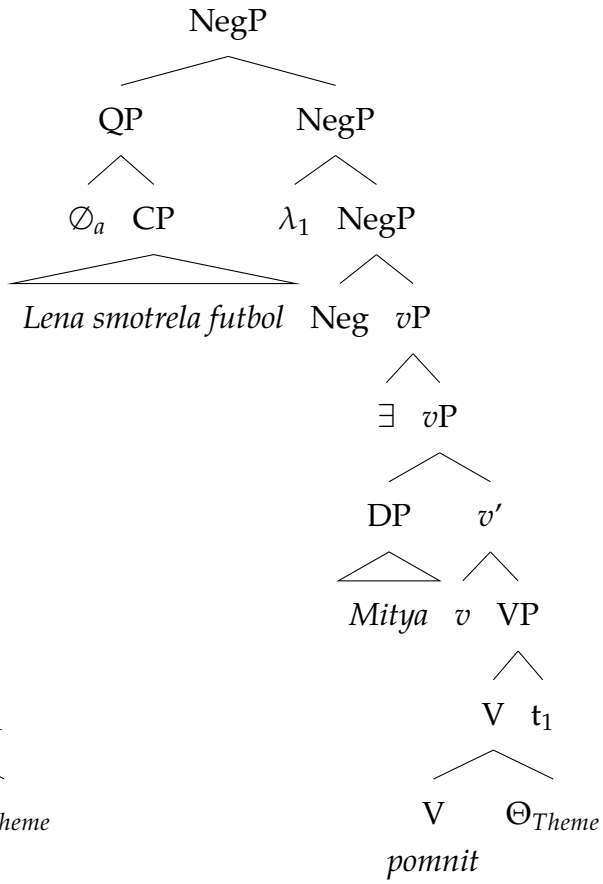
I propose that weak NPI subjunctives are indefinites: the embedded CP in them is the restrictor of a null existential quantifier, and the trace of this QP, which undergoes QR, saturates the internal argument of verbs like *pomnit'* 'remember'. Quantificational nominalized clauses can in principle take scope in different positions within the structure. For example, if we have an indefinite CP and negation like in (84), the clause could scope either below negation, (85), or above negation, (86).

(84) Mitja ne pomnit, [$\varnothing_a$ čto Lena smotrela futbol].
Mitya NEG remembers COMP Lena watched soccer
'Mitya doesn't remember that Lena watched soccer.'

(85) **Low Scope of the CP**



(86) **High Scope of the CP**



Weak NPI subjunctives are indefinites that have to occur below the scope of

operators like negation, so, e.g. a subjunctive clause could occur in a structure like (85), but not in (86). We will see shortly what derives such a restriction.

If we have an indefinite clause and some operator in the structure, there are the following parameters that sentences could vary along: scope of the clause with respect to the operator (low scope of the CP vs. high scope of the CP), meaning of the clause (Cont-CP vs. Sit-CP), mood of the clause (indicative vs. subjunctive). I would like to argue that not all logically possible combinations of these parameters are attested; the possible combinations are presented in the table 5.6.

Mood	**Low Scope**		**High Scope**	
	CONT-CP	SIT-CP	CONT-CP	SIT-CP
Indicative	✓	✓	✓	✓
Subjunctive	*	✓	*	*

Table 5.6: The range of interpretations

When a clause is indicative, there are in principle no restrictions on what its meaning and scope are. In section 5.3.3 I discuss the readings of indicative clauses in more detail, focusing on the presence of factive inferences in sentences with them. But my main focus is on the restrictions that we observe with weak NPI subjunctive clauses: first, they cannot take high scope with respect to other operators, and thereby are for example ungrammatical in UE contexts (see section 5.2.3.2), and second, they cannot be Cont-CPs (see section 5.2.3.4).

I would like to argue that both of these restrictions emerge from the following ingredients: a theory of licensing of weak NPIs, my proposal about the meanings of Sit-CPs and Cont-CPs presented in chapter 2, and assumptions about where the subjunctive morpheme *by* appears in the structures of embedded clauses and what alternatives it activates. In section 5.2.3.2 I present the general approach to NPI licensing that I will follow (Lahiri 1998, Chierchia 2013, Crnič 2019, a.m.o.), in section 5.2.3.3 I make a proposal about how weak NPIs are licensed in Russian and explain why weak NPI subjunctives must take low scope. Section 5.2.3.4 focuses on the distinction between Sit-CPs and Cont-CPs, and argues that Cont-CPs cannot be weak NPI subjunctives due to the equality semantics of displacement introduced by the Cont head. Finally, section 5.2.3.5 provides a formal implementation of my proposal within a theory that treats focus as a kind of variable binding (Kratzer 1991, Wold 1995, 1996, Büring 2016).

5.2.3.2 Licensing weak NPIs

Conditions like (55), repeated below as (87), raise many questions. Why do such conditions exist? "Where" in the grammar and how are they encoded?

(87) **Condition for licensing weak NPIs**
A weak NPI is an indefnite that is acceptable only if it is dominated by a constituent that is Strawson Downward Entailing (SDE) with respect to its restrictor.

There is a promising line of ongoing research (Lahiri 1998, Chierchia 2013, Crnič 2019, a.m.o.) that attempts to depart from viewing such conditions as primitives, and derive them from more general principles of how meaning is computed in natural language. The main idea behind this approach is that conditions like (87) arise due to the interplay between two factors: (i) how natural language handles expressions that make reference to alternatives; (ii) how natural language handles structures that have contradictory or trivial meanings by the virtue of the logic involved in them (see discussion of *L-analyticity* in section 1.3 of chapter 1).

Let us start with the first factor. Natural languages have expressions whose meaning needs to make reference to *alternatives* to the sentence in which they occur. This can be illustrated with (88).

(88) Only ANYA$_F$ danced.
$\Rightarrow$ 'Vanya danced' is false
$\Rightarrow$ 'Danya danced' is false

Let us restrict the set of individuals to only three people: Anya, Vanya and Danya. The meaning of *only* in (88) has to make reference not only to the proposition 'Anya danced', but also to its alternatives—propositions 'Vanya danced' and 'Danya danced'. Specifically, *only* tells us that these alternative propositions are false. How does *only* get access to these propositions? The general intuition goes as follows. Some elements can "activate" alternatives: make our computation care about them in non-trivial ways. In (88) the focus on *Anya* (indicated by capital letters and $_F$ subscript) is such an element: it determines that we will be caring about alternatives, and our alternatives will be identical to the prejacent except that they could potentially have different individuals in the place of 'Anya'. So in (88) alternatives

will be 'Anya danced' (the prejacent itself), 'Vanya danced' and 'Danya danced'. Once alternatives are activated, they are passed on onto higher nodes of the tree, and can be used by operators like 'only', whose denotations make reference to them.

There are reasons to think that sentences with NPIs might also present a case where some alternatives are activated and then acted upon. Consider again our definition of Strawson Downward-Entailingness (53), repeated below as (89).

(89) **Strawson Downward-Entailing (SDE)** (from Crnič 2019: p.4, (7))
A Constituent S is *Strawson Downward-Entailing* with respect to a subconstituent X iff for every X' such that $[\![X']\!] \Rightarrow_s [\![X]\!]$, it holds that $[\![S]\!] \Rightarrow_s [\![S[X/X']]\!]$ (where S[X/X'] is identical to S except that X' replaces X).

What this definition asks us to do is consider *alternatives to a subconstituent X*, X', that have certain properties, and then check whether entailment holds between the original sentence S and sentences in which we would substitute X' for X. This definition already contains components that are very similar to the ones we needed for describing the meaning of the sentence with *only* in (88), and that we need for alternative-sensitive structures more generally. These ingredients of an alternative-sensitive structure might be schematized as in (90).

(90) O $[_S$ ...X_F...]

a. Substitutions to X:
Set of things we get by "substituting" X for values of the same type.

b. ALT (set of alternatives O operates on):
Set of the alternative sentences that we get from substitution.

c. Operator: the operator says something about the relationship between the prejacent and the alternatives.

There is an operator O combining with a prejacent sentence S. Inside S, there is some constituent X with respect to which alternatives are activated. We look at the set of things that can substitute for X (substitutions), and then at the set of resulting sentences—the ALT(ernative) set. The operator has access to ALT in addition to the prejacent S, and tells us something about both of them.

In (91) I show how sentences with *only* fit into this schema. The DP *Anya* is the constituent X in this case that we are seeking substitutions for, and the substitution set will contain three individuals: {Anya, Vanya, Danya}. Once we build the preja-

cent, we will also have the set of alternatives corresponding to these substitutions: {Anya danced, Vanya danced, Danya danced}. *Only* is the operator O whose semantics will refer to ALT: assert that all propositions in ALT that are not entailed by the prejacent are false.

(91) Only $[_S$ ...ANYA$_F$...]

a. Substitutions to *Anya*—individuals of type e:
Anya, Vanya, Danya

b. ALT (the set of alternatives O operates on):
{*Anya danced, Vanya danced, Danya danced*}.

c. What *only* does:
presupposes that the prejacent is true, asserts that all propositions in ALT that are not entailed by the prejacent are false

As one can see, the definition in (89) contains at least two components from the schema: the constituent X that we are doing substitutions to, and the resulting set of alternative propositions. If we assume that there is a single mechanism in the grammar that handles all alternative-sensitive phenomena, then it has to be the case that the third component, the operator acting on alternatives, is present in sentences with NPIs as well. This idea is illustrated in (92).

(92) O $[_S$ Anya ate any $[_{NP}$ ice-cream$]_F]$

a. Substitutions to D$_F$—Subdomain Alternatives (SA):
{x: x is a strawberry ice-cream},
{x: x is a strawberry ice-cream with sprinkles},
{x: x is a strawberry ice-cream with sprinkles and whipped cream}
etc. (all subsets of the set of ice-creams)

b. ALT (the set of alternatives O operates on):
{*Anya ate a strawberry ice-cream,*
Anya ate a strawberry ice-cream with sprinkles,
Anya ate a strawberry ice-cream with sprinkles and whipped cream...etc.}
(sentences corresponding to all subsets of the set of ice-creams)

c. What O does: asserts that the prejacent is true, and says that all the propositions in ALT are entailed by the prejacent.[22]

[22]Here I use 'says' to refrain from making a choice whether this component of meaning is part

There is a silent operator O present in sentences containing NPIs, which combines with the prejacent S. The prejacent contains a constituent alternatives to which are generated: the NP *ice-cream*, which is the restrictor of an indefinite. One difference from (91) is that the substitution has to be more specific: we will substitute 'ice-cream' not for any constituent of the same type (<e,t>), but for constituents of the same type that are subsets of the set of ice-creams. For example, the set of strawberry ice-creams will be among our substitutions, the set of strawberry ice-cream with sprinkles, the set of strawberry ice-cream with sprinkles and whipped cream, among many others. We will consider all subsets of the set of ice-creams, and these sets will determine the set of alternatives ALT. If the condition for NPI licensing is the one in (89), then what the operator has to do in addition to asserting the prejacent is place the requirement on the propositions in ALT that all of them must be entailed by the prejacent. As we will see in the next section, this will give rise to the requirement that weak NPIs have to occur in SDE contexts.

To summarize the discussion up to this point, it has been proposed in the literature that sentences with NPIs involve alternative semantics and thus follow the general schema in (90). What exactly is the nature of the operator(s) involved in sentences with NPIs is still a question of ongoing research. The operator that I sketched out in (92), based on the condition in (89), is not something that to my knowledge has been proposed in the literature, but this is an operator that I argue is needed for Russian weak NPIs and weak NPI subjunctives. What has been proposed is that covert operators with meanings similar to *only* and *even* are responsible for licensing of NPIs (Lahiri 1998, Chierchia 2013, Crnič 2019, a.o.). I do not follow such proposals because for Russian they overgenerate: predict weak NPIs to be licensed in contexts where they are ungrammatical.[23]

The second ingredient that we need to move away from having the licensing condition as a primitive is a theory of how certain kinds of meanings produce ungrammaticality. Whereas the licensing condition just explicitly states the requirement for the structure to be grammatical, in a system where we want to *derive* the observed generalizations from independent principles of the grammar, we need a way for certain meanings to make the corresponding sentences ungrammatical. In

of the assertion or of the presupposition.

[23]See section 5.6.5 of the supplementary materials for discussion of non-monotone quantifiers, which are an apparent exception to the generalization that weak NPIs in Russian are licensed in SDE environments.

the introduction (section 1.3 chapter 1) I discussed the hypothesis that *L-analyticity* (Barwise & Cooper 1981, von Fintel 1993, Gajewski 2002, Chierchia 2013, a.m.o.), (93), is a property of sentence meanings that can result in ungrammaticality.

(93) *L(ogical)-analyticity* (Gajewski 2002)

a. L-analytic sentences are those that are true or false in virtue of their logical structure.

b. L-analytic sentences are ungrammatical

I will adopt this hypothesis here, and assume that sentences whose meanings are trivial in the virtue of their logical structure are perceived as ungrammatical.[24]

Now putting the alternative-based semantics for NPIs and *L-analyticity* together, we can formulate the general idea of how NPI licensing conditions can be derived:

(94) **Failed NPI-licensing as result of L-analyticity**

a. The structure: O $[_S$ ...X_F...]

b. The requirement of the operator O placed on ALT: P

c. The nature of the alternatives in ALT: ¬P

d. ⇒ The sentence is L-analytic, and hence ungrammatical.

Sentences with NPIs are ungrammatical when they are L-analytic. This happens when the requirements of the operator O present in the structure contradict something that is true in the virtue of alternatives that have been generated. The assumption is that the operator is an element of the logical vocabulary, and the *kind* of alternatives that are generated does not depend on the exact open-class lexical items present in the sentence. So if the operator demands that P be true, but due to the *kind* of alternatives that we invoked ¬P is true, then no subsitution of open-class elements of the sentence will allow the sentence to avoid being trivially false. It will be always false in the virtue of the *logical structure* present, and hence it will be L-analytic and ungrammatical.

This is the general shape of proposals that attempt to derive the licensing con-

[24] A different route is taken in (Pereltsvaig 2004), where ungrammatical cases of NPI licensing are analyzed as cases where a morphological item has been inserted into the structure whose conditions for insertion have not been met. For her, a lexical item can explicitly state that it needs to occur in a structure with certain monotonicity properties. A general question that such an approach raises is whether there are any restrictions as to what requirements lexical items could encode.

dition for NPIs by appealing to alternative-based semantics and L-analyticity (e.g., Chierchia 2013, Crnič 2019, a.o.). The next section presents my proposal about weak NPIs and weak NPI subjunctives in Russian within this framework.

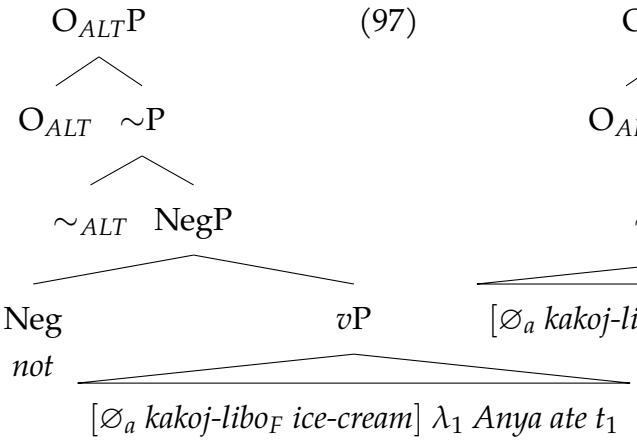
5.2.3.3 Weak NPI subjunctives must scope low

I propose that the focus operator responsible for licensing weak NPIs in Russian has the denotation in (95): its semantic contribution is the presupposition that all propositions in the alternative set g(ALT), where ALT is a free variable of type <st,t>, are entailed by the prejacent.

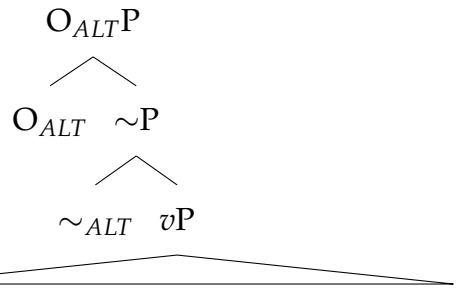
(95) $[\![\mathrm{O}_{ALT}]\!]^{s,g} = \lambda \mathrm{p}_{st}$: $\forall \mathrm{q} \in \mathrm{g(ALT)}$ [$\mathrm{p} \Rightarrow_s \mathrm{q}$]. $\mathrm{p(s)}=1$.

Sentences with pronominal weak NPIs like *kakoj-libo* and *kakoj by to ni bylo* have LFs like in (96) when they occur under negation, and like in (97) without any operators.

(96)



(97)



I am assuming that $\sim_{ALT}$ establishes a relationship between g(ALT) and the set of alternatives to the prejacent. Here I will assume for simplification that this relation is equality, but see the formal fragment in section 5.2.3.5, where I assume that g(ALT) is a subset of the set of alternatives to the prejacent.

I am also assuming that the subdomain alternatives to the restrictor (*ice-cream*) are generated by having NPI modifiers *wh-libo /wh-by to ni bylo* (type <e,t>) which are lexically focus-marked and thus always activate alternatives. How that is done compositionally is discussed in section 5.2.3.5. In (98) I illustrate what kinds of meanings we will be substituting instead of the meaning of *ice-cream* in the prejacent in order to derive alternative propositions.

(98) **Substitutions:**
{{x: x is an ice-cream in s},
{x: x is a strawberry ice-cream in s},
{x: x is a strawberry ice-cream with sprinkles in s},...etc.}

Now let us consider what happens if there is negation present in the sentence, and the indefinite scopes below it, (99)–(100).

(99) **Prejacent in (96):** λs. $\neg\exists$x, s'[ice-cream(x)$_s$ $\wedge$ ate-Anya-x(s')$_s$]
$\neg$(*There is an ice-cream that Anya ate*)

(100) **ALT in (96):**
{λs.$\neg\exists$x,s'[x $\in$ {y: ice-cream(y)$_s$} $\wedge$ ate-Anya-x(s')$_s$],
$\neg$(*There is an ice-cream that Anya ate*)

λs.$\neg\exists$x,s'[x $\in$ {y: strawberry-ice-cream(y)$_s$} $\wedge$ ate-Anya-x(s')$_s$],
$\neg$(*There is a strawberry ice-cream that Anya ate*)

λs.$\neg\exists$x,s'[x $\in$ {y: strawberry-ice-cream-with-sprinkles(y)$_s$}
$\wedge$ ate-Anya-x(s')$_s$],...etc.}
$\neg$(*There is a strawberry ice-cream with sprinkles that Anya ate*)

By the nature of the generated alternatives, the prejacent entails all the propositions in its alternative set: if there is no ice-cream that Anya ate, then there is no strawberry ice-cream that Anya ate, no strawberry ice-cream with sprinkles that Anya ate, and so on. Thus, the presupposition introduced by the operator O_{ALT}, (95), will always be satisfied. This means that the contribution of O_{ALT} is vacuous, but the sentence is not L-analytic, and thus will be grammatical.

As discussed above, Russian is a language with the Bagel Problem. This is why although (96) is predicted to be grammatical, it is not a good sentence: weak NPIs are morphologically blocked by NCIs in this context (Pereltsvaig 2004), (101).

(101) Anja ne ela ni-kakogo moroženogo /*kakoe-libo moroženoe
Anya NEG ate NCI-what.kind ice-cream what.kind-LIBO ice-cream
/*kakoe by to ni bylo moroženoe.
what.kind SUBJ SPEC NEG be.PST ice-cream
'Anya didn't eat any ice-cream.'

That pronominal weak NPIs are in fact semantically licensed under negation can be shown with the help of a different negation marker. Erschler (To appear) notes that colloquial Russian has grammaticalized an alternative sentential negation marker derived from the word *xuj* 'dick'. Erschler observes that unlike regular sentential negation *ne*, *xuj* does not permit negative concord items but licenses weak NPIs. I illustrate this with the examples in (102)–(103).[25]

(102) *Xuj Anja ela ni-kakoe moroženoe.
NEG$_3$ Anya ate NCI-what.kind ice-cream
'Anya didn't eat any ice-cream.'

(103) ?Xuj Anja ela kakoe-libo /kakoe by to ni bylo
NEG$_3$ Anya ate what.kind-LIBO /what.kind SUBJ SPEC NEG be.PST
moroženoe.
ice-cream
'Anya didn't eat any ice-cream.'

This pattern is expected if weak NPIs are semantically licensed under negation: in a context where NCIs are disallowed (perhaps, due to lack of concord/agreement), they do not block the use of weak NPIs any longer, and they become grammatical.

Now let us see what happens without negation. We will make the same substitutions to the prejacent, (104), which will give rise to the alternative set in (105).

(104) **Prejacent in (97):** λs. $\exists$x, s'[ice-cream(x)$_s$ $\wedge$ ate-Anya-x(s')$_s$]
There is an ice-cream that Anya ate

(105) **ALT in (97):**
{λs.$\exists$x,s'[x $\in$ {y: ice-cream(y)$_s$} $\wedge$ ate-Anya-x(s')$_s$],
There is an ice-cream that Anya ate

λs.$\exists$x,s'[x $\in$ {y: strawberry-ice-cream(y)$_s$} $\wedge$ ate-Anya-x(s')$_s$],
There is a strawberry ice-cream that Anya ate

λs.$\exists$x,s'[x $\in$ {y: strawberry-ice-cream-with-sprinkles(y)$_s$}
$\wedge$ ate-Anya-x(s')$_s$],...etc.}
There is a strawberry ice-cream with sprinkles that Anya ate

[25]Some people perceive a register clash between using weak NPIs, which are sometimes perceived as belonging to a more formal style of speech, and *xuj*, which is extremely colloquial, hence the slight degradedness of (103) indicated by "?". (102), on the other hand, is ungrammatical.

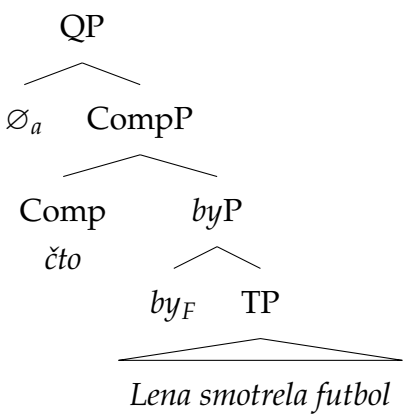
Without negation, the entailment relations between the propositions of the alternative set are reversed: now the prejacent is entailed by all of the alternatives, and it does not entail any alternatives except for itself. If Anya ate an ice-cream, we cannot conclude that she ate a strawberry ice-cream, or a strawberry ice-cream with sprinkles, and this is true for all subsets of the set of ice-creams. Thus, the presupposition of O_{ALT} will never be met: because of the alternatives that we activated, it can never be the case that the prejacent will entail all of its alternatives. Thus, the sentence will be trivial: it will always be a presupposition failure in the virtue of the "logical" lexical items present in the sentence (O_{ALT}, weak NPIs). Hence, the sentence is L-analytic (Barwise & Cooper 1981, von Fintel 1993, Gajewski 2002, Chierchia 2013, a.m.o.), and should be ungrammatical, which is the case, (106).

(106) *Anja ela kakoe-libo moroženoe /kakoe by to ni bylo
Anya ate what.kind-LIBO ice-cream /what.kind SUBJ SPEC NEG be.PST
moroženoe.
ice-cream
'Anya ate some ice-cream.'

Now let us see how this analysis can be extended to account for the weak NPI subjunctives. I will only be considering clauses that are Sit-CPs here, because as we saw in section 5.2.2, polarity-sensitive subjunctive clauses only have a chance of being grammatical if they are Sit-CPs.

I propose that *by* attaches directly to the TP. So in the structure of Sit-CPs, it is in between projections of Comp and T, (107).

(107)



I also propose that *by* is very similar to items like *kakoj-libo* 'what.kind-LIBO' and

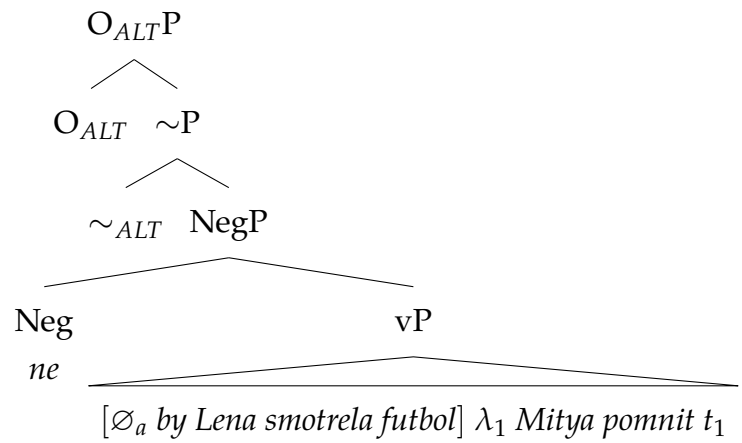
kakoj-by to ni bylo 'what.kind SUBJ SPEC NEG be.PST': it is a polarity-sensitive modifier that comes focus-marked from the lexicon and thus obligatorily activates alternatives. The only difference is that *by* is a predicate of situations (<s,t>). It activates the subdomain alternatives of the embedded proposition, (108). A compositional implementation of this activation can be found in section 5.2.3.5.

(108) **Substitutions:**
{{s: Lena watched soccer in s},
{s: Lena watched soccer in a bar in s},
{s: Lena watched soccer in a bar with friends in s},...etc.}

Now let us consider a sentence containing negation, (109), with the embedded clause taking low scope with respect to it, (110).

(109) Mitja ne pomnit čto-**by** Lena smotrela futbol.
Mitya NEG remembers COMP-**SUBJ** Lena watch.PST soccer
'Mitya doesn't remember that Lena watched soccer.'

(110)



I propose that the focus operator present in the structure is exactly the same as with pronominal weak NPIs — O_{ALT}, (95). It requires that the prejacent, shown in (111), should entail all of its alternatives, (112)–(113).

(111) **Prejacent in (110):**
λs.$\neg\exists$s',s''[s' $\sqsubseteq$ s $\wedge$ s' $\Vdash_e$ {s: Lena watched soccer in s}
$\wedge$ remembers-Mitya-s'(s'')$_s$]
$\neg$(*There is a situation of Lena watching soccer that Mitya remembers*)

(112) **ALT in (110):**
$\{\lambda s.\neg\exists s',s''[s' \sqsubseteq s \wedge s' \Vdash_e$ {s: Lena watched soccer in s}
$\wedge$ remembers-Mitya-s'$(s'')_s]$,
$\lambda s.\neg\exists s',s''[s' \sqsubseteq s \wedge s' \Vdash_e$ {s: Lena watched soccer in a bar in s}
$\wedge$ remembers-Mitya-s'$(s'')_s]$,
$\lambda s.\neg\exists s',s''[s' \sqsubseteq s \wedge s' \Vdash_e$ {s: L. watched soccer in a bar with friends in s}
$\wedge$ remembers-Mitya-s'$(s'')_s]$,...$\}$

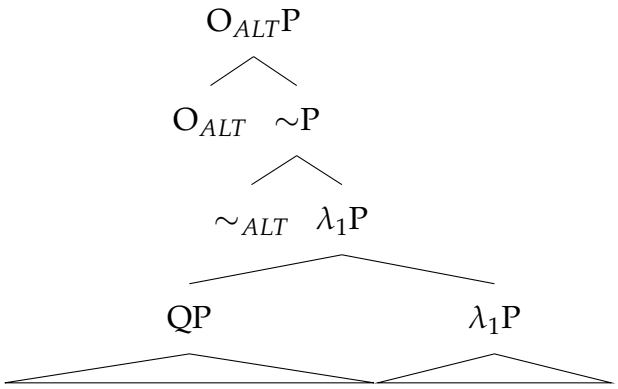
(113) **Paraphrases for ALT in (110):**
$\neg$(*There is a situation of Lena watching soccer that Mitya remembers*),
$\neg$(*There is a situation of Lena watching soccer in a bar that Mitya remembers*),
$\neg$(*There is a situation of Lena watching soccer in a bar with friends that Mitya remembers*) ...

Note that just by the nature of the alternatives involved, the prejacent will always entail all of its alternatives. If there is no situation of Lena watching soccer that Mitya remembers, then there is no situation of Lena watching soccer in a bar that Mitya remembers or situation of Lena watching soccer in a bar with friends that Mitya remembers. For any subset of the set of situations in which Lena watched soccer, there won't be a situation in that set that Mitya remembers. Thus, the presupposition of O_{ALT} in this case will always be satisfied, and the subjunctive particle *by* will be successfully licensed, and the sentence will be grammatical.

Now let us consider what happens in the absence of negation, (114)–(115). Without negation, the entailment relations between the propositions in the alternative set, (117)–(118), will be reversed. Now the prejacent, (116), will be entailed by all of the alternatives and not vice versa: e.g., if Mitya remembers a situation of Lena watching soccer, we cannot infer that Mitya remembers a situation of Lena watching soccer in a bar, or a situation of Lena watching soccer in a bar with friends.

(114) *Mitja pomnit čto-**by** Lena smotrela futbol.
Mitya remembers COMP-**SUBJ** Lena watch.PST soccer
'Mitya remembers that Lena watched soccer.'

(115)



(116) **Prejacent in (115):** λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$ $\exists$s″[remembers-Mitya-s′(s″)$_s$]]
There is a situation of Lena watching soccer and Mitya remembers it

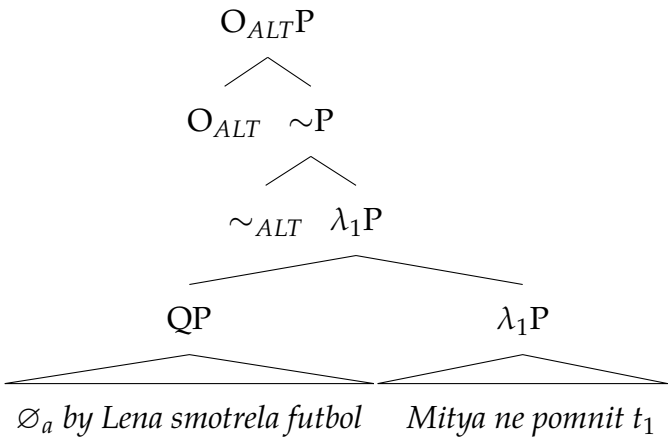
(117) **ALT in (115):**
{λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$
$\exists$s″[remembers-Mitya-s′(s″)$_s$]],
λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in a bar in s} $\wedge$
$\exists$s″[remembers-Mitya-s′(s″)$_s$]],
λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in a bar with friends in s} $\wedge$
$\exists$s″[remembers-Mitya-s′(s″)$_s$]]}

(118) **Paraphrases for ALT in (115):**
There is a situation of Lena watching soccer and Mitya remembers it,
There is a situation of Lena watching soccer in a bar and
Mitya remembers it,
There is a situation of Lena watching soccer in a bar with friends and
Mitya remembers it...

This means that the presupposition of O_{ALT} will never be satisfied in contexts without entailment-reversing operators like negation: O_{ALT} demands that the prejacent entail all of its alternatives, but by the nature of the alternatives prejacent does not entail all of its alternatives. Thus, the sentence will be L-analytic: always undefined in the virtue of its logical structure. Hence, the sentence is correctly predicted to be ungrammatical due to our assumption that L-analyticity leads to ungrammaticality.

Note that we also predict ungrammaticality if negation is present in the structure, but the embedded clause scopes above it, (119).

(119)



The prejacent and the alternative set for this configuration are illustrated in (120) and (121)–(122) respectively.

(120) **Prejacent in (119):** λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$ $\neg\exists$s″[remembers-Mitya-s′(s″)$_s$]]
There is a situation of Lena watching soccer and $\neg$(*Mitya remembers it*)

(121) **ALT in (119):**
{λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$
$\neg\exists$s″[remembers-Mitya-s′(s″)$_s$]],
λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in a bar in s} $\wedge$
$\neg\exists$s″[remembers-Mitya-s′(s″)$_s$]],
λs.$\exists$s′[s′ $\sqsubseteq$ s $\wedge$ s′ $\Vdash_e$ {s: Lena watched soccer in a bar with friends in s} $\wedge$
$\neg\exists$s″[remembers-Mitya-s′(s″)$_s$]]}

(122) **Paraphrases for ALT in (119):**
There is a situation of Lena watching soccer and
$\neg$(*Mitya remembers it*),
There is a situation of Lena watching soccer in a bar and
$\neg$(*Mitya remembers it*),
There is a situation of Lena watching soccer in a bar with friends and
$\neg$(*Mitya remembers it*)...

We see that by the nature of alternatives, the prejacent will not entail any propositions in ALT but for itself: e.g. if there is a situation of Lena watching soccer that Mitya doesn't remember, it doesn't follow that there is a situation of Lena watching soccer in a bar that Mitya doesn't remember, as there just might not exist any situation of Lena watching soccer in a bar. Thus, the presupposition of O_{ALT} will never be met in this configuration either, leading to L-analyticity and ungrammaticality.

This prediction of our theory is borne out: while subjunctive CPs are possible with verbs like *pomnit'* 'remember' under negation, they cannot take high scope with respect to negation. This is illustrated in (123) by the inability of anaphora to the embedded CP; cf. the possibility of anaphora with an indicative clause in (124).

(123) Mitja ne pomnit [**čto-by** Lena smotrela futbol].
Mitya NEG remembers **COMP-SUBJ** Lena watch.PST soccer
#**Èto** bylo davno.
this was long.ago
'Mitya doesn't remember that Lena watched soccer.
This [= Lena watching soccer] happened long time ago.'

(124) Mitja ne pomnit [čto Lena smotrela futbol].
Mitya NEG remembers COMP Lena watch.PST soccer
Èto bylo davno.
this was long.ago
'Mitya doesn't remember that Lena watched soccer.
This [= Lena watching soccer] happened long time ago.'

It has been observed in the literature (Karttunen 1976) that when indefinites are in the scope of negation, pronouns can't refer back to them: cf. (125a) and (125b).

(125) a. $\neg > \exists$: It's not the case that Mary saw [a puppy]. #It was cute.
b. $\exists > \neg$: There is [a puppy] that Mary didn't see. It was cute.

Thus, if the subjunctive clause in (123) was able to take high scope with respect to negation, we expect that it would have been able to be referred back to by the pronoun *èto*, which can refer back to indicative clauses when they take high scope (124). The fact that the subjunctive does not permit such anaphora suggests that it obligatorily scopes low, as is predicted.

Let us recap our account of why polarity-sensitive subjunctive clauses must take low scope with respect to entailment-reversing operators. *By* combines with an embedded proposition and activates its subdomain alternatives, which are later operated on by the focus operator O_{ALT}. The sentence is grammatical only if it is Strawson-Downward Entailing with respect to the the embedded TP, because O_{ALT} demands that the prejacent entail all of its alternatives.

If we reflect on why with Sit-CPs the demands of O_{ALT} will be satisfied in contexts like under negation, the property in (126) seems to be crucial.

(126) For any situation s, propositions p and q such that $p \Rightarrow_s q$:
$\exists s'$ in s: s' exemplifies $p \Rightarrow_s \exists s''$ in s: s'' exemplifies q.
(e.g.: if there is a Lena-watching-soccer-in-a-bar situation, then there is a Lena-watching-soccer situation)

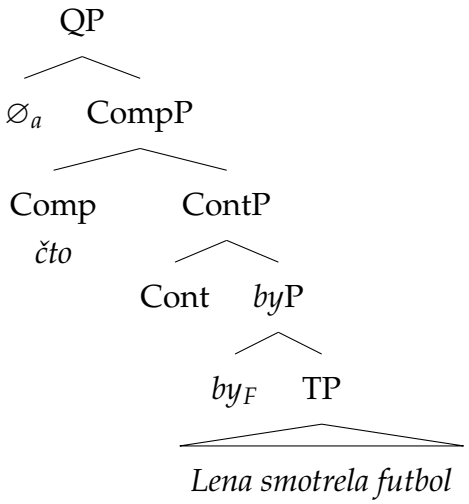
If p Strawson-entails q, and there is a situation exemplifying p in our situation of evaluation, then there also must be a situation exemplifying q in the evaluation situation. Because of this property, when Sit-CPs are in scope of operators like negation, the prejacent will always entail all of its subdomain alternatives, satisfying O_{ALT}'s presupposition and making the use of *by* grammatical.

While here I only illustrated licensing of weak NPI subjunctives in sentences with negation, the same treatment of subjunctive should extend to sentences containing other operators (e.g., scope of *tol'ko* 'only', restrictor of *každyj* 'every', antecedents of conditionals etc., see section 5.2.1) that will make the sentence SDE with respect to the embedded proposition.

5.2.3.4 Why Cont-CPs cannot be Weak NPI subjunctives

Now that we have a general proposal for how weak NPI subjunctives are licensed, we can turn to the question of why they cannot be Cont-CPs. I will be assuming that *by* attaches to the embedded TP, just as was the case with Sit-CPs. Thus, the only difference in the structure of the embedded clause is that there is a Cont projection intervening between CompP and *by*P, (127).

(127)

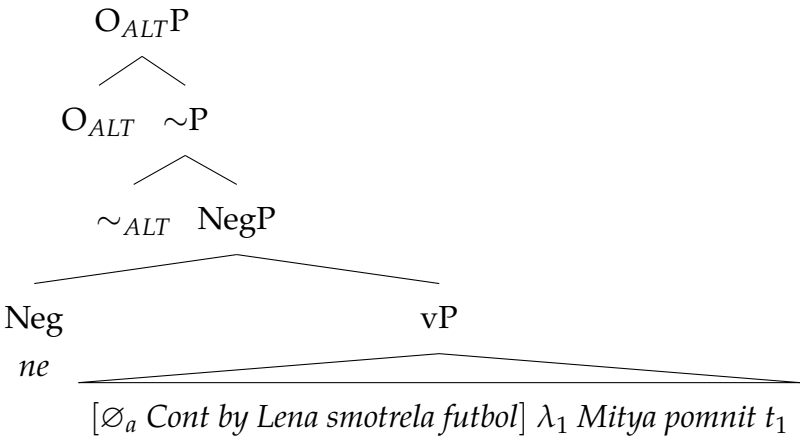


As before, *by* will activate the subdomain alternatives of the embedded proposition, (108), repeated below in (128).

(128) **Substitutions:**
{{s: Lena watched soccer in s},
{s: Lena watched soccer in a bar in s},
{s: Lena watched soccer in a bar with friends in s},...etc.}

Now let us consider a configuration in which the embedded clause takes low scope with respect to an entailment-reversing operator like negation, (129), and see that even with the low scope the subjunctive clause will not be allowed due to the semantics of the embedded Cont-CPs.

(129)



The prejacent will have the denotation in (130): it is a predicate of situations

such that there is no entities with propositional content *"Lena watched soccer"* in them that Mitya remembers.

(130) **Prejacent in (129):**
λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}$Cont(s′) = {s: Lena watched soccer in s}
$\wedge$ remembers-Mitya-s′(s″)$_s$]
$\neg$(There is an entity with Content *"Lena watched soccer"*
that Mitya remembers)

The ALT set is presented in (131), with paraphrases provided in (132).

(131) **ALT in (129):**
{λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}$Cont(s′) = {s: Lena watched soccer in s}
$\wedge$ remembers-Mitya-s′(s″)$_s$],
λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}$Cont(s′) = {s: Lena watched soccer in a bar in s}
$\wedge$ remembers-Mitya-s′(s″)$_s$],
λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}$Cont(s′) = {s: Lena watched soccer in a bar with
friends in s} $\wedge$ remembers-Mitya-s′(s″)$_s$],...}

(132) **Paraphrases for ALT in (129):**
$\neg$(There is an entity with Content *"Lena watched soccer"*
that Mitya remembers),
$\neg$(There is an entity with Content *"Lena watched soccer in a bar"*
that Mitya remembers),
$\neg$(There is an entity with Content *"Lena watched soccer in a bar with
friends"* that Mitya remembers) ...

Because of the equality semantics of displacement, the propositions in ALT in (131) are not ordered by entailment. This lack of entailment is due to the following property: if a proposition $p \Rightarrow_s$ proposition q, existence of an individual in s that has p as its propositional content does not generally entail existence in s of an individual whose propositional content is q, (133). Note that this is different from what we observed with Sit-CPs in (126). Thus, without any additional meaning postulates or assumptions about the ontology, (non)-existence of an entity whose propositional content is p does not entail (non)-existence of an entity whose propositional content is q, for $p \Rightarrow_s q$.

(133) For an arbitrary situation s, for all p and $q \in D_{st}$ such that $p \Rightarrow_s q$:[26]
$\exists x$ in s $[^{\Vdash_e}\textsc{cont}(x) = p] \not\Rightarrow_s \exists x$ in s $[^{\Vdash_e}\textsc{cont}(x) = q]$
(For example: if there is a rumor that Lena watched soccer in a bar, it doesn't mean that there is a rumor that Lena watched soccer—the two rumors are distinct things)

And we need the entailment to hold for *all* situations in order for the prejacent to Strawson-entail any of its alternatives. This is due to the definition of Strawson Entailment, (52), repeated here as (134).

(134) **Strawson Entailment** $(\Rightarrow_s)$
(von Fintel 1999, here via Crnič 2019: p.2, (2))
a. For any p, q of type t: $p \Rightarrow_s q$ iff $p = 0$ or $q = 1$.
b. For any f, g of type $(\sigma\tau)$, $f \Rightarrow_s g$ iff for every x of type σ such that $g(x)$ is defined, $f(x) \Rightarrow_s g(x)$.

Propositions are functions from situations to truth-values. For the prejacent p to entail any of its alternatives q, it must be the case that for *every situation s*, as long as q is defined, $p(s) \Rightarrow_s q(s)$. For example, consider p in (135a) and q in (135b).

(135) a. λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}\textsc{Cont}$(s′) = {s: L. watched soccer in s}
$\wedge$ remembers-Mitya-s′(s″)$_s$]
b. λs.$\neg\exists$s′,s″[s′ $\sqsubseteq$ s $\wedge$ $^{\Vdash_e}\textsc{Cont}$(s′) = {s: L. watched soccer in a bar in s}
$\wedge$ remembers-Mitya-s′(s″)$_s$]

For p to Strawson-entail q, it has to be the case that *whatever situation s we pick*, absence of an individual with content *"Lena watched soccer"* in s would entail absence of an individual with content *"Lena watched soccer in a bar"* in s. However, some situations could lack an entity with content *"Lena watched soccer"* but have an entity with content *"Lena watched soccer in a bar"* in them. Imagine that everyone knows

[26] Note that even if we introduced an additional principle saying that existence of an individual x with content p in *the maximal situation s* entails existence of an individual y with content q in s, (133) would still be true, as for an arbitrary situation this entailment does not go through. So, for example, if we regard **propositions** as individuals with propositional content, we might want to say that they/their counterparts exist in all worlds, which would mean that for all maximal situations, for any proposition q, there will be an individual with content q, and thus the entailment would trivially go through (I'm grateful to Kai von Fintel for bringing this point to my attention). But entailment going through in maximal situations is not sufficient for the prejacent to Strawson-entail its alternatives; it needs to hold in *all* situations.

that Lena watches soccer every day, but where she watches it could be something that people don't know and make hypotheses about. Then there could be a situation containing a rumor that Lena watched soccer in a bar, but not containing any rumor that Lena watched soccer—such a rumor in this context just could not exist.

The property in (133) means that the Cont head will disrupt the monotonicity of the environment. The prejacent in (130) will not Strawson-entail its alternatives. The presupposition of O_{ALT} will thus be never satisfied, making sentences with subjunctive Cont-CPs ungrammatical even in contexts like under negation.

Note that if we had semantics with universal quantification over situations compatible with the content of an individual instead, then for all situations, existence of an individual with the content p in s would entail existence of an individual with content q in s, for any $p \Rightarrow_s q$, (136).

(136) For all situations s and individuals x, for all p and $q \in D_{st}$ such that $p \Rightarrow_s q$:
$\exists x$ in s $[\forall s'[s'$ is compatible with $\textsc{cont}(x) \Rightarrow p(s')=1]$
$\Rightarrow_s \exists x$ in s $[\forall s'[s'$ is compatible with $\textsc{cont}(x) \Rightarrow q(s')=1]$
(E.g.: if there is a rumor, such that in all situations compatible with its content Lena watched soccer in a bar, then there is a rumor, such that in all situations compatible with its content Lena watched soccer)

In (136) the entailment goes through because any individual x that satisfies the antecedent will also satisfy the consequent: if the set of situations compatible with $\textsc{cont}(x)$ is a subset of the set of situations in which p is true, and p is the subset of the set of situations in which q is true, it follows that the set of situations compatible with $\textsc{cont}(x)$ is a subset of the set of situations in which q is true. Thus, under the subset semantics, existence of a individual described by the Cont-CP with an embedded proposition p in a situation s entails existence of an individual described by the Cont-CP with an embedded proposition q in s, for any $p \Rightarrow_s q$ and any s.

Thus, on the equality semantics, but not on the subset semantics we predict that in the general case Cont disrupts the monotonicity of the environment.

Let us discuss some evidence from Cont-CPs that combine with nouns that this is empirically a good prediction (see also section 2.4 of chapter 2 and chapter 3). Consider the dialogue in (137), which occurs in a context of two people talking about a potential hire in the linguistics department.

(137) **Context:** Our linguistics department is looking to hire someone. My non-linguist friend asks me about the rumors that Mitya came across.

A: Mitja pomnit slux, čto otdelenie najmët lingvista?
Mitya remembers rumor COMP department will.hire linguist
'Does M. remember a rumor that the department will hire a linguist?'

B: Mitja ne pomnit sluxa, [čto otdelenie najmët lingvista].
Mitya NEG remember rumor COMP department will.hire linguist
Kto by stal raspuskat' takoj slux? Estestvenno, my najmëm
who SUBJ would spread.INF such rumor of.course we will.hire
lingvista. Mitja pomnit slux, [čto otdelenie najmët
linguist Mitya remembers rumor COMP department will.hire
fonologa].
phonologist
'Mitya doesn't remember a rumor that the department will hire a linguist. Who would spread such a rumor? Of course we will hire a linguist. Mitya remembers a rumor that the department will hire a phonologist.'

Being a phonologist entails being a linguist, yet in (137) B can truthfully assert both that Mitya doesn't remember a rumor that the department will hire a linguist and that Mitya remembers a rumor that the department will hire a phonologist. This is so because existence of a rumor that a phonologist will be hired does not entail existence of a rumor that a linguist will be hired. That would be a very boring rumor to spread, as linguistics departments in most cases hire linguists. This lack of contradiction in B's response is predicted by the equality semantics: if CONT establishes equality relation between the content of an individual and the embedded proposition, then without any further assumptions, entailment is not predicted.

On the subset semantics, B's response should contain a contradiction, because by merely remembering a rumor that p, Mitya is already necessarily remembering a rumor that q. We will get such a contradiction if we use 'according to which' relative clauses instead of embedded clauses, (138): as soon as it is true that Mitya remembers a rumor *according to which* the department will hire a phonologist, it is immediately also true that Mitya remembers a rumor *according to which* the department will hire a linguist, hence the contradiction.

(138) #Mitja pomnit [slux, soglasno kotoromu otdelenie najmët
Mitya remembers rumor according REL.DAT department will.hire
fonologa], no on ne pomnit [sluxa, soglasno kotoromu
phonologist but he NEG remembers rumor according REL.DAT
otdelenie najmët lingvista].
department will.hire linguist
'Mitya remembers a rumor according to which the department will hire a phonologist, but he doesn't remember a rumor according to which the department will hire a linguist.'

The contrast between (137) and (138) suggests that we don't want to have subset semantics as the general semantics for clausal embedding.[27]

[27] Note that adding universal quantification quantifying over entities with propositional content will not restore monotonicity. Compare illustrations in (i)–(iv), where $p \Rightarrow_s q$.

(i) a. $\forall x[\textsc{Cont}(x)=q \rightarrow$ Mitya remembers $x] \not\Rightarrow_s \forall x[\textsc{Cont}(x)=p \rightarrow$ Mitya remembers $x]$
b. For all rumors with the content *"We will hire a linguist"*, Mitya remembers them. $\not\Rightarrow_s$ For all rumors with the content *"We will hire a phonologist"*, Mitya remembers them.

(ii) a. $\forall x[q(x) \rightarrow$ Mitya remembers $x] \Rightarrow_s \forall x[p(x) \rightarrow$ Mitya remembers $x]$
b. For all people who were linguists and were hired, Mitya remembers them. $\Rightarrow_s$ For all people who were phonologists and were hired, Mitya remembers them.

(iii) a. $\exists x[$Mitya remembers $x \wedge \forall s'\ [s' \in \textsc{Cont}(x) \rightarrow q(s')]$
$\not\Rightarrow_s \exists x[$Mitya remembers $x \wedge \forall s'\ [s' \in \textsc{Cont}(x) \rightarrow p(s')]$
b. There is a rumor that Mitya remembers such that in all situations compatible with its content, we're hiring a linguist. $\not\Rightarrow_s$ There is a rumor that Mitya remembers such that in all situations compatible with its content, we're hiring a phonologist.

(iv) a. $\neg\exists x[$Mitya remembers $x \wedge \forall s'\ [s' \in \textsc{Cont}(x) \rightarrow q(s')]$
$\Rightarrow_s \neg\exists x[$Mitya remembers $x \wedge \forall s'\ [s' \in \textsc{Cont}(x) \rightarrow p(s')]$
b. There no rumor that Mitya remembers such that in all situations compatible with its content, we're hiring a linguist. $\Rightarrow_s$ There is no rumor that Mitya remembers such that in all situations compatible with its content, we're hiring a phonologist.

In (i), unlike in (ii), the entailment will not go through. Imagine we are a cognitive science department. There might be two rumors that we will hire a linguist, one spread by Masha, and one by Petya, and Mitya remembers both of them. There might be another, more specific rumor made by Ira — a rumor that we will hire a phonologist. And Mitya does not remember that rumor. In this case, the antecedent will be true, but the consequent will be false, despite the fact that hiring a phonologist entails hiring a linguist. Note that without the CONT function, restrictor of the universal quantifier is Downward-Entailing, (ii): e.g., if Mitya remembers all the linguists who were hired, then he remembers all the phonologists who were hired. If we introduce a "lower" universal modal quantifying over situations compatible with propositional content, the sentence will be Upward-Entailing in the absence of operators like negation, (iii), and Downward-Entailing with them, (iv). I'm grateful to Patrick Elliott, Paloma Jeretič and Wataru Uegaki for making me think about these issues.

Consider another example: (140)–(141) said in the context provided in (139).

(139) **Context:** Lena watches soccer a lot, and she always goes to bars to watch it. It is absolutely unthinkable that she would watch soccer at home. Someone makes a claim *"Lena is watching soccer at home"*, and that makes the speaker of (140)/(141) laugh.

(140) Utverždenie, čto Lena smotrit futbol doma, rassmešilo menja.
claim COMP Lena is.watching soccer at.home made.laugh me
'A claim that Lena is watching soccer at home made me laugh.'

(141) Utverždenie, čto Lena smotrit futbol, rassmešilo menja.
claim COMP Lena is.watching soccer made.laugh me
'A claim that Lena is watching soccer made me laugh.'

The sentence in (140) is judged true in the context of (139), but (141) in the same context is judged to be false: it's not true that a claim *"Lena is watching soccer"* made the speaker laugh; no one even made such a claim, and if they did, the speaker is unlikely to find that funny, as there is nothing unusual about Lena watching soccer.

Again, the subset semantics of embedding would predict (141) to be true as soon as (140) is true: if there is a claim according to which Lena is watching soccer at home that made the speaker laugh, then there is also a claim according to which Lena is watching soccer that made the speaker laugh. One might perhaps object by saying that (141) is actually true but uninformative in the context of (139), as it doesn't tell us about the reason for why the speaker laughed, and this is why it is judged as false by native speakers. I would like to argue that this is not the case.

Imagine a context where the speaker wants to actually conceal what they found funny without making a statement that is false (142). In such a context, the speaker could use the *"according to which"* relative clause and make a true utterance.

(142) **Context:** Lena watches soccer a lot, and she always goes to bars to watch it. It is absolutely unthinkable that she would watch soccer at home. Someone makes a claim *"Lena is watching soccer at home"*, which makes the speaker laugh. The speaker is being asked about what made them laugh, and they want to conceal what was funny to them without lying.

[TRUE] Utverždenie, [soglasno kotoromu Lena smotrit futbol],
claim according REL Lena is.watching soccer
rassmešilo menja.
made.laugh me

'A claim according to which Lena is watching soccer made me laugh.'

In the context of (142) the sentence in (141) still cannot be uttered. Even with a *sneaky-but-truthful* speaker, whose intention is to conceal the fact that it was the place of watching that made them laugh, (141) cannot be used, as it is simply false.

Finally, consider the dialogue in (143).

(143) A: Vy proverjaete gipotezu, [čto vaš novyj alogritm rabotaet]?
you are.proving hypothesis COMP your new algorithm works
'Are you testing the hypothesis that your new algorithm works?'
B: Net, èto my uže proverili, on rabotaet. My proverjaem
no this we already proven he works we are.proving
gipotezu, [čto naš novyj alogritm rabotaet bystree drugix].
hypothesis COMP our new algorithm works faster others.GEN
'No, we've already tested that hypothesis, it works. We are testing the hypothesis that our new algorithm works faster than the others.'

The proposition p = *Our new algorithm is working faster than the others* entails the proposition q = *Our new algorithm is working*. On the subset semantics of clausal embedding, if it is true that *the team is testing a hypothesis that p*, then it is automatically true that *the team is testing a hypothesis that q*. However, we see in (143) that B at the same time negates that their team is testing a hypothesis that q, and asserts that their team is testing a hypothesis that p. The subset semantics predicts this to be a contradiction, but it is not. The equality semantics on the other hand predicts no infelicity: having a hypothesis that the algorithm is working faster than the others does not entail having a hypothesis that the algorithm is working. At the moment of the conversation, there is no *hypothesis* that the algorithm is working: it is by then an established *fact* that the team is no longer testing.

Thus, I would like to conclude that the property of Cont-CPs in (133) that equality semantics delivers in the absence of additional assumptions is a good prediction of our theory: in the general case, we do not want existence of an individual x with

content p in a situation s to immediately entail existence of an individual with content q in s for all q that are Strawson-entailed by p.

While this is the general case, there are cases in which existence of some x with content p tells us something about existence of other individuals whose contents are supersets of p. For example, if a situation contains an individual x that is a belief with content p held by some attitude holder, it seems that at least for some supersets q of p, this situation must also contain individuals—beliefs held by the same attitude holder—with q as their contents, (144).

(144) For all situations s and individuals x and y,
for all p and $q \in D_{st}$ such that $p \Rightarrow_s q$:
$\exists x$ in s $[{}^{\Vdash_e}\textsc{cont}(x) = p \wedge x \in \textsc{bel}(y)]$
$\Rightarrow_s \exists x$ in s $[{}^{\Vdash_e}\textsc{cont}(x) = q \wedge x \in \textsc{bel}(y)]$,
where $\textsc{bel}(y)$ is the set of beliefs that y has
For example: if Masha has a belief that Lena watched soccer in a bar, she also has a belief that Lena watched soccer.

For example, if Masha has a belief that Lena watched soccer in a bar, it seems that we can conclude that Masha has a belief that Lena watched soccer. More research is needed on how the entailment like in (144) arises. Under the approach pursued in this thesis, such entailment is not the default: it holds only for individuals with certain properties. Future research needs to investigate how contenful individuals differ in this respect: how can their mereologies vary? For example, beliefs and hypotheses seem to be different: existence of a hypothesis with content $r \wedge q$ does not entail existence of a hypothesis with content q (q can be an already established fact), but existence of a belief $r \wedge q$ does entail existence of a belief with content q. The proposal in (Elliott 2020) paves the way for examining how such entailment can be modeled in a system with equality semantics.

To sum up, the meaning of the embedded clause makes a difference for whether it can be a weak NPI subjunctive: the clause needs to be monotonic with respect to the embedded proposition in order to become a weak NPI. Sit-CPs are monotonic with respect to the embedded proposition, but Cont-CPs are not: propositions like *Mitya remembers an individual with content p* and *Mitya remembers an individual with content q* do not necessarily stand in an entailment relation even if $p \Rightarrow_s q$. Therefore, Cont-CPs cannot function as weak NPIs. We have seen that the Cont head

disrupts the monotonicity both with clauses that combine with verbs, and with clauses that combine with nouns, (145) (cf. the grammatical (146)), corroborating our hypothesis that it is the meaning of the clause that interferes with NPI licensing.

(145) *Mitja ne pomnit utverždenija /sluxa, **čto-(*by)** grabitel'
Mitya NEG remembers claim /rumor **COMP-(SUBJ)** robber
pytalsja proniknut' na sklad.
tried get.in.INF on warehouse
'Mitya doesn't remember a claim/rumor that the robber tried to get into the warehouse.'

(146) Mitja ne pomnit situacii, /slučaja **čto-(by)** grabitel' pytalsja
Mitya NEG remembers situation /event **COMP-(SUBJ)** robber tried
proniknut' na sklad.
get.in.INF on warehouse
'Mitya doesn't remember a situation/event of the robber trying to get into the warehouse.'

This proposal makes a prediction: if we introduce a universal modal inside of an embedded clause that would quantify over situations compatible with the content of a certain individual, the subjunctive should be licensed in SDE environments. 'According to which' is a relative clause with such a modal inside of it, and it does indeed allow subjunctive in environments like under negation, (147)–(148).[28]

(147) *Mitja pomnit slux, [soglasno kotoromu **by** Lena
Mitya remembers rumor according REL.DAT **SUBJ** Lena
smotrela futbol].
watch.PST soccer
'Mitya remembers a rumor according to which Lena watches soccer.'

(148) Mitja ne pomnit sluxa, [soglasno kotoromu **by** Lena
Mitya NEG remembers rumor according REL.DAT **SUBJ** Lena
smotrela futbol].
watch.PST soccer
'Mitya doesn't remember a rumor according to which L. watches soccer.'

[28] For discussion of general predictions about relative clauses, see section 5.3.1.

Thus, in addition to the arguments in favor of equality semantics for Cont-CPs discussed in chapters 2 and 3, weak NPI subjunctives present an additional argument: equality semantics can explain why Cont-CPs, unlike Sit-CPs, cannot be weak NPIs. Semantics based on the subset relation on the other hand does not predict the meaning of the clause to matter for NPI licensing.

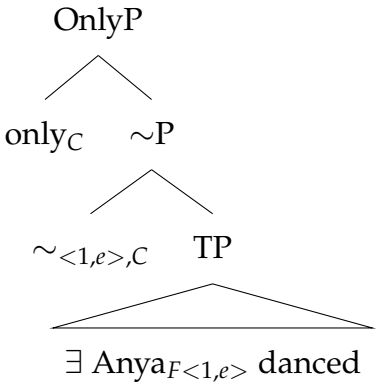
5.2.3.5 A formal fragment

In this section I provide a formal fragment that illustrates how the proposal made in previous sections can be implemented compositionally. To do this, we first need to introduce some general principles of dealing with alternatives in a compositional way. Here I will adopt a theory that treats focus as a kind of variable binding (Kratzer 1991, Wold 1995, 1996, Büring 2016). Below I provide a sketch of such a system, building primarily on the chapter 5 of (Büring 2016).[29]

In this system, the sentences like (149) have LFs like in (150). Focus is interpreted with the help of the squiggle operator ($\sim$), which attaches to the prejacent before the focus operator (*only* in (150)) combines with it.

(149) Only Anya$_{F<1,e>}$ danced.

(150)



The $\sim$ operator and the focus operator come with the same free variable C, which receives its interpretation from the assignment function g. $g(\mathrm{C})$ will be the set of alternative propositions that the focus operator will say something about, but

[29] I have opted for a theory with focus assignment functions, as opposed to focus semantic values (Rooth 1985, 1992), for two reasons. First, it does not create issues for compositionally defining Predicate Abstraction (see Shan 2004, Charlow 2020, 2021). Second, it allows us to have two focus operators operating on distinct sets of alternatives, something seems to be needed to account for the cases where non-monotone quantifiers like *exactly* license NPIs (see section 5.6.5).

how this $g(C)$ is restricted will be determined by $\sim$.

The $\sim$ operator and all foci bear indices: the indices are a pair of a natural number ($n \in \mathbb{N}$) and a semantic type τ: i = <n,τ>. Our interpretation function will now have two assignment functions: in addition to the function g, which assigns denotations to pronouns and traces, we will have an assignment function h, which assigns (alternative) denotations to focused elements. Meanings of focused-marked expressions are determined in the following way:[30]

(151) For any expression α of type τ, and any natural number n, $[\![\alpha_{F_{<n,\tau>}}]\!]^{s,g,h}$ =
  a. $[\![\alpha]\!]^{s,g,h}$ if <n,τ> is not in the domain of h,
  b. h(<n,τ>) otherwise.
  (Büring 2016: 287, (60))

We check if the index of the focused-marked expression (= the pair consisting of its number and its semantic type) is in the domain of the assignment function h. If it is not, the meaning of the focused expression is the same as the meaning of that expression without the focus feature. If it is in the domain of h, then the meaning of the focused expression is whatever h returns when applied to the index. Thus, we can think of ordinary meanings of expressions as their denotations when evaluated with respect to h that has no pairs in its domain:

(152) *Ordinary Meaning* (Büring 2016: 287, (61))
  For any expression α and assingment function g, $[\![\alpha]\!]^g_o =_{def} [\![\alpha]\!]^{g,\{\}}$

To illustrate how the focus assignment function works, consider (153).

(153) a. $[\![\text{Anya}_{F_3}\ \text{danced}]\!]^{s,g,\{\}} = 1$ iff Anya danced
  b. $[\![\text{Anya}_{F_3}\ \text{danced}]\!]^{s,g,\{<3,e>\rightarrow Nadya\}} = 1$ iff Nadya danced
  c. $[\![\text{Anya}_{F_3}\ \text{danced}]\!]^{s,g,\{<5,e>\rightarrow Nadya\}} = 1$ iff Anya ate danced
  d. $[\![\text{Anya}_{F_3}\ \text{danced}]\!]^{s,g,\{<3,e>\rightarrow y\}} = 1$ iff y danced

If $h = \{\}$, then we will just get the ordinary semantic value as the meaning of the sentence—the focus feature on *Anya* will be ignored, (153a). The same will happen if h has some pairs in its domain, but <3,e> is not one of such pairs. We see this in (153c). If h has <3,e> in its domain, the sentence will be true if the individual that

[30] Here and henceforth I omit the tense parameter from the interpretation function for simplification, as tense will not be important in our discussion.

h returns when applied to <3,e> danced. In (153b) h maps this index to Nadya, in (153d) it maps this index to the variable y, and so the respective sentences are true under the focus assignment functions at hand if Nadya/y danced.

In order to get sets of alternatives for different expressions, we will need the definitions in (154) and (155).

(154) *I-Alternative F-Assignment Functions* (Büring 2016: 287, (63))
For any set I of pairs <n,τ> $\in \mathbb{N}$ x *types*, and any assignment function h, let H_I^h be the set of assignment functions h' such that h' differs from h at most in the values it assigns to the i $\in$ I.

(155) *I-Alternatives* (Büring 2016: 287, (64))
For any set I of pairs <n,τ> $\in \mathbb{N}$ x *types*, any syntactic constituent α, the set of α's I-alternatives, relative to assignments g and h, written as $[\![\alpha]\!]^{g,h}_{F_I}$, is $\{[\![\alpha]\!]^{g,h'} \mid h' \in H_I^h\}$

(154) defines as set of focus assignment functions, H_I^h, which contains functions that only differ from h in what they return when they get indices i $\in$ I. For example, if our I consists of a single index, I = {<1,e>}, then $H_I^h = H^h_{\{<1,e>\}}$ will be the set of all focus functions h' that differ from h only in the individual that they return when applied to number 1. (155) defines for any expression α what its set of I-alternatives is: it is a set of values that we get by interpreting α with respect to focus assignment functions $h' \in H_I^h$. I will call ***the set of α's i-alternatives*** the set of alternatives $\{[\![\alpha]\!]^{s,g,h'} \mid h' \in H^h_{\{i\}}\}$ for any $[\![\alpha]\!]^{s,g,h} \notin D_t$ and any index i, and the set of alternatives $\{\lambda s.[\![\alpha]\!]^{s,g,h'} \mid h' \in H^h_{\{i\}}\}$ for any $[\![\alpha]\!]^{s,g,h} \in D_t$ and any index i.

I define the rule of focus interpretation as in (156),[31]

(156) *Focus Interpretation* (*FI*)
If α is a branching node, $\{\sim_{i,C}, \gamma\}$ is the set of α's daughters, and C is a free variable of type <st,t> and γ is of type t, then: $[\![\alpha]\!]^{s,g,h}$ is defined iff
$[\![C]\!]^{s,g,h} \subseteq \{\lambda s.[\![\gamma]\!]^{s,g,h'} \mid h' \in H^h_{\{i\}}\}$
when defined, true iff $[\![\gamma]\!]^{s,g,h} = 1$

[31] In section 5.6.5 I suggest that we need another definedness condition in our rule of Focus Interpretation: an existential presupposition that says that there should be an alternative to the prejacent that is true ($\exists q\,[q \in \{\lambda s.[\![\gamma]\!]^{s,g,h'} \mid h' \in H^h_{\{i\}}\} \wedge q(s)=1]$). Here I omit this presupposition, as it is not required for illustrating the general implementation of NPI licensing.

The combination of the $\sim_{i,C}$ and its sister is defined iff the semantic value of C is a subset of the *i*-alternatives of the prejacent. The *i*-alternatives of the prejacent are derived in the following way: we take the interpretations of the prejacent with respect to all *h'* that are different from *h* only in what they return when they receive the index *i*, then we abstract over the situation argument of all of those interpretations. Thus, we get a set of propositions which differ only in the interpretation of the focused expression(s) with the index *i*.

Let us evaluate the sentence in (149) with respect to the empty focus assignment function $h = \{\}$; i.e., we will be calculating the ordinary value of (149). The prejacent will receive the meaning in (157): it will be true iff Anya danced in *s*.

(157) $[\![\exists\ \text{Anya}_{F<1,e>}\ \text{danced}]\!]^{s,g,\{\}} = 1$ iff $\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Anya}]$

Then we combine the squiggle operator with the prejacent (158).

(158) $[\![\sim P]\!]^{s,g,\{\}}$ is defined iff:
$g(C) \subseteq \{\lambda s.[\![\exists\ \text{Anya}_{F<1,e>}\ \text{danced}]\!]^{s,g,h'} \mid h' \in H^{\{\}}_{\{<1,e>\}}\}$
where defined, true iff $\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Anya}]$

Note that the index that the squiggle operator bears is the same that we see on *Anya*. Thus, the presupposition that $\sim$ introduces will reference the intensionalized <1,e>-alternatives of the prejacent. For example, if D_e contains only three individuals: Anya, Vanya and Danya, then the set of focus assignment functions $H^{\{\}}_{\{<1,e>\}}$ will be as is illustrated in (159).

(159) $H^{\{\}}_{\{<1,e>\}} = \{\{<1,e>\rightarrow\text{Anya}\},\{<1,e>\rightarrow\text{Vanya}\},\{<1,e>\rightarrow\text{Danya}\}\}$

Then, the set of alternatives that the squiggle will introduce the presupposition about will be {*Anya danced, Vanya danced, Danya danced*}:

(160) $[\![\sim P]\!]^{s,g,\{\}}$ is defined iff:
$g(C) \subseteq \{\lambda s.\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Anya}],$
$\lambda s.\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Vanya}],$
$\lambda s.\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Danya}]\},$
where defined, true iff $\exists s'[{}^{|\vdash}e\text{dance}(s')_s \wedge \textsc{Agent}(s')=\text{Anya}]$

Finally, we will combine $\sim$P with *only*, (161), whose interpretation depends on the same free variable C that the squiggle's interpretation depends on. *Only* will

introduce the presupposition that the prejacent is true and assert that all the propositions in $g(\mathrm{C})$ that are not entailed by the prejacent are false, (162).

(161) $[\![\mathrm{only}_C]\!]^{s,g,h} = \lambda \mathrm{p}_{st}\text{: } \mathrm{p}(\mathrm{s})=1.\ \forall \mathrm{q} \in g(\mathrm{C})\ [\neg(\mathrm{p} \subseteq \mathrm{q}) \Rightarrow \mathrm{q}(\mathrm{s})=0]$

(162) $[\![\mathrm{OnlyP}]\!]^{s,g,\{\}}$ is defined iff:
$\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Anya}] \wedge$
$g(\mathrm{C}) \subseteq \{\lambda \mathrm{s}.[\![\exists\ \mathrm{Anya}_{F<1,e>}\ \mathrm{danced}]\!]^{s,g,h'} \mid \mathrm{h}' \in \mathrm{H}^{\{\}}_{\{<1,e>\}}\}$,
where defined, true iff:
$\forall \mathrm{q} \in g(\mathrm{C})\ [\neg(\lambda \mathrm{s}.\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Anya}] \subseteq \mathrm{q}) \Rightarrow \mathrm{q}(\mathrm{s})=0]$

In our example with D_e consisting of three individuals (Anya, Vanya, Danya), we will get the truth-conditions in (163).

(163) $[\![\mathrm{OnlyP}]\!]^{s,g,\{\}}$ is defined iff:
$\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Anya}] \wedge$
$g(\mathrm{C}) \subseteq \{\lambda \mathrm{s}.\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Anya}],$
$\lambda \mathrm{s}.\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Vanya}],$
$\lambda \mathrm{s}.\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Danya}]\}$,
where defined, true iff:
$\forall \mathrm{q} \in g(\mathrm{C})\ [\neg(\lambda \mathrm{s}.\exists \mathrm{s}'[^{|\vdash_e}\mathrm{dance}(\mathrm{s}')_s \wedge \textsc{Agent}(\mathrm{s}')=\mathrm{Anya}] \subseteq \mathrm{q}) \Rightarrow \mathrm{q}(\mathrm{s})=0]$

OnlyP will be defined iff Anya danced, and the contextually salient set of propositions $g(\mathrm{C})$ is a subset of the set {*Anya danced, Vanya danced, Danya danced*}. When defined, the sentence will be true if the propositions in $g(\mathrm{C})$ that are not entailed by *Anya danced* are false. For example, if $g(\mathrm{C})$ = {*Anya danced, Vanya danced, Danya danced*}, the sentence will be true if Vanya didn't dance and Danya didn't dance.

Now that we have sketched a general approach to interpreting focus, let us return to the subjunctive embedded clauses. I propose that *by* is always focus-marked — it is lexically specified to bear the focus feature F with some index <n,st>, and it has the denotation in (164).

(164) $[\![by_{F_{<n,st>}}]\!]^{s,g,h}$ =
a. $\lambda \mathrm{s}.\ \top$ if $<n, st>$ is not in the domain of h;
b. $h(<n, st>)$ otherwise.

If *by*'s index is in the domain of the focus assignment function h, then its semantic

value is the function h applied to its index, as is generally the case for focus-bearing elements. If *by*'s index is not in the domain of the focus assignment function h, then its semantic value is the function that is true of all situations.

Note that *by* will not be able to combine with the TP by any principle of semantic composition that we currently have: *by* is a function of type <s,t>, but the denotation of the TP is a truth-value, so they cannot compose. I define *Intensionalized Predicate Modification* in (165), which will enable us to compose *by* with the TP.

(165) *Intensionalized Predicate Modification (IPM)*
If α is a branching node, $\{\beta,\gamma\}$ is the set of α's daughters, then for any situation s, assignment g and time interval t, α is in the domain of $[\![\ ]\!]^{s,g,t}$ if both β and γ are, if there is some domain $D_{<s,<(\sigma),t>>}$ such that $[\![\beta]\!]^{s,g,t}$ is in it and $\lambda s.[\![\gamma]\!]^{s,g,t}$ is in it, and if there is some item $s' \in D_s$ (and some item $x \in D_\sigma$) such that $[\![\beta]\!]^{s,g,t}$ and $\lambda s.[\![\gamma]\!]^{s,g,t}$ are both defined for it (/them).
In this case,
$[\![\alpha]\!]^{s,g,t} = \lambda s'$: s' in D_s.(λx: x in D_σ). $[\![\beta]\!]^{s,g,t}(s')((x)) = [\![\gamma]\!]^{s',g,t}((x)) = 1$.

Intensionalized Predicate Modification allows us to compose two expressions if they differ type-wise only in one expression having an additional situation argument and the other one lacking it. When *by* composes by IPM with the embedded TP, (166), we get the denotation in (167).

(166) $[\![[_{TP}$ *Lena smotrela futbol*$]]\!]^{s,g,h} = 1$ iff
$\exists s'[{}^{|\vdash_e}$watch-soccer$(s')_s \wedge$ AGENT(s')=Lena$]$

(167) $[\![by_{<n,st>}\ [_{TP}$ *Lena smotrela futbol*$]]\!]^{s,g,h} =$

a. if $<n,st>$ is not in the domain of h:
$\lambda s.\ \exists s'[{}^{|\vdash_e}$watch-soccer$(s')_s \wedge$ AGENT(s')=Lena$] \wedge \top =$
$\lambda s.\ \exists s'[{}^{|\vdash_e}$watch-soccer$(s')_s \wedge$ AGENT(s')=Lena$]$
$=_{abbr} \lambda s'$. Lena watched soccer in s'

b. if $<n,st>$ is in the domain of h:
$\lambda s.\ \exists s'[{}^{|\vdash_e}$watch-soccer$(s')_s \wedge$ AGENT(s')=Lena$] \wedge h(<n,st>)(s)$
$=_{abbr} \lambda s'$. Lena watched soccer in s' $\wedge\ h(<n,st>)(s')$

If the index on *by* is not in the domain of the focus assignment function, the semantic value of *by*P will be equivalent to that of the embedded proposition ($\lambda s.\top$

$\wedge$ *Lena watched soccer in s* = λs. *Lena watched soccer in s*). I will abbreviate this as $\lambda s'$. *Lena watched soccer in s'*. When *by*'s index is in the domain of the function h, we will intersect the set of situations that the TP is true of with the set of situations that the h function returns when applied to the index on *by*. Thus, depending on what proposition h maps $<n, st>$ to, the denotation of *by*P will be a different subset of the set of situations in which Lena watched soccer. (168) provides some examples of *by*Ps evaluated with respect to different focus assignment functions.

(168) a. $[\![by_{<n,st>}\ [_{TP}\ \textit{Lena smotrela futbol}]]\!]^{s,g,\{\}}$ =
λs'. Lena watched soccer in s'

b. $[\![by_{<n,st>}\ [_{TP}\ \textit{Lena smotrela futbol}]]\!]^{s,g,\{<n,st>\rightarrow\{\text{s: s is in a bar}\}\}}$ =
λs'. Lena watched soccer in a bar in s'

c. $[\![by_{<n,st>}\ [_{TP}\ \textit{Lena smotrela futbol}]]\!]^{s,g,\{<n,st>\rightarrow\{\text{s: s is in a bar with friends}\}\}}$
= λs'. Lena watched soccer in a bar with friends in s'

In (168a) we see that if we evaluate *by*P with respect to the empty focus assignment function, we get the set of situations in which Lena watched soccer. If *by*P is evaluated with respect to h that maps $<n, st>$ to the set of situations occuring in a bar, (168b), then *by*P will denote the set of situations of Lena watching soccer in a bar. If h maps $<n, st>$ to the set of situations occurring in a bar with friends, (168c), then *by*P will denote the set of situations of Lena watching soccer in a bar with friends.

Thus, the set of $<n, st>$-alternatives of *by*P—the set of values of *by*P under all possible focus assignment functions (minimally different from the function of evaluation h) that map <n,st> to some proposition—is in (169). It is a set of all possible subsets of the set of situations in which Lena watched soccer. This is how *by* activates the subdomain alternatives of the embedded proposition.

(169) ***<n,st>-alternatives of byP under some h:***
$\{[\![by_{<n,st>}\text{P}]\!]^{s,g,h'} \mid h' \in \text{H}^{h}_{\{<n,st>\}}\}$ = {f: f $\subseteq$ {s: Lena watched soccer in s}}

If we are building a Sit-CP, *by*P then combines with the complementizer. Recall from chapter 2, section 2.3, that the full meaning of Comp requires that its individual argument x is part of the situation of evaluation s (170). Here I'll be using this full definition, as the anchoring to the evaluation situation will become important in sentences with high-scoping QPs. Thus, the meaning of the CompP will be in (171).

(170) $[\![\text{Comp}]\!]^{s,g,h} = \lambda p.\lambda x.\ x \sqsubseteq s \wedge x \Vdash_e p$

(171) $[\![\text{CompP}]\!]^{s,g,h} =$

a. if $<n, st>$ is not in the domain of h:
$\lambda x.\ x \sqsubseteq s \wedge x \Vdash_e$ {s': Lena watched soccer in s'}

b. if $<n, st>$ is in the domain of h:
$\lambda x.\ x \sqsubseteq s \wedge x \Vdash_e$ {s': Lena watched soccer in s' $\wedge\ h(<n, st>)(s')$}

Finally, the null existential quantifier $\varnothing_a$ composes with CompP, (172).

(172) $[\![\text{QP}]\!]^{s,g,h} =$

a. if $<n, st>$ is not in the domain of h:
$\lambda k.\ \exists x[k(x)=1 \wedge x \sqsubseteq s \wedge x \Vdash_e$ {s': Lena watched soccer in s'}]

b. if $<n, st>$ is in the domain of h:
$\lambda k.\ \exists x[k(x)=1 \wedge x \sqsubseteq s \wedge x \Vdash_e$ {s': L. watched soccer in s' $\wedge\ h(<n, st>)(s')$}]

The $<n, st>$-alternatives of the resulting QP are illustrated in (173): this is a set of functions that take an <e,t> predicate k and return 1 iff there is an individual such that k is true of it, it is part of s, and it exemplifies f, where f is a subset of the set of situations in which Lena watched soccer.

(173) ***<n,st>-alternatives of QP under some h:***
$\{[\![\text{QP}]\!]^{s,g,h'} \mid h' \in H^h_{\{<n,st>\}}\} =$
$\{\lambda k.\ \exists x[k(x)=1 \wedge x \sqsubseteq s \wedge x \Vdash_e f]$: $f \subseteq$ {s: Lena watched soccer in s}$\}$

The operator O_{ALT} that we have defined in (95), repeated below as (174), does not need any modification: it requires that all the alternative propositions in the contextually determined set $g(\text{ALT})$ are Strawson-entailed by the prejacent.

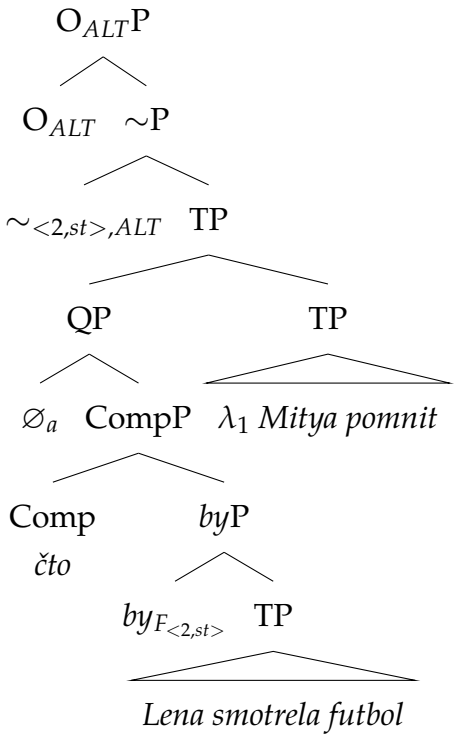
(174) $[\![O_{ALT}]\!]^{s,g,h} = \lambda p_{st}$: $\forall q \in g(\text{ALT})\ [p \Rightarrow_s q].\ p(s)=1.$

Now let us illustrate three configurations in sentences with Sit-CPs: a configuration where there is no operator that would reverse the entailment, a configuration with an entailment-reversing operator and the low scope of a Sit-CP, and a configuration with an entailment-reversing operator and the hight scope of a Sit-CP. I will use negation as an operator for illustration.

The LF with no negation is presented in (175). As we see, the index on *by* is the

same as on the squiggle operator: $<2, st>$.

(175) **No Neg or other operators**



When the prejacent of $\sim_{<2,st>,ALT}$ is evaluated at the empty focus assignment function, it is true iff Mitya remembers a situation of Lena watching soccer (176).

(176) $[\![\text{TP}]\!]^{s,g,\{\}} = 1$ iff $\exists$x,s'[$^{\Vdash_e}$remember(s')$_s$ $\wedge$ Exp(s')=Mitya $\wedge$ Theme(s')=x $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}] $=_{abbr}$
$\exists$x,s'[$^{\Vdash_e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: L. watched soccer in s}]

The meaning of ∼P evaluated at the function {} is in (177).

(177) $[\![\sim\text{P}]\!]^{s,g,\{\}}$

a. is defined iff $g(\text{ALT}) \subseteq \{\lambda$s.$\exists$x,s'[$^{\Vdash_e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s $\wedge$ h'(<2,st>)(s)}]: $h' \in \text{H}^{\{\}}_{\{<2,st>\}}\}$ $= g(\text{ALT}) \subseteq \{\lambda$s.$\exists$x,s'[$^{\Vdash_e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ f]: f $\subseteq$ {s: Lena watched soccer in s}}

b. where defined, true iff $\exists$x,s'[$^{\Vdash_e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}]

$\sim_{<2,st>,ALT}$ introduces the definedness condition that the set of propositions g(ALT) has to be the subset of the set of propositions that we get by abstracting over the situation argument of TP and evaluating it under all possible focus assignment functions h' that differ from {} maximally in what values they assign to the index $<2, st>$. This means that this presupposition requires that g(ALT) be a subset of the set of propositions of the form *Mitya remembers a situation that exemplifies P'*, where *P'* is a subset of the set of situations in which Lena watched soccer. When defined, ∼P will be true if Mitya remembers Lena watching soccer.

Finally, O_{ALT} combines with ∼P, and we get the truth-conditions in (178).

(178) $[\![O_{ALT}P]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1. g(ALT) $\subseteq$ {λs.$\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ f]: f $\subseteq$ {s: Lena watched soccer in s}}
2. $\forall$q $\in$ g(ALT): λs.$\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}] $\Rightarrow_s$ q

when defined, true iff: $\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}]

Given the alternatives in g(ALT), the presupposition introduced by O_{ALT} will never be met: the only proposition in g(ALT) that will be entailed by the prejacent is the prejacent itself. For example, consider the following g(ALT):

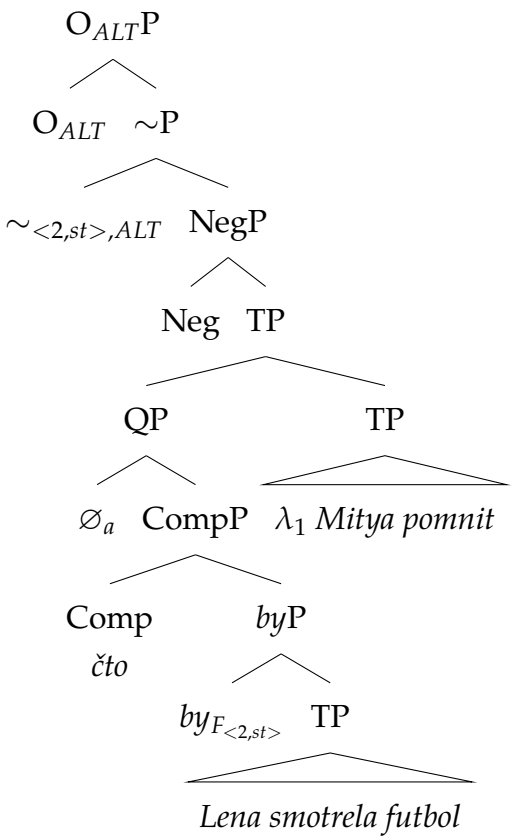
(179) g(ALT) =
{λs.$\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}],
λs.$\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in a bar in s}],
λs.$\exists$x,s'[$^{\Vdash}{}_{e}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in a bar with friends in s}]}

This g(ALT) satisfies the first presupposition: it is a subset of the set of <2,st>-alternatives of the prejacent. However, it does not satisfy the second presupposition: it is not the case that all propositions in g(ALT) are entailed by the prejacent. In fact, by the nature of alternatives invoked, all the propositions in g(ALT) entail the prejacent: e.g., if Mitya remembers a situation exemplifying {s: Lena watched

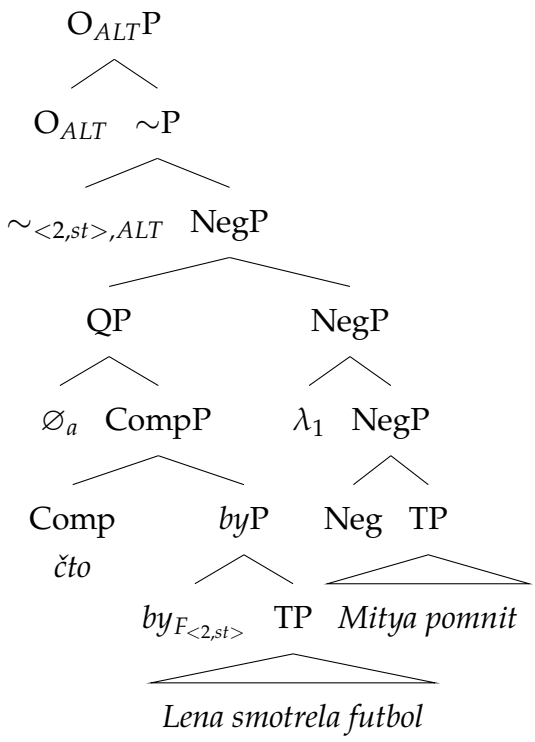
soccer in a bar in s}, then he also remembers a situation exemplifying {s: Lena watched soccer in s}, but not the other way around. Thus, $O_{ALT}P$ will always result in a presupposition failure. Hence, it is trivial in the virtue of its logical structure, and is currectly predicted to be ungrammatical.

Now let us consider that happens once we introduce negation. The QP with the embedded clause as its restrictor can be either below Neg, (180), or above it, (181).

(180) **Low Scope of CP, with Neg**



(181) **High Scope of CP, with Neg**



If the clause scopes below Neg, then we will get the truth-conditions for the sentence under the empty focus function {} in (182).

(182) $[\![O_{ALT}P]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1. $g(\text{ALT}) \subseteq \{\lambda s.\neg\exists x,s'[^{|\vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge x \,|\vdash_e f]$: $f \subseteq \{s: \text{Lena watched soccer in s}\}$
2. $\forall q \in g(\text{ALT})$: $\lambda s.\neg\exists x,s'[^{|\vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge x \,|\vdash_e \{s: \text{Lena watched soccer in s}\}] \Rightarrow_s q$

when defined, true iff: $\neg\exists$x,s'[$^{\Vdash}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}]

The two presuppositions, introduced by $\sim_{<2,st>,ALT}$ and O_{ALT} respectively, now do not contradict each other: the prejacent will indeed entail all the propositions in g(ALT). For example, consider g(ALT) in (183).

(183) g(ALT) =
{λs.$\neg\exists$x,s'[$^{\Vdash}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s}],
λs.$\neg\exists$x,s'[$^{\Vdash}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in a bar in s}],
λs.$\neg\exists$x,s'[$^{\Vdash}$remember-Mitya-x(s')$_s$ $\wedge$ x $\sqsubseteq$ s
$\wedge$ x $\Vdash_e$ {s: Lena watched soccer in a bar with friends in s}]}

This g(ALT) satisfies the presupposition introduced by $\sim_{<2,st>,ALT}$: it is a subset of the set of <2,st>-alternatives of the prejacent. It also satisfies the presupposition introduced by O_{ALT}: all propositions in g(ALT) are entailed by the prejacent: if *Mitya doesn't remember Lena watching soccer*, it follows that *he doesn't remember Lena watching soccer in a bar*, *he doesn't remember Lena watching soccer in a bar with friends*, and so on. Thus, the presupposition of O_{ALT} will always be satisfied, and its contribution will thus be vacuous; the sentence is correctly predicted to be grammatical.

Now let us see what we predict for the high scope of a Sit-CP, (181):

(184) $[\![O_{ALT}P]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1. g(ALT) $\subseteq$ {λs.$\exists$x[x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ f $\wedge$ $\neg\exists$s'[$^{\Vdash}$remember-Mitya-x(s')$_s$]]: f $\subseteq$ {s: Lena watched soccer in s}}

2. $\forall$q $\in$ g(ALT): λs.$\exists$x[x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$ $\neg\exists$s'[$^{\Vdash}$remember-Mitya-x(s')$_s$]] $\Rightarrow_s$ q

when defined, true iff: $\exists$x[x $\sqsubseteq$ s $\wedge$ x $\Vdash_e$ {s: Lena watched soccer in s} $\wedge$ $\neg\exists$s'[$^{\Vdash}$remember-Mitya-x(s')$_s$]]

The presuppositions introduced by $\sim_{<2,st>,ALT}$ and O_{ALT} will never be both met in (184): the prejacent will never entail any propositions in g(ALT) except for itself. For example, consider the g(ALT) in (185). This g(ALT) satisfies the presupposition of $\sim_{<2,st>,ALT}$: it is a subset of the set of <2,st>-alternatives of NegP.

(185) $g(\text{ALT}) =$
$\{\lambda s.\exists x[x \sqsubseteq s \wedge x \Vdash_e \{s\text{: Lena watched soccer in s}\}$
$\wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]$,
$\lambda s.\exists x[x \sqsubseteq s \wedge x \Vdash_e \{s\text{: Lena watched soccer in a bar in s}\}$
$\wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]$,
$\lambda s.\exists x[x \sqsubseteq s \wedge x \Vdash_e \{s\text{: Lena watched soccer in a bar in with friends in s}\}$
$\wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]\}$

However, no proposition other than the prejacent itself in $g(\text{ALT})$ will be entailed by the prejacent: if *there is a situation of Lena watching soccer that Mitya doesn't remember*, it does not follow that *there is a situation of Lena watching soccer in a bar that Mitya doesn't remember*. It could be that while there is a situation of Lena watching soccer in the evaluation situation, there are no situations of Lena watching soccer in a bar. Thus, if a Sit-CP scopes above negation, the sentence will always be a presupposition failure, and thus is predicted by L-analyticity to be ungrammatical.

Now let us consider what happens if we have a sentence with a Cont-CP. The QP with the Cont-CP as its restrictor will have the denotation in (186).

(186) $[\![\text{QP}]\!]^{s,g,h} =$

a. if $<n, st>$ is not in the domain of h:
$\lambda k.\ \exists x[k(x)=1 \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: L. watched soccer in s}\}]$

b. if $<n, st>$ is in the domain of h:
$\lambda k.\ \exists x[k(x)=1 \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in s}$
$\wedge h(<n, st>)(s)\}]$

Now let us see how the disruption of monotonicity introduced by Cont affects licensing of subjunctive clauses. The LFs for configurations without any operators, with a high scope of Cont-CP with respect to negation and with a low scope of Cont-CP with respect to negation are represented in (190)–(192) respectively.

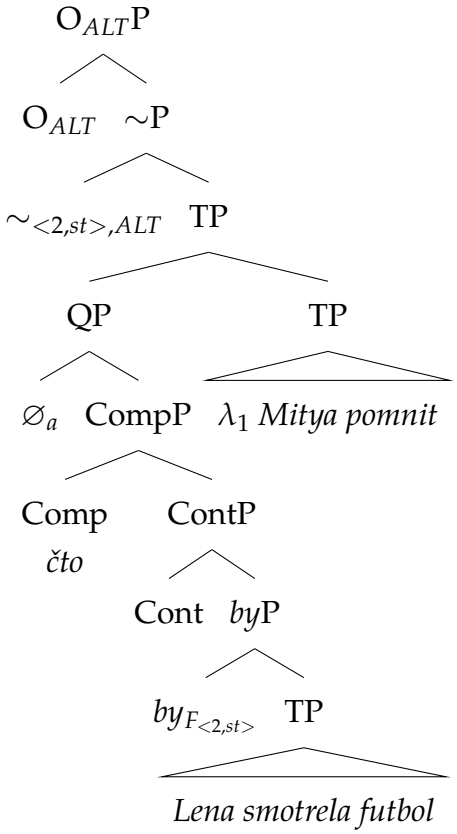
The denotations of the prejacents evaluated under the empty focus assignment function in these three configurations are in (187), (188) and (189) respectively.

(187) $[\![\text{TP}]\!]^{s,g,\{\}} = 1$ iff $\exists x,s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) =$
$\{s\text{: Lena watched soccer in s}\}]$

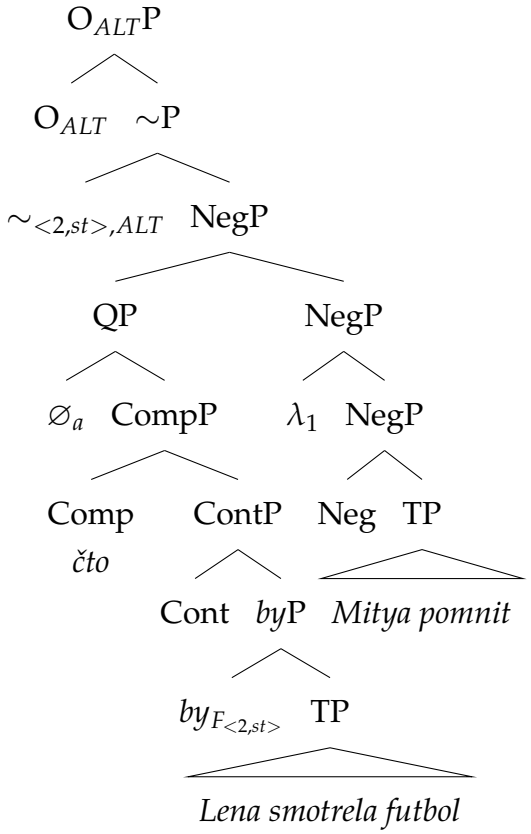
(188) $[\![\text{NegP in (191)}]\!]^{s,g,\{\}} = 1$ iff $\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in s}\} \wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]$

(189) $[\![\text{NegP in (192)}]\!]^{s,g,\{\}} = 1$ iff $\neg\exists x,s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in s}\}]$

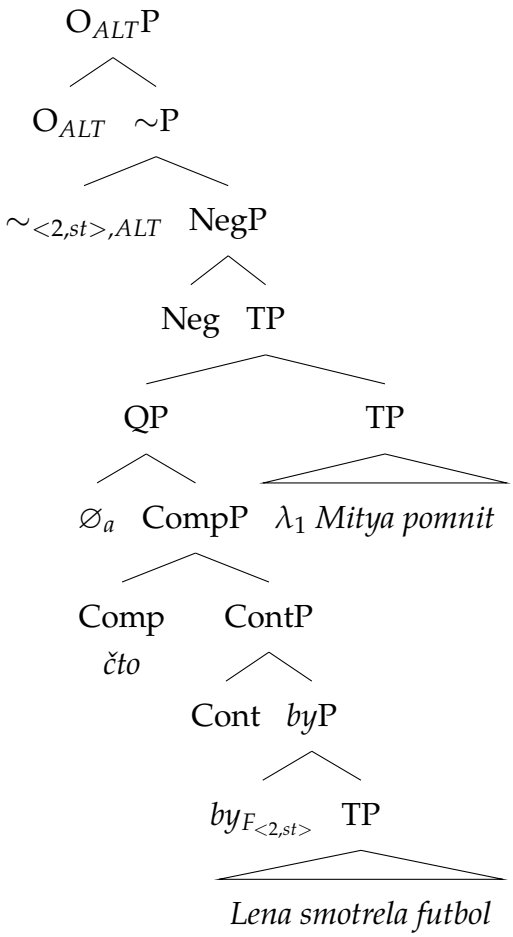
(190) **No Neg or other operators**



(191) **High Scope of CP, with Neg**



(192) **Low Scope of CP, with Neg**



The operators $\sim_{<2,st>,ALT}$ and O_{ALT} then combine with these prejacents, resulting in the truth-conditions in (193), (194) and (195) respectively.

(193) $[\![O_{ALT}P \text{ in (190)}]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1. $g(\text{ALT}) \subseteq \{\lambda s.\exists x,s'[{}^{|\vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge {}^{|\vdash_e}\textsc{Cont}(x) = f]: f \subseteq \{s: \text{Lena watched soccer in } s\}\}$
2. $\forall q \in g(\text{ALT}): \lambda s.\exists x,s'[{}^{|\vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge {}^{|\vdash_e}\textsc{Cont}(x) = \{s: \text{Lena watched soccer in } s\}] \Rightarrow_s q$

when defined, true iff: $\exists x,s'[{}^{|\vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s \wedge {}^{|\vdash_e}\textsc{Cont}(x) = \{s: \text{Lena watched soccer in } s\}]$

(194) $[\![O_{ALT}P \text{ in (191)}]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1. $g(\text{ALT}) \subseteq \{\lambda s.\exists x[x \sqsubseteq s \wedge {}^{|\vdash_e}\textsc{Cont}(x) = f \wedge \neg\exists s'[{}^{|\vdash_e}\text{remember-Mitya-}$

$x(s')_s]]$: $f \subseteq$ {s: Lena watched soccer in s}}

2.$\forall q \in g(ALT)$: $\lambda s.\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) =$ {s: Lena watched soccer in s} $\wedge \neg\exists s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s]] \Rightarrow_s q$

when defined, true iff: $\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) =$ {s: Lena watched soccer in s} $\wedge \neg\exists s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s]]$

(195) $[\![O_{ALT}P$ in (192)$]\!]^{s,g,\{\}}$ is defined iff two conditions are met:

1.$g(ALT) \subseteq \{\lambda s.\neg\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x)$ $= f]$: $f \subseteq$ {s: Lena watched soccer in s}}

2.$\forall q \in g(ALT)$: $\lambda s.\neg\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x)$ $=$ {s: Lena watched soccer in s}$] \Rightarrow_s q$

when defined, true iff: $\neg\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x)$ $=$ {s: Lena watched soccer in s}$]$

In all the three configurations, the value of $O_{ALT}P$ will always be a presupposition failure. This is because the prejacent will never entail any alternatives in $g(ALT)$ that are not equivalent to itself, independent of the presence of negation and the scope of the clause. Let us consider the configurations one by one. For the configuration without any operators, (193), the $g(ALT)$ in (196) would for example satisfy the presupposition introduced by $\sim_{<2,st>,ALT}$.

(196) $g(ALT) =$
$\{\lambda s.\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) =$ {s: Lena watched soccer in s},
$\lambda s.\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) =$ {s: Lena watched soccer in a bar in s},
$\lambda s.\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) =$ {s: Lena watched soccer in a bar with friends in s}}

The propositions in $g(ALT)$ are not ordered by entailment: no proposition entails any other. Thus, the prejacent will not entail all the propositions in $g(ALT)$, and the presupposition of O_{ALT} will never be satisfied, leading to ungrammaticality.

For the configuration with a Cont-CP scoping high over an operator like negation, (194), the set of alternatives in (197) would be an example of $g(ALT)$ that would satisfy the presupposition of $\sim_{<2,st>,ALT}$.

(197) $g(\text{ALT}) =$
$\{\lambda s.\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in s}\}$
$\wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]$,
$\lambda s.\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in a bar in s}\}$
$\wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]$,
$\lambda s.\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in a bar with friends in s}\} \wedge \neg\exists s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s]]\}$

Again, the propositions in (197) are not ordered by entailment. Thus, the prejacent will never entail all the alternatives in $g(\text{ALT})$, leading to ungrammaticality.

Finally, let us consider the configuration in which a Cont-CP scopes below negation, (195). Recall that for Sit-CPs low scope with respect to negation allowed licensing the subjunctive, as the sentence was SDE with respect to the embedded proposition. With Cont-CPs, we will be considering alternatives of the form *It's not the case that Mitya remembers an individual with content P'*, where *P'* is a subset of the set of situations in which Lena watched soccer. An example of $g(\text{ALT})$ that would satisfy the presupposition of $\sim_{<2,st>,ALT}$ is presented in (198).

(198) $g(\text{ALT}) =$
$\{\lambda s.\neg\exists x,s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in s}\}$,
$\lambda s.\neg\exists x,s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in a bar in s}\}$,
$\lambda s.\neg\exists x,s'[{}^{\Vdash_e}\text{remember-Mitya-x}(s')_s \wedge x \sqsubseteq s$
$\wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s\text{: Lena watched soccer in a bar with friends in s}\}\}$

Note that just as (196) was not ordered by entailment, neither is (198): it is not the case that absence of an individual with content *q* entails absence of an individual with content *p*, for $p \Rightarrow_s q$. For example, while Mitya might not be remembering any *rumor that Lena watched soccer*, he could be remembering *a rumor that Lena watched soccer in a bar*. Thus, the prejacent will not entail any presuppositions in $g(\text{ALT})$ that are not equivalent to it, and the presupposition of O_{ALT} will thus never be satisfied, leading to ungrammaticality.

5.3 Some predictions

In this section I discuss some predictions that my proposal in section 5.2 makes: predictions about subjunctive mood in relative clauses (5.3.1), about licensing pronominal weak NPIs in embedded clauses (5.3.2) and about factivity (5.3.3).

5.3.1 Relative Clauses

According to my proposal, *by* can appear inside of an embedded clause as long as the sentence is Strawson-Downward Entailing with respect to the proposition it attaches to. Given this condition, we should expect not only embedded Sit-CPs, but also other clauses that preserve monotonicity to be able to be subjunctive in SDE contexts. I would like to argue that this is borne out: relative clauses can be weak NPI subjunctives as well (see also Beghelli 1998, Quer 1998).

In "positive" contexts, relative clauses in Russian cannot be subjunctive: having *by* inside of the relative clause in (199) leads to ungrammaticality.[32]

(199) Mitja videl devušku, kotoraja (*by) zanimalas' skalolazaniem.
Mitya saw young.woman REL (SUBJ) do.PST rock-climbing
'Mitya saw a woman who did rock-climbing.'[33]

But once we embed a sentence like (199) under negation,[34] in a question, or in

[32]Subjunctive seems to be possible in "positive" contexts under intensional verbs like *iskat'* 'search': e.g. in (i) a woman who does rock-climbing might not exist in the actual world.

(i) Mitja iščet devušku, kotoraja by zanimalas' skalolazaniem.
Mitya is.searching young.woman REL SUBJ do.PST rock-climbing
'Mitya is searching for a woman who would do rock-climbing.'

[33]The sentence with subjunctive is grammatical under an irrelevant conditional reading: *Mitya saw a woman who (if some condition held) would do rock-climbing.* This reading arises because *by* can occur in consequents of conditionals (see section 5.6.1 of the supplementary materials).

[34]Russian also allows genitive objects under negation, and such DPs obligatorily receive narrow scope. This makes accusative arguments under negation preferrably exhibit wide scope, which is what we see with the indicative clause in (200). The fact that subjunctive still scopes low, despite modifying an accusative DP, suggests that accusative DPs under negation can be forced into narrow scope readings when otherwise the sentence would be ungrammatical. With the genitive of negation on *devuška* 'young woman', the scope of the NP is low with both indicative and subjunctive CPs:

(i) Mitja ne videl devuški, kotoraja (by) zanimalas' skalolazaniem.
Mitya NEG saw young.woman.GEN REL (SUBJ) do.PST rock-climbing
'Mitya didn't see a woman who did rock-climbing.' ✗$\exists > \neg$, ✓ $\neg > \exists$

an antecedent of a conditional, subjunctive marking in the relative clause becomes grammatical, (200)–(202).

(200) Mitja ne videl devušku, kotoraja (by) zanimalas'
Mitya NEG saw young.woman.ACC REL (SUBJ) do.PST
skalolazaniem.
rock-climbing
'Mitya didn't see a woman who did rock-climbing.'
indicative: $\exists > \neg$, subjunctive: $\neg > \exists$

(201) Mitja videl devušku, kotoraja (by) zanimalas' skalolazaniem?
Mitya saw young.woman REL (SUBJ) do.PST rock-climbing
'Did Mitya see a woman who did rock-climbing?'

(202) Esli Mitja videl devušku, kotoraja (by) zanimalas'
if Mitya saw young.woman REL (SUBJ) do.PST
skalolazaniem, to on mne o nej rasskažet.
rock-climbing then he me about her will.tell
'If Mitya saw a woman who did rock-climbing, he will tell me about her.'

Thus, subjunctive relatives clauses that modify nouns that are objects of verbs like *videt'* 'see' behave like weak NPIs: they can occur only if the sentence is SDE with respect to the embedded proposition.

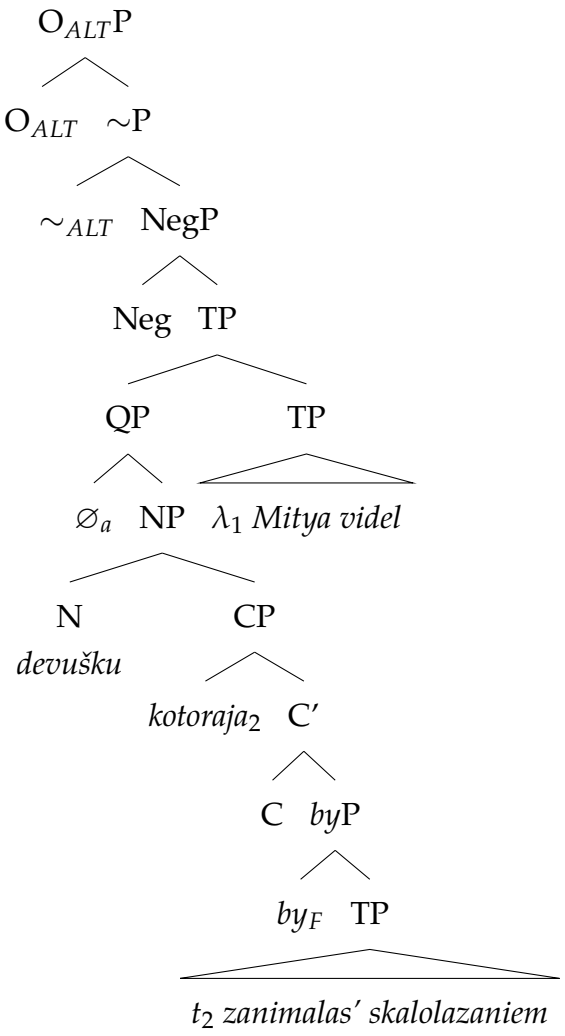
This is expected under my proposal that *by* activates subdomain alternatives of the proposition it attaches to. I hypothesize that a sentence with a subjunctive relative clause like (200) has the LF as in (203), with *by* attaching directly to the embedded proposition.[35,36]

[35]The relative clause under consideration probably has a more elaborate structure than (203) depicts; (203) should be regarded a simplification. See, for example, Lyutikova & Tatevosov 2019 on the structure of Russian relative clauses with the pronoun *kotoryj* 'which'.

[36]According to my proposal, the semantic value of *by*P is a proposition. In relative clauses, where there is no operator above *by*P that would take a proposition as its argument, we want to go back to a truth-value as the meaning of the CP. One way to implement this is to assume that the C head inside the relative clause takes a proposition and gives back the truth value of this proposition in the situation of evaluation, (i). This meaning for the C in relatives clauses would work well even in the absence of *by*P (C would combine with TP by Intensional Functional Application).

(i) $[\![\text{C}]\!]^{s,g,h} = \lambda \text{p.p(s)}$

(203) **Subjunctive RC under Neg**



As with other cases of weak NPIs, there is an operator O_{ALT} present in the structure, which demands that the prejacent, (204), entail all of its alternatives. Examples of alternative propositions are illustrated in (205)–(206).

(204) **Prejacent in (203):** λs.$\neg\exists$x[young.woman(x)$_s$ $\wedge$ $\exists$s″[rock-climbing-x(s″)$_s$] $\wedge$ $\exists$s′[saw-Mitya-x(s′)$_s$]]
¬(*There is a young woman who did rock-climbing that Mitya saw.*)

(205) **ALT in (203):**
{λs.$\neg\exists$x[young.woman(x)$_s$ $\wedge$ $\exists$s″[rock-climbing-x(s″)$_s$] $\wedge$
$\exists$s′[saw-Mitya-x(s′)$_s$]],

λs.$\neg\exists$x[young.woman(x)$_s$ $\wedge$ $\exists$s''[rock-climbing-x(s'')$_s$ $\wedge$ at-our-gym(s'')$_s$]
$\wedge$ $\exists$s'[saw-Mitya-x(s')$_s$]],
λs.$\neg\exists$x[young.woman(x)$_s$ $\wedge$ $\exists$s''[rock-climbing-x(s'')$_s$ $\wedge$ at-our-gym(s'')$_s$
$\wedge$ today(s'')$_s$] $\wedge$ $\exists$s'[saw-Mitya-x(s')$_s$]],...}

(206) **Paraphrases for ALT in (205):**
$\neg$(*There is a young woman who did rock-climbing that Mitya saw.*)
$\neg$(*There is a young woman who did rock-climbing at our gym that Mitya saw.*)
$\neg$(*There is a young woman who did rock-climbing at our gym today that Mitya saw.*)

We see that the propositions in the alternative set are ordered by entailment: if there is no woman seen by Mitya who did rock-climbing, then it follows that there is no woman seen by Mitya who did rock-climbing at our gym, or who did rock-climbing at our gym today, and so on. Thus, in sentences with operators like negation the prejacent will entail all of its alternatives, the presupposition of O_{ALT} will be met, and the subjunctive in the relative clause will be licensed.

If we did not have negation in the sentence, the entailment between the propositions in the alternative set would have been reversed: all the propositions would entail the prejacent and not vice versa. Thus, in a "positive" context, the presupposition of O_{ALT} would never have been satisfied, leading to ungrammaticality. Hence, we see that my proposal can provide a uniform account of subjunctive relative clauses and subjunctive embedded clauses that function as weak NPIs.

5.3.2 Licensing pronominal NPIs

My proposal makes another prediction: since I argue that the CONT head disrupts monotonicity of the environment, I predict that Cont-CPs should not be able to have pronominal weak NPIs inside of them even when they occur under operators like negation, provided that there is nothing additional that makes the environment monotonic. This prediction is presented in more detail in (207).

(207) **Predictions for licensing of weak NPIs inside embedded clauses:**
Whether weak NPIs are licensed inside embedded clauses should depend not only on the higher operators, but on the meaning of the CP. If there is a higher operator that generally makes the environment SDE with respect

to constituents inside of it, then:

1. If a verb combines with Sit-CPs only, weak NPIs should be licensed.
2. If a verb combines with Cont-CPs only, weak NPIs should not be licensed, *unless other components of the meaning of the verb make the environment monotone*.
3. If a verb combines with both Sit-CPs and Cont-CPs, it should be able to contain weak NPIs only under the Sit-CP interpretation of the CP, *unless other components of the meaning of the verb make the environment in a sentence with a Cont-CP monotone*.

While these predictions need a more thorough investigation than I was able to conduct, some tentative results are promising. First, verbs that combine only with Sit-CPs do indeed allow weak NPIs inside of them under entailment-reversing operators like negation.[37] This is illustrated in (208)–(209).

(208) Ne slučalos' takogo, čto-(by) Maša prixodila
NEG occured such COMP-(SUBJ) Masha come.PST
kuda-libo vovremja.
where-LIBO on.time
'It's not the case that Masha coming anywhere on time occurred.'

[37] This is true for the verbs we have looked at so far, where the verb asserts existence of a situation of the kind described by the embedded clause in the situation of evaluation. But the relation between the verb's meaning and the situation argument matters: not all verbs that take situation arguments are like *slučat'sja* 'occur' in being monotonic with respect to the embedded proposition. For example, *bojat'sja* 'be afraid of' can admit situations as arguments, however it is non-monotone (i) and thus cannot license weak NPIs in its complement (ii).

(i) Ira boitsja (situacii) čto Andrej kupil dorogušč̌ij dom. $\not\Rightarrow$
Ira is.afraid.of (situation.GEN) COMP Andrey bought very.expensive house
Ira boitsja (situacii) čto Andrej kupil dom.
Ira is.afraid.of (situation.GEN) COMP Andrey bought house
'Ira is afraid of a situation of Andrey buying a very expensive house
$\not\Rightarrow$ Ira is afraid of a situation of Andrey buying a house.'

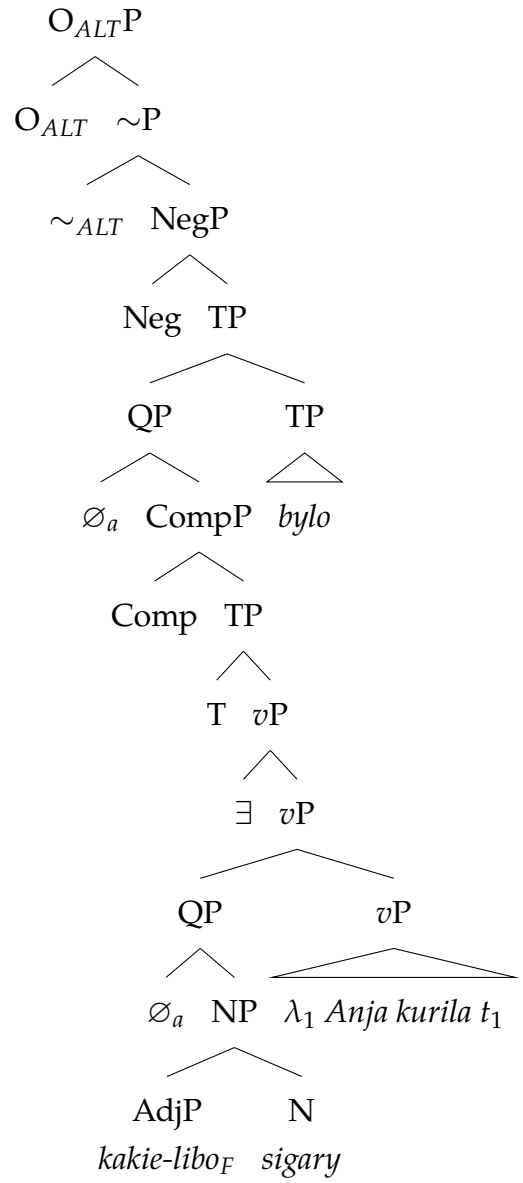
(ii) *Ira ne boitsja, [čto Andrej kupil kakoj-libo /kakoj by to ni bylo dom].
Ira NEG is.afraid COMP Andrey bought what-PTCL /what SUBJ SPEC NEG be.PST house
'Ira is not afraid of Andrey having bought any house.'

In other words, the key requirement for licensing of weak NPIs like *kakoj-libo* 'any' inside of embedded clauses is that the sentence is SDE with respect to the restrictor of the indefinite. If the verb itself disrupts monotonicity, the sentence will not be SDE, and NPIs won't be licensed even in Sit-CPs.

(209) Ne bylo /byvalo takogo, čto-(by) Anja kurila
NEG was /happened such COMP-(SUBJ) Anya smoked
kakie-libo sigary.
some-LIBO cigars
'It did not happen that Anya smoked any cigars.'

Let us discuss the prediction for the sentence in (209) with an indicative embedded clause and the verb *byt'* 'be, exist'. I assume it will have the LF in (210).

(210) **Sit-CP under Neg with an NPI**



Here I make a simplifying assumption that the meaning of *byt'* 'be, exist' is the same as the one I introduced for *slučat'sja* 'occur' in section 4.3.3 of chapter 4, (211). The embedded clause that has combined with an existential quantifier will have the denotation in (212).

(211) $[\![byt']\!]^{s,g} = \lambda s'.\ s' \Vdash_e \{s'\colon s' \sqsubseteq s\}$

(212) $[\![QP]\!]^{s,g} = \lambda k.\ \exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a cigar in } s\} \wedge k(s')=1]$

After the QP combines with the verb *byt'* 'be, exist' and with negation, we get the prejacent with the denotation in (213): the set of situations such that there is no situation exemplifying Anya smoking a cigar in them.[38]

(213) **Prejacent in (210):**
$\lambda s.\neg\exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a cigar in } s\} \wedge s' \Vdash_e \{s'\colon s' \sqsubseteq s\}]$
$= \lambda s.\neg\exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a cigar in } s\} \wedge s' \sqsubseteq s]$
$\neg$(*There is a situation of Anya smoking a cigar*)

The weak NPI that combines with the noun activates the subdomain alternatives of the set of cigars, (214). Thus, the ALT set that we get is illustrated in (215).

(214) **Substitutions:**
{{x: x is a cigar in s},
{x: x is a Cuban cigar in s},
{x: x is a fat Cuban cigar in s},...etc.}

(215) **ALT in (210):**
$\{\lambda s.\neg\exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a cigar in } s\} \wedge s' \sqsubseteq s]$,
$\neg$(*There is a situation of Anya smoking a cigar*),

$\lambda s.\neg\exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a Cuban cigar in } s\} \wedge s' \sqsubseteq s]$,
$\neg$(*There is a situation of Anya smoking a Cuban cigar*),

$\lambda s.\neg\exists s'[s' \Vdash_e \{s\colon \text{Anya smoked a fat Cuban cigar in } s\} \wedge s' \sqsubseteq s]$,...etc.}
$\neg$(*There is a situation of Anya smoking a fat Cuban cigar*)

[38] Recall that by the definition of exemplification, $s' \Vdash_e \{s''\colon s'' \sqsubseteq s\}$ iff $s' \sqsubseteq s$ and either all proper subparts of s' are part of s or no proper subparts of s' are part of s. Assuming that for any situations s' and s, if $s' \sqsubseteq s$, then all of the parts of s' have to be part of s, this condition can be reduced to the requirement that $s' \sqsubseteq s$.

Due to the nature of alternatives evoked, the propositions in ALT will be ordered by entailment: under an entailment-reversing operator liken negation, the prejacent will entail all of the alternatives in ALT. For example, if there is no situation of Anya smoking a cigar, it is also true that there is no situation of Anya smoking a Cuban cigar, there is no situation of Anya smoking a fat Cuban cigar, and so on. Thus, the presupposition of O_{ALT} will be satisfied, and the sentence with the pronominal weak NPI in a Sit-CP is correctly predicted to be grammatical.

Verbs that combine exclusively with Cont-CPs fall into two groups. Some verbs, like *prokommentirovat'* 'comment' or *vyskazat'sja* 'make a statement' don't allow weak NPIs even when they occur under entailment-reversing operators, (216)–(217).

(216) *Lena ne prokommentirovala, čto Ira kupila **kakoe-libo** plat'e.
Lena NEG comment.on.PST COMP Ira bought **what-LIBO** dress
Intended: 'Lena didn't comment on (a claim) that Ira bought a dress.'

(217) *Tol'ko Maša vyskazalas', čto Anja prišla **kuda-libo** s opozdaniem.
only Masha make.a.statement.PST COMP Anya came **where-LIBO** with delay
Intended: 'Only Masha stated that Anya came somewhere late.'

Other verbs, like *dumat'* 'think' or *verit'* 'believe', allow weak NPIs when they occur with entailment-reversing operators, (218).

(218) *Monotone Cont-CP-only verbs: weak NPIs are good*
Maša ne verila /dumala, čto Lena ispekla **kakoj-libo** pirog.
Masha NEG believe.PST /think.PST COMP Lena baked **what-LIBO** pie
'Lena didn't believe/think that Lena baked any pie.'

The difference between the two classes of verbs is that while the former are non-monotonic with respect to the embedded proposition, the latter are monotonic. For example, consider (219) under the THEME reading of the clause. If Lena commented on a claim that Ira bought an expensive dress, it does not follow that Lena commented on a claim that Ira bought a dress. It could be that no one made a claim that Ira bought a dress (only a more specific claim was made), or someone made such a claim but Lena wasn't aware of it and didn't comment on it.

(219) Lena prokommentirovala, čto Ira kupila dorogoe plat'e. $\not\Rightarrow$
Lena comment.on.PST COMP Ira bought expensive dress
Lena prokommentirovala, čto Ira kupila plat'e.
Lena comment.on.PST COMP Ira bought dress
'Lena commented on (a claim) that Ira bought an expensive dress. $\not\Rightarrow$
Lena commented on (a claim) that Ira bought a dress.'

On the other hand, if Masha thought that Lena baked a tasty pie, it does follow that Masha thought that Lena baked a pie, (220). This is because having a belief with the Content p entails having a belief with the Content q, if p entails q.[39]

(220) Maša dumala, čto Lena ispekla vkusnyj pirog. $\Rightarrow$
Masha think.PST COMP Lena baked tasty pie
Maša dumala, čto Lena ispekla pirog.
Masha think.PST COMP Lena baked pie
'Masha thought that Lena baked a tasty pie. $\Rightarrow$
Masha thought that Lena baked a pie.'

The semantics of clausal embedding argued for in this thesis considers non-monotonicity to be the default case: the Cont function inside the Cont-CPs disrupts monotonicity. The intuition about verbs like *dumat'* 'think' and *verit'* 'believe' is that Cont-CPs with them describe beliefs, and there is something about being a belief (as opposed to other individuals with content) that makes the entailment like in (220) go through. Elliott (2020) makes an account of such entailment that relies on appealing to the mereology of belief states. He proposes that an individual is an experiencer of a plurality of belief states at any given time. An individual's belief states form a Boolean algebra which has the closure property in (221).

(221) Let BS_x be the set of x's belief states. BS_x is closed under meet (sum): $s, s' \in BS_x$ iff $s \sqcup s' \in BS_x$.

He suggests that propositions also form a Boolean algebra, and the function CONT is a *homomorphism* from the Boolean algebra BS_x to the Boolean algebra of

[39] This is an oversimplification: it is not clear that by believing p we automatically believe all the consequences of p. See discussion of the problem of *logical omniscience* in Grano 2021 and the references therein. But it seems that at least for some propositions that p entails we do draw an inference that the attitude holder has beliefs with that content.

propositions.[40] This proposal has for example the consequence in (222): if states s_1 with content p and s_2 with content q are in the Boolean algebra of belief states, then their sum $s_1 \sqcup s_2$ must be in it too, and its content will be $p \wedge q$.

(222) Iff $\textsc{cont}(s_1) = p$ and $\textsc{cont}(s_2) = q$, then $\textsc{cont}(s_1 \sqcup s_2) = p \wedge q$.

More research is needed on what should count as a part of an individual with content and how the propositional content of the individual is related to the propositional content of its parts. But for cases like (220) we could hypothesize, that if there is a belief state s_1 with propositional content *λs. Lena baked a tasty pie in s* in BS_x, there must be a belief state s_2 with propositional content *λs. Lena baked a pie in s* in BS_x. Disregarding the problem of logical omniscience, we could model entailment of verbs like *believe* by placing the following restriction on belief states:

(223) *Restriction on Mereology of Belief States*
For any BS_x, if $s_1 \sqsubseteq BS_x \wedge \textsc{cont}(s_1) = p$, then for all q:
$[(p \Rightarrow_s q) \Rightarrow \exists s_2[s_2 \sqsubseteq BS_x \wedge \textsc{cont}(s_2) = q]]$

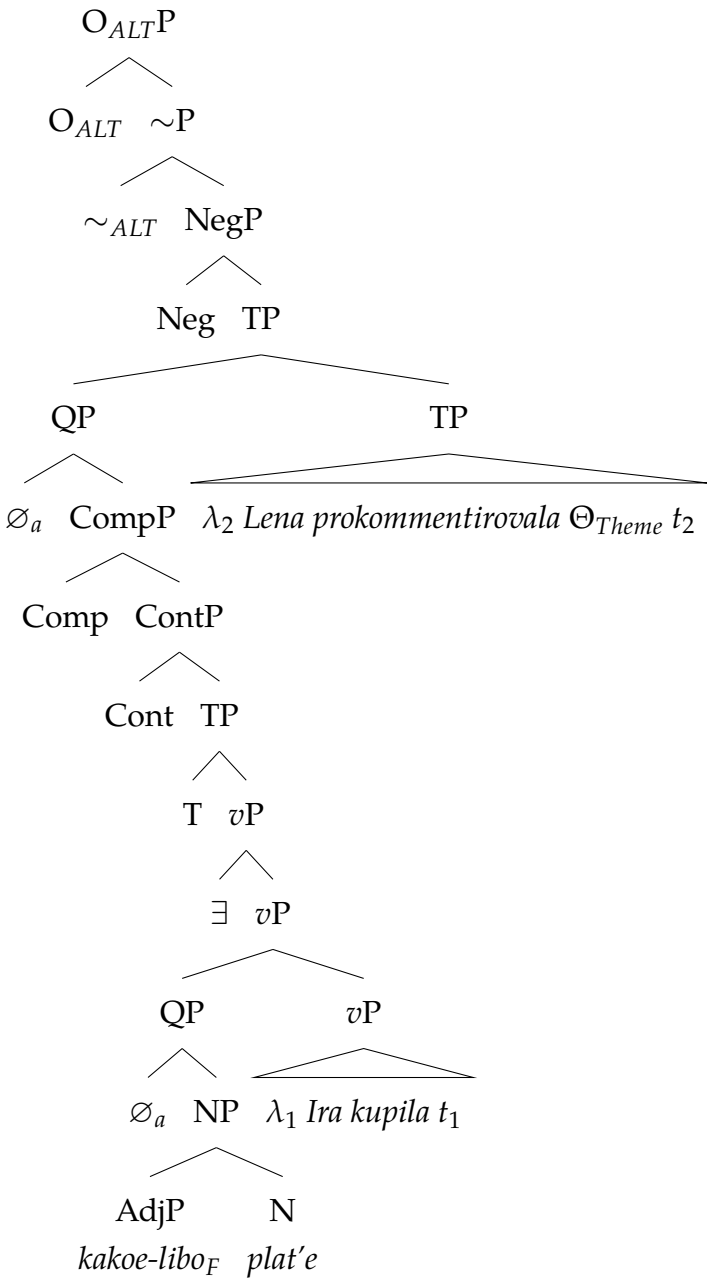
(223) declares that states that make up the set of belief states of any attitude holder are such that if we have a belief with content p, we also have beliefs that q for any q that is entailed by p. Having this property will guarantee the entailment in sentences like (220) and make them monotonic with respect to the embedded proposition despite the fact that the Cont function generally disrupts the entailment.[41]

Now let us illustrate why in sentences like (216), which do not exhibit the same monotonicity-reestablishing restriction as verbs like *believe*, weak NPIs will not be licensed. I assume the LF in (224) for (216).

[40] A homomorphism is a function whose domain and range are Boolean algebras, and which is structure preserving, i.e., it commutes with the Boolean operations.

[41] This move to restore monotonicity by introducing a restriction on the mereology of belief states raises a question: if these verbs are monotonic at the end of the day, should we expect them to license weak NPI subjunctives as well? I predict that they should, but in reality they do not (see examples with *dumat'* 'think' in section 5.2.2). Monotonic verbs like *dumat'* 'think' in Russian allow subjunctive complements exclusively under negation, but not in any other SDE contexts (see section 5.4). This is a puzzle for my proposal. One difference between verbs like *dumat'* 'think' and *pomnit'* 'remember' is that the former can only combine clauses *via the Situation argument*, whereas the latter can combine CPs *via the Theme argument* (see chapter 4). This raises a possibility that the integration path and the difference in the syntactic structure it comes with could place additional restrictions on where *by* can appear. For example, we could imagine that there are restrictions on how "far away" from O_{ALT} the particle *by* is allowed to be. I have to leave investigation of this issue for future research.

(224) **Cont-CP under Neg with an NPI**



The denotation of the QP is in (225), and the prejacent has the meaning in (226).

(225) $[\![\text{QP}]\!]^{s,g} = \lambda k.\ \exists y[\ ^{\Vdash_e}\textsc{Cont}(y) = \{s\text{: Ira bought a dress in s}\} \wedge k(y)=1]$

(226) **Prejacent in (224):** $\lambda s.\neg\exists s',y[\text{comment.on-Lena-y}(s')_s \wedge\ ^{\Vdash_e}\textsc{Cont}(y) = \{s\text{: Ira bought a dress in s}\}]$

¬(*There is a claim with content "Ira bought a dress" that Lena commented on*)

The NPI activates alternatives as in (227): the subsets of the set of dresses.

(227) **Substitutions:**
{{x: x is a dress in s},
{x: x is a red dress in s},
{x: x is an expensive red dress in s},...etc.}

These substitutions give rise to the alternative set that is illustrated in (228).

(228) **ALT in (224):**
{λs.¬∃s',y[comment.on-Lena-y(s')$_s$
∧ $^{\Vdash_e}$CONT(y) = {s: Ira bought a dress in s}],
¬(*There is a claim with content "Ira bought a dress" that Lena commented on*),

λs.¬∃s',y[comment.on-Lena-y(s')$_s$
∧ $^{\Vdash_e}$CONT(y) = {s: Ira bought a red dress in s}],
¬(*There is a claim with content "Ira bought a red dress" that L. commented on*),

λs.¬∃s',y[comment.on-Lena-y(s')$_s$
∧ $^{\Vdash_e}$CONT(y) = {s: Ira bought an expensive red dress in s}]
¬(*There is a claim with content "Ira bought an expensive red dress"
that Lena commented on*)

The sentence will always be a presupposition failure, because the presupposition introduced by O_{ALT} will never be met. This is because existence of an individual with the propositional content p in general does not tell us anything about existence of an individual with the propositional content q, where $p \Rightarrow_s q$. Note that if we restricted individuals under consideration to belief states of some attitude holder, this would have been different: then due to (223) existence of an individual with content p would be sufficient for knowing that an individual with content q exists for $p \Rightarrow_s q$. But since we do not have such a restriction here, ALT will never be ordered by entailment, and thus the presupposition of O_{ALT} that the prejacent entails all the alternatives in ALT will never be satisfied, leading to ungrammaticality of sentences with weak NPIs inside of embedded Cont-CPs with verbs like *prokommentirovat'* 'comment'.

Finally, my proposal makes a prediction that verbs like *pomnit'* 'remember' should

only be able to have weak NPIs inside of their embedded clauses if the clause is interpreted as a Sit-CPs. This seems to be right: in (229) we see that the sentence is grammatical, but the clause has to be interpreted as a situation that Mitya does not remember perceiving, not as a claim/idea that Mitya does not remember. In (230) we also see that having an NPI in a clause with *pomnit'* 'remember' where one of the predicates has to be interpreted *de dicto* leads to infelicity.

(229) *Weak NPI good under Sit-CP reading of the clause*
Mitja ne pomnit čto-(by) Anja kurila **kakie-libo** sigary.
Mitya NEG remembers COMP-(SUBJ) Anya smoke.PST **what-LIBO** cigars
✓ 'Mitya doesn't remember Anya smoking any sigars.'
* 'Mitya doesn't remember (a claim/rumor) that Anya smoked some sigars.'

(230) #Mitja ne pomnit čto-(by) [ovcy na ètoj gore] byli
Mitya NEG remembers COMP-(SUBJ) sheep on this mountain were
kakimi-libo kozami.
what-LIBO goats
'Mitya doesn't remember sheep on this mountain being any goats.'

Thus, I conclude that the predictions formulated in (207) seem to be on the right track. But it is necessary to conduct a more thorough testing of them in the future.

5.3.3 Factivity

In this section I address the question of what the interpretative difference between indicative and subjunctive clauses is in environments where both are possible, and what happens with factive inferences in such environments.

When presented with sentences like in (231), native speakers of Russian often express an intuition that the version of the sentence with an indicative clause differs from the version with the subjunctive clause in that the former has a factive inference, but the latter does not.

(231) Mitja ne pomnit, čto / čto-**by** Lena smotrela futbol.
Mitya NEG remembers COMP / COMP-**SUBJ** Lena watch.PST soccer
'Mitya doesn't remember that Lena watched soccer.'
SUBJ: ⇝ Lena didn't watch soccer
IND: ⇝ Lena watched soccer

I would like to argue that this is only partially true: sentences with weak NPI subjunctives indeed always lack factive inferences, but sentences with indicative clauses in the same environments have several possible LFs. One of these LFs derives a factive inference, but others do not, and with enough context we can get non-factive readings for indicative clauses like in (231) as well.

Whenever we see factive inferences present in some sentences with a verb but not in others, we have to address the question of what is the source of this variability. While in chapter 4 I have argued that some cases of factivity alternations arise due to different paths of composition of embedded clauses, for phenomena like (231) I propose a different solution. I would like to suggest that the verb in sentences like (231) does not lexically encode factivity (cf. theories like Abusch 2009, Abrusán 2011, Simons et al. 2017 which propose that presuppositions of "soft triggers" are entailments that project), but that factive inferences can arise with these verbs as entailments when clauses describing situations take wide and exceptionally wide scope (e.g., outside of antecedents of conditionals or questions).

Let us first consider the predictions that the current proposal makes about whether factive inferences should be observed, which are summarized in table 5.7.

Mood	**Low Scope**		**High Scope**	
	CONT-CP	SIT-CP	CONT-CP	SIT-CP
Indicative	✓ NON-FACT	✓ NON-FACT	✓ NON-FACT	✓ FACT
Subjunctive	*	✓ NON-FACT	*	*

Table 5.7: The predicted interpretations (FACT—factive inference predicted, NON-FACT—no obligatory factive inference predicted)

As discussed in the previous section, subjunctive CPs are predicted to be possible only if they are low-scoping Sit-CPs. If there is no lexically triggered presupposition introduced by the verb, then we predict that such sentences should not exhibit factive presuppositions. For example, consider (232).

(232) **Low Scope of Sit-CP ⇒ no factive inference**
$[\![$[NEG [$\emptyset_a$ čto Lena watched soccer] [1 Mitya remembers t_1]]$]\!]^{s,g}$
when defined, is true iff $\neg\exists x,s'[{}^{|\vdash}{}_e$remember-Mitya-x$(s')_s \wedge x \sqsubseteq s \wedge x {}^{|\vdash}{}_e$ {s: Lena watched soccer in s}]
"It's not the case that Mitya remembers a Lena-watching-soccer-situation"

This sentence will be true if there are no situations s' and x such that s' is Mitya's remembering of x, and x is a situation exemplifying Lena watching soccer. Thus, it does not entail that Lena watched soccer.[42]

As for the indicative clauses, my proposal does not place any restrictions on their scope, or their interpretation (Sit-CP vs. Cont-CP). Thus, all the four readings are expected for such clauses: the low scope Sit-CP reading in (232), the high scope Sit-CP reading in (233), the low scope Cont-CP reading in (235) and the high scope Cont-CP reading in (234). As just discussed, the low-scoping Sit-CP reading does not have a factive inference. The high scope of a Sit-CP however leads to factivity:

(233) **High Scope of Sit-CP ⇒ factive inference**
$[\![[[\varnothing_a$ čto Lena watched soccer] [NEG [1 Mitya remembers t_1]]]]$]\!]^{s,g}$
when defined, is true iff $\exists x[x \sqsubseteq s \wedge x \Vdash_e$ {s: Lena watched soccer in s} $\wedge$
$\neg\exists s'[{}^{\Vdash_e}$remember-Mitya-x$(s')_s$]]
"There is a Lena-watching-soccer-situation, and Mitya doesn't remember it."

The sentence in (233) will be true iff there is a situation of Lena watching soccer in the situation of evaluation and Mitya doesn't remember it. Thus, (233) has the factive inference that Lena watched soccer as its entailment. Recall that the condition "$x \sqsubseteq s$" is part of the meaning of Comp. It becomes important in this case, as it ensures that the sentence entails that Lena watched soccer in the *situation of evaluation*, and not in just in *some arbitrary situation*.

The two remaining readings of indicative clauses do not predict there to be factive inferences. The high scope of Cont-CPs predicts only an existential inference: there has to be some individual in the situation of evaluation with the propositional content specified by the embedded proposition, (234). Such an existential presup-

[42] My analysis however does predict that in sentences with *only* there should be a factive inference even with subjunctive clauses, because such sentences presuppose that the prejacent is true. I'm grateful to Kai von Fintel and Patrick Elliott for pointing this out to me.

Whether this is indeed borne out needs further investigation. My own judgement is that sentences like (i), in which negation of the prejacent is assumed to be true, are indeed quite odd if followed by a sentence with *only* and a weak NPI subjunctive.

(i) Kak my znaem, Lena nikogda ne smotrela futbol. (*own judgement*)
as we know Lena never NEG watched soccer
#Tol'ko Mitja zamečal, čto-by Lena smotrela futbol.
only Mitya noticed COMP-SUBJ Lena watch.PST soccer
'As we know, Lena never watched soccer. #Only Mitya noticed Lena watching soccer.'

position might trigger a requirement that in order to assert a sentence like (234), *"Lena watched soccer"* has to be old information—someone must have previously had an idea /thought /claim that Lena watched soccer.

(234) **High Scope of Cont-CP ⇒ existential inference**
$[\![[[\emptyset_a$ čto Cont Lena watched soccer] [neg [1 Mitya remembers t_1]]]]$]\!]^{s,g}$
when defined, is true iff $\exists x[x \sqsubseteq s \wedge {}^{\Vdash_e}\textsc{Cont}(x) = \{s:$ Lena watched soccer in $s\} \wedge \neg\exists s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s$]]
"There is an individual (e.g., claim/idea) with the content "Lena watched soccer", and Mitya doesn't remember it."

The low scope of Cont-CPs predicts neither factive nor existential inferences: (235) just says that it's not the case that Mitya remembers an individual whose content is the embedded proposition.

(235) **Low Scope of Cont-CP ⇒ no factive or existential inferences**
$[\![[$neg $[\emptyset_a$ čto Cont Lena watched soccer] [1 Mitya remembers t_1]]]$]\!]^{s,g}$
when defined, is true iff $\neg\exists x,s'[{}^{\Vdash_e}$remember-Mitya-$x(s')_s \wedge x \sqsubseteq s \wedge$ ${}^{\Vdash_e}\textsc{Cont}(x) = \{s:$ Lena watched soccer in $s\}]$
"It's not the case that Mitya remembers an individual (e.g., claim/idea) with the content "Lena watched soccer""

Thus, my proposal predicts that sentences like (231) with indicative clauses are 4-way ambiguous, and only one of those readings results in a factive inference.

Let us now try to evaluate these predictions. First, sentences with subjunctive clauses indeed do not exhibit factive inferences: they are felicitous in contexts where the speech act participants are ignorant about the truth of the embedded proposition, as is illustrated in (236).[43]

(236) **Context:** We don't know if Anya smokes and are trying to find out if she

[43]The sentence in (236) is not incompatible with *"p is true"* or *"p is false"* being in the Common Ground, it just does not itself imply anything about whether *p* is taken to be true or false. Consider (i), for example: it says that the speaker can't recall directly perceived situations of Anya smoking, but they know the fact that she smoked. These are not contradictory statements.

(i) Ja ne pomnju čto-by Anja kurila, xotja ja točno znaju čto ona kurila.
I neg remember comp-subj Anya smoked although I definitely know comp she smoked
'I don't remember Anya smoking, although I definitely know that she smoked.'

does. We have been asking several people to recall whether they encountered Anya smoking.
Mitja ne pomnit [**čto-by** Anja kurila]. ⇏ *Anya smoked*
Mitya NEG remembers **COMP-SUBJ** Anya smoke.PST
'Mitya doesn't remember that Anya smoked.'

Second, factive inferences are very often observed with indicative clauses, this is the most salient interpretation for them (237).

(237) **Context:** We all know that Anya smoked. We're wondering if Mitya remembers this.
Mitja ne pomnit [**čto** Anja kurila (včera)].⇒ *Anya smoked*
Mitya NEG remembers **COMP** Anya smoke.PST (yesterday)
'Mitya doesn't remember that Anya smoked (yesterday).'
= 'Anya smoked (yesterday), and Mitya doesn't remember it.'

Presence of factive inferences with indicative clauses is expected: they should arise when the LF has a Sit-CP taking wide scope with respect to operators like negation. My conjecture is that indefinite clauses should be just like other indefinites in allowing not only wide scope with respect to negation, but also exceptional wide scope. For example, in sentences like (238) we can interpret *some friend* as scoping outside of the conditional: there is some friend of mine, such that if they come on time this time, I will be happy. It seems that the same kinds of readings are possible for clauses (239): there was a situation of Lena cooking dinner yesterday, and if Mitya remembers it, the speaker will be surprised.

(238) If some friend of mine is on time this time, I will be happy.
✓ *if* > *some*, ✓ *some* > *if*

(239) Esli Mitja pomnit, [čto Lena včera gotovila užin],
if Mitya remembers COMP Lena yesterday cooked dinner
to ja udivljus'.
then I will.be.surprised
'If M. remembers that L. cooked the dinner yesterday, I will be surprised.'

Thus, exceptional scope of Sit-CPs like in (239) can lead to factive inferences.

The low-scope indicative Sit-CP reading is quite strongly dispreferred by the speakers. I hypothesize that this is so because a subjunctive Sit-CP is always an option in such cases, and it unambiguously picks out the right LF, whereas sentences with indicative clauses are highly ambiguous. However it does seem possible to force this reading for indicative clauses in certain circumstances. First, the modifier *takoe* 'such' that can occur with Sit-CPs always seem to force them to take low scope. When it occurs on top of an indicative clause, we get the desired reading:

(240) **Context:** We don't know if Anya smokes and are trying to find out if she does. We have been asking several people to recall whether they encountered Anya smoking.
Mitja ne pomnit **takogo** [**čto** Anja kurila].
Mitya NEG remembers **such** **COMP** Anya smoke.PST
'Mitya doesn't remember a situation of Anya smoking.

Second, it is possible to enforce low scope of indicative CPs via quantifier binding.[44] Consider the sentence in (241).

(241) **Context:** The speaker is a social worker who is interviewing residents about potential cases of their cars being illegally evacuated. The speaker has just interviewed a building with 10 residents and reports:
Ni odin iz desjati žitelej ne pomnit, čto ego mašinu
not one from ten residents NEG remembers COMP his car
èvakuirovali.
was.evacuated
'None of the 10 residents$_i$ *remember that their$_i$ car was evacuated.'*
= *"It's not the case that there is a resident that has a car and recalls it being evacuated."* (no inference that there were any evacuations, can be used to imply that there have been no evacuations in this building)

In (241) *cars* must vary with *residents*, and the embedded clause thus has to be interpreted below the quantificational subject, which is interpreted below negation. If the verb had a lexically triggered presupposition, we would expect it to project, and the sentence on the whole to presuppose that all of the residents have cars and all those cars were evacuated. We see however that even though the clause

[44] I am grateful to Patrick Elliott and Filipe Kobayashi for suggesting this diagnostic to me.

is indicative, the sentence can be true even if there have been no car evacuations whatsoever: it will be true just if no resident can recall a situation of their car being evacuated. Thus, it seems that in sentences like (241) we have an indicative Sit-CP scoping low, leading to a non-factive reading.[45]

Let us now discuss the two predicted readings of Cont-CPs. High-scope indicative Cont-CPs seem to be possible, although they often require more context. Sentences in (242) and (243) provide examples of high-scoping indicative Cont-CPs in contexts where the truth of the embedded proposition is not known and where it is known to be false respectively.

(242) ***p*-is-unknown-context:**
There is a rumor that Andrey is getting married. We don't know if this rumor is true.
Katja ne slyšala čto Andrej ženitsja.
Katya NEG heard COMP Andrey is.getting.married
'Katya didn't hear that Andrey is getting married.'
= 'There's a rumor that A. is getting married, but Katya didn't hear it.'

(243) ***p*-is-false-context:**
We are running an experiment: we ask our participants to memorize and recall a list of statements, some of which are are true, others are false (and participants know it). When we asked Mitya to recall the statements.
a. Kakoe iz utverždenij Mitja ne pomnit?
what from statements Mitya NEG remember
'Which statement does Mitya not remember?'

[45]Note that there seem to exist verbs that introduce real lexical presuppositions, and then it is impossible to get rid of them in the same configuration:

(i) **Context:** The speaker is a social worker who is interviewing residents about potential cases of their cars being illegally evacuated. The speaker has just interviewed a building with 10 residents and reports:
Ni odin iz desjati žitelej ne v kurse, čto ego mašinu èvakuirovali.
not one from ten residents NEG is.aware COMP his car was.evacuated
'None of the 10 residents$_i$ are aware that their$_i$ car was evacuated.'
Possible as: "The cars of 10 residents were evacuated, and none of them are aware of it." (implies that all residents have cars, and all of these cars have been evacuated)

b. Mitja ne pomnit čto N'ju-Jork stolica Ameriki.
Mitya NEG rememberts COMP New-York capital of.America
'Mitya doesn't remember that New York is the capital of America.'

Given the preceding contexts, we infer that the clause in (242) describes a rumor, and thus is a Cont-CP, and that the clause in (243) describes a statement, and thus is also a Cont-CP. However, as we see, the embedded propositions of these clauses do not have to be true in the situation of the evaluation: their truth could be unknown, (242), or they could be false, (243). In both sentences though there is an individual whose propositional content is the embedded proposition that has been previously introduced into the context. I would like to also note that the presence of negation is not necessary for getting the readings in (242)–(243), positive versions of these sentences could be interpreted in the same way: *"There is an individual (claim/rumor/etc.) with propositional content p, and Katya heard it/Mitya remembers it"*.

Finally, the low scope of indicative Cont-CPs in SDE environments is also not very easy to get (see also relevant observations about negation in Djärv 2019). But I think that (244) is an example of this reading: in this sentence the CP describes an individual with content (statement/announcement/rumor) rather than a situation, and there is no factive inference and no inference that someone had previously made a statement with the content *People are allowed to not wear masks*. Hence, I hypothesize that this must be a low-scoping Cont-CP.

(244) **Context:** I see my friend without a mask in the department.

Ty slyšala čto maski možno ne nosit'?
you heard COMP masks is.allowed NEG to.wear

'Have you heard that we're allowed to not wear masks?'
$\sim$ Is it the case that you heard a statement/rumor/announcement with the content *People are allowed to not wear masks*?

It also seems to be possible to get a low-scope indicative Cont-CP reading in a configuration where binding forces low scope:

(245) **Context:** The speaker is a journalist interviewing celebrities about whether they are aware of any rumors about them. The speaker interviewed 10 actresses, and reports:

Ni odna iz desjati aktris ne slyšala,
not one of ten actresses NEG heard
[čto kto-to sledit za eë mašinoj].
COMP someone is.spying after her car
'None of the 10 actresses$_i$ heared (a rumor) that someone is spying on her$_i$ car.' = *"It's not the case that there is an actress that has a car and heard a rumor that someone is spying on it."* (no inference that there has to be a rumor that someone is spying on a car, can be used to imply that there have been no such rumors /claims etc.)

In (245) the context makes it clear that we are talking about rumors, and thus the clause in the sentence must be a Cont-CP. The sentence is not factive, and also doesn't have any existential inference: it will be true if no rumors about any of the actresses have been spread, and none of the actresses heard any rumors that their cars are being spied on. This suggests that the verb under consideration does not have a lexically triggered presupposition that projects, and that we are observing no existential inference due to the low scope of the Cont-CP.[46]

To sum up, I would like to make a tentative conclusion that the predicted landscape of readings is attested: indicative clauses, unlike subjunctive clauses, are compatible with four different LFs, and can be both factive (high-scoping Sit-CP) and non-factive, and also, if they are Cont-CPs, they can both entail existence of an individual with content (high-scoping Cont-CP) and not entail it.

Many open questions remain, however. One question is why the accessibility of different interpretations with indicative clauses differs so much: the factive interpretation is clearly much more salient, compared to the other three interpretations.

[46]Compare again with a presuppositional verb for which this is not possible:

(i) **Context:** The speaker is a journalist interviewing celebrities about whether they are aware of any rumors about them. The speaker interviewed 10 actresses, and reports:
Ni odna iz desjati aktris ne zabyla, čto kto-to sledit za eë mašinoj.
not one of ten actresses NEG forgot COMP someone is.spying after her car
Intended: 'None of the 10 actresses$_i$ forgot (a rumor) that someone is spying on her$_i$ car.'
= Possible only as:
"The cars of 10 actresses are being spied on, and none of them forgot about this fact."

It seems that *zabyt'* 'forget', unlike *slyšat'* 'hear', does presuppose that its object is a fact, and this presupposition projects, requiring that the cars of all actresses are being spied on.

A potentially related question is whether there is some default way to interpret *"an individual with propositional content"* in cases when it is not specified in the sentence what kind of individual it is. So far, I have been assuming that the default intepretation of unspecified individuals with content is something like 'claim' or 'idea', but what if the default interpretation is 'fact'? Another question is how definiteness influences the interpretation. Note that for indicative clauses, both definite and indefinite readings should in principle be available; does that influence the interpretations we receive and/or their accessibility? Finally, note while I argue that factivity alternations with verbs like 'hear'/'remember' are not lexically triggered, there could be verbs which have lexically triggered presuppositions. One of the questions this raises is: would any such verbs be able to take weak NPI subjunctives, or is absence of such presuppositions a pre-condition for licensing them?

5.4 Clauses as strong NPIs

5.4.1 Strong NPI Subjunctives in Russian

In addition to clauses that behave like weak NPIs, Russian also has a second class of polarity subjunctives. This type of polarity subjunctives occurs with verbs like *dumat'* 'think', *verit'* 'believe', *predpolagat'* 'suppose', *podozrevat'* 'suspect', *predstavljat'* 'imagine', *nadejat'sja* 'hope'. With these verbs, subjunctive complements are impossible in "positive" contexts, (246), and are possible under negation, (247), just like with predicates like *pomnit'* 'remember' discussed in the previous section.

(246) Ja dumaju /verju /predpolagaju /predstavljaju čto /*čto-**by** Lena
I think /believe /suppose /imagine COMP /COMP-**SUBJ** Lena
pila vodku.
drink.PST vodka
'I think/believe/suppose/imagine that Lena drank vodka.'

(247) Ja ne dumaju /verju /predpolagaju /predstavljaju čto /čto-**by**
I NEG think /believe /suppose /imagine COMP /COMP-**SUBJ**
Lena pila vodku.
Lena drink.PST vodka
'I don't think/believe/suppose/imagine that Lena drank vodka.'

But verbs like *dumat'* 'think' cannot take subjunctive complements in any other environments that license weak NPIs, (248)-(252).

(248) *Scope of tol'ko 'only'*

Tol'ko Mitja dumaet /verit /predpolagaet /predstavljaet čto
Only Mitya thinks /believes /supposes /imagines COMP
/*čto-**by** Lena pila vodku.
/COMP-**SUBJ** Lena drink.PST vodka
'Only Mitya thinks/believes/supposes/imagines that Lena drank vodka.'

(249) *Scope of malo 'few'*

Malo kto dumaet /verit /predpolagaet /predstavljaet čto
few who thinks /believes /supposes /imagines COMP
/??čto-**by** Lena pila vodku.
/COMP-**SUBJ** Lena drink.PST vodka
'Few think/believe/suppose/imagine that Lena drank vodka.'

(250) *Question*

Ty dumaeš' /veriš' /predpolagaeš' /predstavljaeš' čto /*čto-**by**
you think /believe /suppose /imagine COMP /COMP-**SUBJ**
Lena pila vodku?
Lena drink.PST vodka
'Do you think/believe/suppose/imagine that Lena drank vodka?'[47]

(251) *Restrictor of každyj 'every'*

Každyj, kto dumaet /verit /predpolagaet /predstavljaet čto
every who thinks /believes /supposes /imagines COMP
/*čto-**by** Lena pila vodku, byl na večerinke do konca.
/COMP-**SUBJ** Lena drink.PST vodka was on party until end
'Everyone who thinks/believes/supposes/imagines that Lena drank vodka, was at the party until the end.'

[47] In my own judgement, the acceptability of this sentence with 'imagine' is somewhat better than with other verbs, however other speakers I consulted did not report a contrast here.

(252) *Antecedent of a conditional*

Esli ty dumaeš' /veriš' /predpolagaeš' /predstavljaeš' čto
if you think /believe /suppose /imagine COMP
/*čto-**by** Lena pila vodku, pozvoni mne.
/COMP-**SUBJ** Lena drink.PST vodka call me
'If you think/believe/suppose/imagine that Lena drank vodka, call me.'

Given that this class of verbs takes subjunctive complements exclusively under negation, I will call them verbs that take *strong NPI subjunctives*. Some of these have been discussed in the literature under the category of verbs taking "subjunctive of an epistemic type" in (Dobrushina 2016b).[48] Dobrushina notes that in the previous centuries constructions with verbs taking such subjunctives were more widespread and varied, and that currently some of the verbs taking polarity subjunctives are mostly used with 1st person subjects. While 1st person subjects indeed seem much more common with verbs like *dumat'* 'think' taking subjunctive, some naturally occurring examples with other kinds of subjects can be found, e.g. see (253)-(254).

(253) *'Imagine' with 3rd person subject taking subjunctive* <Link-to-source>

Po eë slovam, **ona** ne predstavljaet, [čto-**by** eë brat ili otec
on her words **she** NEG imagines COMP-**SUBJ** her brother or father
rebënka celymi sutkami snimali storis o sebe].
child.GEN whole 24-hour-day film.PST stories about self

'According to her, she cannot imagine that her brother or the father of her child would film (instagram) stories about themselves the whole day.'

(254) *'Think' with 3rd person subject taking subjunctive* <Link-to-source>

Čerčill' skazal, čto **on** ... ne dumaet, čto-**by** Turcija takže
Churchill said COMP **he** ... NEG thinks COMP-**SUBJ** Turkey also
soglasilas' s ètim predloženiem.
agree.PST with this proposition

'Churchill said that he <...> doesn't think that Turkey would also agree with this proposition.'

[48] Dobrushina attributes a more diverse set of predicates to this class. For example, verbs like *pomnit'* 'remember', which take weak NPI subjunctives, for her also belong to this category. But many of the examples she discusses are of predicates that take strong polarity subjunctives.

With this class of embedding verbs, subjunctive complements are also not possible in imperatives, (255), under existential modals, (256), under future tense, (257) or under non-monotone predicates like 'want', (258). Thus, negation seems to be the only element that enables these verbs to take subjunctive complements.

(255) *Imperatives*

*(Po)-dumaj /(po)-ver' /predpoloži /predstav' čto-**by**
(PFV)-think.IMP /(PFV)-believe.IMP /suppose.IMP /imagine.IMP COMP-**SUBJ**
Lena pila vodku!
Lena drink.PST vodka
'Think/believe/suppose/imagine that Lena drank vodka!' [49]

(256) *Existential modals* (*e.g. 'possible'*)

*Možno dumat' /verit' /predpolagat' /predstavljat' čto-**by**
possible think.INF /believe.INF /suppose.INF /imagine.INF COMP-**SUBJ**
Lena pila vodku.
Lena drink.PST vodka
'It's possible to think/believe/suppose/imagine that Lena drank vodka.'

(257) *Future*

*Mitja budet dumat' /verit' /predpolagat' /predstavljat'
Mitya will think.INF /believe.INF /suppose.INF /imagine.INF
čto-**by** Lena pila vodku.
COMP-**SUBJ** Lena drink.PST vodka
'Mitya will think/believe/suppose/imagine that Lena drank vodka.'

(258) *Under non-monotone predicates like 'want'*

*Ja xoču čto-by Mitja dumal /veril /predpolagal
I want COMP-SUBJ Mitya think.PST /believe.PST /suppose.PST
/predstavljal čto-**by** Lena pila vodku.
/imagine.PST COMP-**SUBJ** Lena drink.PST vodka
'I want Mitya to think/believe/suppose/imagine that Lena drank vodka.'

[49] Imperatives of stative vebs like *dumat'* 'think' and *verit'* 'believe' might sound independently pragmatically odd, but note that non-stative versions of these verbs (*podumat'* 'form a thought' and *poverit'* 'accept something into one's beliefs), which don't seem to have the same oddness when used in imperative forms, still cannot combine with a subjunctive clause.

There is one more epistemic predicate that might be considered as belonging to this class, despite showing a different behavior: *somnevat'sja* 'doubt'. Dobrushina (2016b: 311, ex. (1008)) observes that this verb can take subjunctive clauses in "positive" contexts, but cannot take subjunctive clauses under negation:[50,51]

(259) Somnevajus', čto /čto-**by** ne vydannye Žanne den'gi
I.doubt COMP /COMP-**SUBJ** NEG given to.Zhanna money
vozvratilis' v kaznu.
returned to treasury
'I doubt that the money not given to Zhanna returned to the treasury.'

(260) Ne somnevajus', čto /*čto-**by** ne vydannye Žanne den'gi
NEG I.doubt COMP /COMP-**SUBJ** NEG given to.Zhanna money
vozvratilis' v kaznu.
returned to treasury
'I don't doubt that the money not given to Z. returned to the treasury.'

If we assume that 'doubt' roughly means 'not think' and thus already contains negation, grammaticality of (259) with the subjunctive clause is expected. Negating 'doubt' would then result in the embedding verb meaning 'think', which should not allow subjunctive complements, and it indeed does not (260). So although the polarity-sensitivity of taking a subjunctive complement with *somnevat'sja* 'doubt' is the reverse of what we see with verbs like *dumat'* 'think', it seems that the underlying phenomenon is the same: subjunctive complements requiring negation (overt or lexical) in order to appear with epistemic predicates.[52]

Strong NPI subjunctives differ from weak NPI subjunctives in that they do not

[50]The example in (259) with the subjunctive complement is from a book by Evgenij Rubin *"Pan ili propal. Žizneopisanie"* (1999-2000), here cited via (Dobrushina 2016b: 311, ex. (1008a)), the ungrammatical sentence with subjunctive in (260) is from (Dobrushina 2016b: 311, ex. (1008b)). The grammatical versions of (259)-(260) with indicative clauses were added by me.

[51]Dobrushina notes that this restriction was less strict in the previous centuries, and examples of subjunctive with 'doubt' under negation can be found in 19th century texts.

[52]Note that the ungrammaticality of (260) with a subjunctive CP is potentially problematic for theories of NPI-licensing that assume that there just needs to exist *some* constituent in the structure that satisfies the licensing condition for an NPI (e.g., Crnič 2019). If the constituent that consists of 'doubt' and the embedded clause satisfies the condition for licensing subjunctive (which we can conclude based on (259)), then this should be sufficient to always allow subjunctive complements under 'doubt'. Adding another negation should not be able to 'undo' the licensing, and thus (260) with a subjunctive clause should be grammatical, contra to what we see.

seem to exhibit any temporal or aspectual restrictions on the interpretation of the embedded clause. While the embedded verb still has to occur with the "fake" past tense morphology, the time of the event described by the embedded clause can be in the past, (261a), in the present, (261b) or in the future, (261c).

(261) (Dobrushina 2016b: p. 310, ex. (1007))

a. Ne dumaju, čto-by on včera prixodil.
NEG I.think COMP-SUBJ he yesterday come.PST
'I don't think that he came yesterday.'

b. Ne dumaju, čto-by on zdes' naxodilsja.
NEG I.think COMP-SUBJ he here be.located.PST
'I don't think that he is (currently) located here.'

c. Ne dumaju, čto-by on zavtra prišël.
NEG I.think COMP-SUBJ he tomorrow come.PST
'I don't think that he will come tomorrow.'

While in weak NPI subjunctives the embedded verb had to be in a morphologically imperfective form, strong NPI subjunctives allow embedded verbs in perfective forms. This is illustrated in (262)-(263).

(262) Ne dumaju, čto-by **v**-stal vopros ob impičmente
NEG I.think COMP-SUBJ **PFV**-raise.PST question about impeachment
prezidenta. <Link-to-source>
of.president
'I don't think that a question about impeaching the president will arise.'

(263) Ne predstavljaju, čto-by on sovsem **u**-šël. <Link-to-source>
NEG I.imagine COMP-SUBJ he completely **PFV**-go.PST
'I can't imagine him leaving completely.'
(lit. 'I don't imagine that he will completely leave.')

Perfective is not only morphologically possible, but it is interpreted as expected. Consider (264)-(265): with perfective aspect in the embedded CP Masha's bringing pizza has to follow the arrival, but with imperfective aspect the arrival is included in the time interval corresponding to Masha's bringing pizza. Thus, aspect is interpreted in strong NPI subjunctives in the same way as in unembedded sentences.

(264) Ja ne dumaju, čto-by kogda oni včera prišli,
I NEG think COMP-SUBJ when they yesterday come.PFV.PST
Maša **prinesla** pizzu.
Masha **bring.PFV.PST** pizza
'I don't think that when they came yesterday, Masha brought pizza.'
✗ τ(their arrival) $\subset$ τ(Masha's bringing pizza)
✓ τ(their arrival) $<_T$ τ(Masha's bringing pizza)

(265) Ja ne dumaju, čto-by kogda oni včera prišli,
I NEG think COMP-SUBJ when they yesterday come.PFV.PST
Maša **prinosila** pizzu.
Masha **bring.IPFV.PST** pizza
'I don't think that when they came yesterday, Masha was bringing pizza.'
✓ τ(their arrival) $\subset$ τ(Masha's bringing pizza)
✗ τ(their arrival) $<_T$ τ(Masha's bringing pizza)

To sum up, here are the properties of strong NPI subjunctives that we've seen:

(266) **Strong NPI subjunctives:**
a. occur with stative epistemic verbs like *dumat'* 'think', *verit'* 'believe', *predpolagat'* 'suppose', *podozrevat'* 'suspect' etc.
b. occur exclusively under negation and in no other environment
c. exhibit no temporal or aspectual restrictions

In the next sections, I'll discuss the inference that occurs in sentences with strong NPI subjunctives, arguing that it is the Neg-Raising inference (section 5.4.2), and then I'll sketch some ideas towards an account of this phenomenon (section 5.4.3).

5.4.2 The Neg-Raising Inference

Consider the sentence in (267).

(267) Mitja ne dumaet, čto-by Lena pila vodku.
Mitya NEG thinks COMP-SUBJ Lena drink.PST vodka
'Mitya doesn't think that Lena drinks vodka.'
Inference: Mitya thinks that Lena drinking vodka is less likely compared to Lena not drinking vodka.

Negating 'think' in (267) should tell us that it's not the case that all Mitya's belief worlds are worlds in which Lena drinks vodka. This is indeed true of (267), but the interpretation that we get in (267) is stronger than that: we also infer that according to Mitya, Lena drinking vodka is less likely than her not drinking vodka. If Mitya had to bet, he'd bet Lena doesn't drink vodka.

I would like to suggest that this is a Neg-Raising inference. The Neg-Raising inference is usually considered to be saying that in all attitude holder's belief worlds the negation of the embedded proposition holds. Given how I paraphrased the reading of (267) — in terms of *likelihood* — it is not immediately clear that we are dealing with Neg-Raising. But I would like to argue that we are.

I'll show that the attitude holder has to be opinionated (5.4.2.1), and that verbs like *dumat'* 'think' generally seem to allow the speaker to not be completely certain if the embedded proposition is true (5.4.2.2), which suggests a weaker semantics for belief reports. I will sketch an idea that this weaker semantics is based on *likelihood*. In section 5.4.2.3 I will show that some items that seem to behave like strict NPIs are licensed in strong NPI subjunctives, and in section 5.4.2.4 we will see that the possibility of strong NPI subjunctives correlates with aspectual specification of the matrix verb in the same way it has been shown to correlate with the presence of Neg-Raising. These data provide additional evidence that (267) involves Neg-Raising.

5.4.2.1 Opinionated Attitude Holder

Verbs like *dumat'* 'think' in Russian in general allow Neg-Raising readings. This is illustrated with an indicative clause in (268).

(268) **A:** Should we buy Katya a tortoise?

B: Ne dumaju, čto Katja obraduetsja takomu podarku.
NEG I.think COMP Katya will.be.happy such present

'I don't think Katya will be happy about such a present.'

We understand B's response as saying that they shouldn't buy Katya a tortoise: B thinks that Katya will not be happy about such a present. In the same context a subjunctive clause can also be used, with the same interpretation:

(269) **A:** Should we buy Katya a tortoise?

B: Ne dumaju, čto-**by** Katja obradovalas' takomu podarku.
NEG I.think COMP-**SUBJ** Katya be.happy.PST such present
'I don't think Katya would be happy about such a present.'

Neg-Raising is generally an optional inference. In sentences with indicative embedded clauses we can understand negation as being interpreted in the matrix clause, as is illustrated by (270)-(271).

(270) Mitja ne dumaet, čto Lena pila vodku. On bez ponjatija —
Mitya NEG thinks COMP Lena drink.PST vodka he without notion
on voobšče s Lenoj ne znakom!
he even with Lena NEG is.acquainted
'Mitya doesn't think that Lena drinks vodka. He has no opinion—he hasn't even met Lena!'

(271) Ja ne dumaju čto Lena pobedila, i ja ne dumaju čto Lena
I NEG think COMP Lena won and I NEG think COMP Lena
proigrala, ja bez ponjatija kto vyigral turnir!
lost I without notion who won tournament
'I don't think that Lena won and I don't think that Lena lost. I have no clue who won the tournament!'[53]

Negating *think p* is compatible with the attitude holder holding no opinion whatsoever about the truth of the embedded proposition. In (270) and (271) the attitude holder is unopinionated, and the sentences are felicitous, which means the Neg-Raising inference (*think* $\neg$ *p*) has not been derived.

In sentences with subjunctive CPs the attitude holder must be opinionated:

(272) Mitja ne dumaet, čto-**by** Lena pila vodku.
Mitya NEG thinks COMP-**SUBJ** Lena drink.PST vodka
#On bez ponjatija — on voobšče s Lenoj ne znakom!
he without notion he even with Lena NEG is.acquainted
'Mitya doesn't think that Lena drinks vodka. He has no opinion—he hasn't even met Lena!'

[53] I am grateful to Frank Staniszewski for suggesting this test of conjoining two sentences with NEG *think p* and NEG *think* $\neg p$ in them.

(273) #Ja ne dumaju čto-by Lena pobedila, i ja ne dumaju čto-by
I NEG think COMP-SUBJ Lena won and I NEG think COMP-SUBJ
Lena proigrala, ja bez ponjatija kto vyigral turnir!
Lena lost I without notion who won tournament
'I don't think that Lena won and I don't think that Lena lost. I have no clue who won the tournament!'

This opinionatedness is expected if (272)-(273) have to involve Neg-Raising: e.g., (273) would be contradictory, as both a belief that Lena didn't win and a belief that Lena won are attributed to the attitude holder.

5.4.2.2 Weak Belief via likelihood

Sentences with negation, in which the attitude holder is opinionated, still seem to allow for some possibility that the embedded proposition is true. This is illustrated in (274), where the the speaker explicitly denies complete knowledge of the facts and thus must allow for some chance that Lena did drink vodka.

(274) Ja konečno točno ne znaju, no ja ne dumaju, čto-(by) Lena
I of.course precisely NEG know but I NEG think COMP-(SUBJ) Lena
pila vodku.
drink.PST vodka
'I of course don't know for a fact, but I don't think Lena drank vodka.'

I would like to suggest that this is why the likelihood paraphrase seems appropriate: the sentence conveys that the attitude holder finds the embedded proposition very unlikely, but doesn't commit them to being completely certain that it is false.

What we are observing in (274) does not seem to be a fact about Neg-Raising, but a general property of belief ascriptions. For example, sentences with negation in the embedded clause or no negation at all are also compatible with the attitude holder not being fully certain of their opinions, (275)-(276). This has been observed for English in the literature before, (277).

(275) Ja konečno točno ne znaju, no ja dumaju, čto Lena (ne)
I of.course precisely NEG know but I think COMP Lena (NEG)

pila vodku.
drink.PST vodka
'I of course don't know for a fact, but I think L. drank/didn't drink vodka.'

(276) I think Lena drank/didn't drink vodka, but I am not 100% certain.

(277) I believe it's raining, but I'm not sure it's raining.
(Hawthorne, Rothschild & Spectre 2016: 1395, ex. (2))

What these data show us then is that attitude verbs like 'think' and 'believe' might be weaker than commonly assumed (e.g., Hintikka 1969) and perhaps do not always involve universal quantification over worlds compatible with the beliefs of the attitude holder (see Hawthorne, Rothschild & Spectre 2016, Rothschild 2020 for arguments that 'believe' is weak, (Koev 2019) for defense of the 'strong' view).

I would like to suggest that we could model this "weakeness" in terms of likelihood. We can think of all verbs that take strong NPI subjunctives as describing some belief state of an attitude holder.[54] Following Elliott 2020, I will assume that an individual's belief states form a Boolean algebra which has the closure property in (221), repeated here as (278).

(278) Let BS_x be the set of x's belief states. BS_x is closed under meet (sum): $s, s' \in BS_x$ iff $s \sqcup s' \in BS_x$.

I propose a requirement for being a belief in $BS_{\text{AH},s}$ in (279), where the relation $\mathcal{L}(p,\text{AH})_s$ evaluates how likely the attitude holder AH finds p, (280).

(279) **Being a belief in $BS_{\text{AH},s}$—the set of AH's belief states in s**
For any proposition p, situation s and any attitude holder AH:
$\exists x[x \in BS_{\text{AH},s} \wedge \text{CONT}(x)=p]$ iff $\mathcal{L}(p,\text{AH})_s > \mathcal{L}(\neg p,\text{AH})_s$

(280) *Likelihood function $\mathcal{L}$ (definition):*
For any proposition p, individual AH and situation s,
$\mathcal{L}(p,\text{AH})_s$ is the degree to which AH considers p likely

The condition in (279) is a bi-conditional. First, it demands that if the attitude holder has a belief with content p, then they find p to be more likely than $\neg p$. Sec-

[54] It is less obvious that this is the case for verbs *predstavljat'* 'imagine' and *nadejat'sja* 'hope'. I leave working out an extension of my proposal to these verbs for future research.

ond, it requires that if the attitude holder finds p to be more likely than $\neg p$, that entails that they have a belief p. This definition of what it means to be someone's belief allows the attitude holder to be uncertain about the truth of the embedded proposition p even if they believe p: for believing p they only have to find p more likely than its negation. This explains the felicity of (274)–(277).

Analyzing belief in terms of likelihood makes a prediction that it shouldn't be possible to both *believe that p is unlikely* and *believe p*. This is indeed the case:[55]

(281) Ja dumaju, čto pobeda ètoj komandy očen' maloverojatna.
I think COMP victory this team.FEM.GEN very improbable
#No ja dumaju, čto ona pobedit.
but I think COMP she win.FUT
'I think a victory of this team is very improbable.
But I think it will win.'

With the condition in (279), a sentence with a Neg-Raising inference should assert that the attitude holder thinks that p is unlikely. This is indeed the interpretation that strong NPI subjunctives receive, (267).

The restriction on $BS_{\text{AH},s}$ in (279) automatically derives impossibility of contradictory beliefs. This is shown in (282).

(282) **Consequence of (279): no contradictory beliefs**
For any proposition p, situation s and any attitude holder AH:
a. $(\mathcal{L}(p,\text{AH})_s > \mathcal{L}(\neg p,\text{AH})_s) \Rightarrow \neg(\mathcal{L}(p,\text{AH})_s < \mathcal{L}(\neg p,\text{AH})_s)$
b. $\exists x[x \in BS_{\text{AH},s} \wedge \text{CONT}(x)=\neg p]$ iff $(\mathcal{L}(p,\text{AH})_s < \mathcal{L}(\neg p,\text{AH})_s)$
c. $\exists x[x \in BS_{\text{AH},s} \wedge \text{CONT}(x)=p]$
d. $\mathcal{L}(p,\text{AH})_s > \mathcal{L}(\neg p,\text{AH})_s$
e. $\therefore \neg\exists x[x \in BS_{\text{AH},s} \wedge \text{CONT}(x)=\neg p]$

In (282a) we just observe that if p is more likely than $\neg p$ according to the attitude holder, then it is not the case that p is less likely than $\neg p$ in their opinion. In other words, the "$<$" relation is antisymmetric. In (282b) we apply the definition in (279)

[55] This is true as long as we evaluate the predicate *maloverojatna* 'improbable' with respect to the beliefs of the attitude holder. The sentence becomes felicitous if we find a way to evaluate *maloverojatna* 'improbable' with respect to a distinct judge: e.g., the attitude holder could think that the team's victory is unlikely according to some statistics report, but still think that it is likely to happen.

to existence of an individual whose content is $\neg p$: existence of such an individual in $BS_{\text{AH},s}$ is equivalent to the attitude holder considering p less likely than $\neg p$. Now if (282c) holds and there is a belief in $BS_{\text{AH},s}$ with content p, then by the principle in (279), (282d) holds: the attitude holder must find p more likely than $\neg p$. If that's the case, then the right side of the biconditional in (282b) doesn't hold: $\neg(\mathcal{L}(p,\text{AH})_s < \mathcal{L}(\neg p,\text{AH})_s)$, due to (282a). This means that the left side of the biconditional is false as well: it's not the case that there is a belief in $BS_{\text{AH},s}$ with content $\neg p$, (282e). Thus, the requirement in (279) automatically predicts that an attitude holder can't believe both p and its negation. As we see in (283), this is empirically correct.

(283) #Ja dumaju, čto èta komanda pobedit, i ja dumaju, čto èta
I think COMP this team will.win and I think COMP this
komanda proigraet.
team will.lose
'I think that this team will win, and I think that this team will lose.'

5.4.2.3 Licensing Minimizers

One piece of evidence that sentences with strong NPI subjunctives involve Neg-Raising comes from licensing of one kind of strict NPI. Russian has a set of minimizers that are formed by combining the conjunctive particle *i* 'and' with an NP that occupies a low position on some relevant scale. (284)-(287) show some naturally occuring examples of such minimizers: in (284) and (285) *nedelja* 'week' and *sekunda* 'second' are low on the scale of time periods, in (286) *rubl'* 'rouble' is low on the scale of amounts of money, in (287) *gramm* 'gram' is low on the scale of quantities of make-up used.[56]

(284) Voditelja popavšej pod udar mašiny dostavili v bol'nicu, no on
driver.ACC gotten under hit car.GEN they.brought in hospital but he
ne protjanul **[i nedeli]** <Link-to-source>
NEG lasted **and week.GEN**
'The driver of the car that was hit was brought to the hospital, but he didn't last (even) a week.'

[56]See (Rossyaykin 2022a,b,c) for discussion of a similar kind of minimizer: *i odin 'one' + NP*. Rossyaikin argues that this is a strict NPI that is licensed in sentences with Neg-Raising (Rossyaykin 2022b: 59, ex. (14a)). I leave comparison between *i + NP* and *i odin + NP* for future research.

(285) (*talking about a new spider-man movie*) <Link-to-source>

S sobytij prošloj časti ne prošlo **[i sekundy]**...
from events last part.GEN NEG passed **and second.GEN**...

'From the events of the last part there hasn't passed (even) a second.'

(286) (*talking about transfers of soccer players*) <Link-to-source>

...nikto **[i rublja]** ne predložil za Kvaracxeliju.
...no.one **and rouble.GEN** NEG offered for Kvaracxelia

'...no one offered (even) a rouble for Kvaracxelia.'

(287) ...na eë lice ne bylo **[i gramma]** makijaža. <Link-to-source>
...on her face NEG was **and gram.GEN** make-up.GEN
'There wasn't (even) a gram of make-up on her face.'

One thing to note about (284)-(287) is that the NPs of the minimizers occur in genitive case. This is a phenomenon known in Slavic linguistics as Genitive of Negation (see Harves 2013 and the references therein): under negation some NPs get the ability to occur in genitive case instead of the case they would normally appear in (e.g., accusative case in (288)).

(288) a. Maša **ne** videla košku /koški.
Masha **NEG** saw cat.ACC /cat.**GEN**
'Masha didn't see a cat.'

b. Maša videla košku /*koški.
Masha saw cat.ACC /cat.GEN
'Masha saw a cat.'

Expressions like negative concord items, which have to occur under clausemate negation, must appear in genitive case (289); other cases are not available for them.

(289) a. Maša **ne** videla ničego /??ničto.
Masha **NEG** saw nothing.**GEN** /nothing.ACC
'Masha didn't see anything.'

b. *Maša videla ničego /ničto.
Masha saw nothing.GEN /nothing.ACC
'Masha saw nothing.'

Genitive of negation requires real negation. In other environments which we might think of as having a "negative" component in some sense and which license weak NPIs, genitive of negation is impossible, as is illustrated in (290)-(292).

(290) Tol'ko Maša videla košku /*koški.
only Masha saw cat.ACC /cat.GEN
'Only Masha saw a cat.'

(291) Malo kto videl košku /*koški.
few who saw cat.ACC /cat.GEN
'Few saw a cat.'

(292) Esli ty videl košku /*koški, pozvoni mne.
if you saw cat.ACC /cat.GEN, call.IMP me
'If you saw a cat, call me.'

Thus, it is perhaps not surprising that minimizers like in (284)-(287) act as strict NPIs: they can occur with negation, (294), but are impossible in other environments in which weak NPIs are licensed, (295)-(299), in addition to "positive" contexts, (293). Thus, the distribution of minimizers like *i rublja* (AND rouble.GEN) seems to be identical to that of negative concord items, (293)-(299).

(293) *"Positive" context*
*Maša zaplatila i rublja /ni rublja.
Masha paid AND rouble.GEN /NCI rouble.GEN
'Masha paid a rouble.'

(294) *Under negation*
Maša ne zaplatila i rublja /ni rublja.
Masha NEG paid AND rouble.GEN /NCI rouble.GEN
'Masha didn't paid (even) a rouble.'

(295) *Scope of tol'ko 'only'*
*Tol'ko Maša zaplatila i rublja /ni rublja.
only Masha paid AND rouble.GEN /NCI rouble.GEN
'Only Masha paid a rouble.'

(296) *Scope of malo 'few'*
*Malo kto zaplatil i rublja /ni rublja.
few who paid AND rouble.GEN /NCI rouble.GEN
'Few paid a rouble.'

(297) *Question*
*Maša zaplatila i rublja /ni rublja?
Masha paid AND rouble.GEN /NCI rouble.GEN
'Did Masha pay a rouble?'

(298) *Restrictor of každyj 'every'*
*Každyj kto zaplatil i rublja /ni rublja, polučil besplatnyj kofe.
every who paid AND rouble.GEN /NCI rouble.GEN got free coffee
'Everyone who paid a rouble got free coffee.'

(299) *Antecedent of a conditional*
*Esli Maša zaplatila i rublja /ni rublja, pozvoni mne.
if Masha paid AND rouble.GEN /NCI rouble.GEN call.IMP me
'If Masha paid a rouble, call me.'

Genitive case on the NP is crucial for the *AND + NP* to act as a minimizer. If genitive case is removed, *AND + NP* becomes possible even in "positive" contexts, and is interpreted as an additive phrase. For example, in (300) we infer that Masha also paid/didn't pay other sums of money. For instance, in the positive version of the sentence, one needs to imagine the following context: Masha had to pay different sums of money to different people, and one of this sum was just a rouble, and she fulfilled all her obligations, paying a rouble as well as other sums.

(300) Maša (neg) zaplatila **[i rubl']**
Masha (NEG) paid **AND rouble.ACC**
'Masha paid/didn't pay also a rouble.'

(301) Maša oplatila **[i moj bilet]**
Masha paid **AND my ticket**
'Masha also paid for my ticket (in addition to paying for tickets of others).'

(301) presents a more natural example of the additive reading of *AND + NP*: the sentence asserts that Masha paid for the speaker's ticket, and we additionally infer that Masha paid for tickets of some other people.

Having established that constituents of the form *AND + NP.GEN* are strict NPIs, let us now use them in sentences with strong NPI subjunctives. As we see in (302)-(304), the minimizers are licensed in strong NPI subjunctives, which argues in favor of the presence of the Neg-Raising inference in such sentences.[57]

(302) Ja **ne** dumaju, čto-by Maša zaplatila **[i rublja]** /*ni
I **NEG** think COMP-SUBJ Masha paid **AND rouble.GEN** /NCI
rublja.
rouble.GEN
'I don't think Masha paid (even) a rouble.'

(303) Ja **ne** verju, čto-by on zdes' protjanul **[i nedeli]** /*ni nedeli.
I **NEG** think COMP-SUBJ he here lasted **AND week.GEN** /NCI week.GEN
'I don't believe he would have lasted here (even) a week.'

(304) Ja **ne** predpolagala, čto-by na eë lice bylo **[i gramma]** /*ni
I **NEG** think COMP-SUBJ on her face be.PST **AND gram.GEN** /NCI
gramma makijaža.
gram.GEN of.make-up
'I didn't suppose she had (even) a gram of make-up on her face.'

The sentences in (302)-(304) also show that negative concord items are not licensed in the same context, which is puzzling: if both items are strict NPIs, why would one of them be disallowed in this environment? Erschler (To appear) has recently argued with the data from colloquial emphatic negation that Russian negative concord items need to enter morphological concord with the Neg head.[58] If this is indeed the case, then we expect the sentences with the negative concord items to be ungrammatical if the Neg head was never inside of the embedded clause during

[57] These minimizers are also licensed in the absence of the subjunctive in the embedded clause under the Neg-Raising reading.

[58] Erschler's proposal is different from the proposal about negative concord in (Zeijlstra 2004) in the following respect: according to Zeijlstra, negative operator agrees with negative concord items directly, but according to Erschler, negative concord items are semantically licensed by the operator and then undergo morphological concord with the Neg head. For the purposes of the present discussion it is not crucial what exactly the agreement/concord requirement of these items is.

the derivation. The minimizers of the form *AND + NP.GEN* do not require any form of morphological concord/agreement, and thus we do not expect them to necessarily need the Neg head inside of the embedded clause. Thus, if Neg-Raising does not involve any actual raising of negation from the embedded clause, but is just a semantically derived inference (Gajewski 2005, 2007) that creates a relevant environment for licensing strict NPIs, then the pattern in (302)-(304) is what we expect to find: minimizers should be licensed with Neg-Raising, but NCIs, which require concord/agreement, should not be. For more arguments against the syntactic approach to Neg-Raising in Russian, see (Rossyaykin 2022b).[59]

5.4.2.4 Neg-Raising & Stativity Correlation

Another piece of evidence for the Neg-Raising inference in sentences with strong NPI subjunctives comes from lexical aspect. It has been observed in the literature that the ability to create Neg-Raising inferences depends on the lexical aspect of the embedding predicate (Xiang 2013, Bervoets 2014, 2020, Özyıldız 2021):

(305) **Neg-Raising & Stativity Correlation**
In order to be Neg-Raising, a predicate must be stative.
(Xiang 2013, Bervoets 2014, 2020, Özyıldız 2021)

Bervoets (2014: p. 112) writes: *"All Neg-raisers are stative, and in the rare case where an eventive counterpart of a Neg-raiser is available, this eventive counterpart does not lead*

[59] Bošković & Gajewski (2011) claim that in Russian, and in languages without articles in general, what is perceived as the Neg-Raising reading is derived in a pragmatic way, as a conversational implicature (Horn 1989), as opposed to the semantic way (Gajewski 2005, 2007). Thus, they argue, in languages like Russian the semantic environments needed for licensing strict NPIs in embedded clauses are not created. Their evidence comes from ungrammaticality of sentences like (i).

(i) *Ivan ne veril, čto Marija uedet **až do zavtrašnego dnja**.
Ivan NEG believed COMP Maria will.leave **EMPH until tomorrow's day**
'Ivan didn't believe that Maria will leave until tomorrow.'
(Bošković & Gajewski 2011: appendix 1)

They take ungrammaticality of (i) to suggest that Neg-Raising in languages like Russian cannot license strict NPIs. This is in conflict with the data from phrases of the form *AND + NP.GEN* discussed above, and also with the observations in (Rossyaykin 2022b), which both point towards the conclusion that Russian Neg-Raising does license strict NPIs. It could be that some strict NPIs have additional restrictions and thus cannot occur in sentences with Neg-Raising despite the Neg-Raising inference being derived in semantics. This issue needs further research.

to extra-strong readings with negation". Examples (306)-(307) illustrate this.

(306) *Stative 'think'* (Bervoets 2014: 112, ex. (185))

a. The farmer didn't think the tree fell until late last night.

b. The farmer didn't think rain would help the situation.
Can be interpreted as: The farmer thought that rain wouldn't help the situation.

(307) *Eventive 'think'* (Bervoets 2014: 112, ex. (186))

a. *The farmer wasn't thinking the tree fell until late last night when the barking dog startled him out of his reverie this morning.

b. As they turned the corner, the farmer wasn't thinking rain would help the situation.
Cannot be interpreted as: 'As they turned the corner, the farmer was thinking that rain wouldn't help the situation.'

In (306) 'think' receives a stative interpretation, and we observe the Neg-Raising inference. In (306a) we also see that this inference enables licensing of the *until*-phrase, which is a strict NPI, in the embedded clause. In (307) the *when*-clause and the *as*-clause are intended to bring out the eventive reading of 'think' that is available in the progressive. Under the eventive reading, the Neg-Raising reading is unavailable, and strict NPIs cannot be licensed in the embedded clause (307a).

The correlation between Neg-Raising and stativity (305) holds for Russian too. Verbs like *dumat'* 'think', that take strong NPI subjunctives, are atelic stative predicates, and they allow Neg-Raising inferences. Telic eventive counterparts formed from the same verbal roots, e.g. like *podumat'* 'have/form a thought', do not permit Neg-Raising inferences. Let us briefly illustrate this generalization.

In the Russian aspectual system, most atelic predicates are imperfective, and most telic predicates are perfective,[60] so the distinction between the two classes

[60] An exception to this generalization are delimitatives like in (i), which are perfective atelic predicates: in (i) the writing event is completed, but the culmination is not reached.

(i) Ira **po**-pisala statju **dva časa**.
Ira **PFV**-write.PST paper **two hours**
'Ira wrote the paper for two hours.'
(the writing event is finished, but the paper is not written)

of verbs formed from the same roots will be realized morphologically as imperfective/perfective distinction. All the verbs discussed before as verbs taking strong NPI subjunctives bear imperfective morphology, and as compatibility with *for*-adverbials like *dve minuty* 'two minutes' in (308) illustrates, these predicates are atelic.

(308) Maša **dve minuty** dumala /verila /predpolagala,
Masha **two minutes** think.PST.**IPFV** /believe.PST.**IPFV** /suppose.PST.**IPFV**
čto Katja obraduetsja čerepaxe.
COMP Katya will.be.happy toroise.DAT
'Masha thought/believed/supposed for two minutes that Katya will be happy (to get) a tortoise.'

These verbs have perfective counterparts which are telic, as their incompatibility with *for*-adverbials like *dve minuty* 'two minutes' shows (309).[61]

(309) *Maša **dve minuty** **po**-dumala /**po**-verila /predpoložila,
Masha **two minutes** **PFV**-think.PST /**PFV**-believe.PST /suppose.PST.**PFV**
čto Katja obraduetsja čerepaxe.
COMP Katya will.be.happy toroise.DAT
'Masha thought/believed/supposed for two minutes that Katya will be happy (to get) a tortoise.'

Having determined that imperfective predicates like *dumat'* 'think' are atelic, we now can ask whether they are statives or activities. The main difference between statives and all other aktionsarten is that they are not dynamic. Due to this lack of

[61] The verb *podumat'* does have an atelic use, which surfaces when it combines with *about*-PPs and questions (i). What we see in (i) seems to be a delimitative reading, since here Masha spent two minutes entertaining a certain issue/question, but has not necessarily reached an opinion.

(i) Maša **dve minuty** **po**-dumala ob ètom /kogo priglasit' na večerinku.
Masha **two minutes** **PFV**-think.PST about this /who invite.INF on party
'Masha thought for two minutes about this/who to invite to the party.'

This delimitative reading of *podumat'* seems to be unavailable with declarative complements. Note also that the same reading is not possible with *poverit'* when it takes a DP complement:

(ii) *Maša **dve minuty** **po**-verila ètomu utveržderiju.
Masha **two minutes** **PFV**-believe.PST this claim.DAT
'Masha entertained believing this claim for two minutes (but didn't necessarily believe it).'

dynamicity, pseudo-clefts like in (310a) are odd with stative predicates, as well as question-answer pairs like the one in (310b).

(310) a. #What happened yesterday is that Mary liked pizza.
b. A: What happened yesterday?
B: #Anton knew French.

We see the same oddness with atelic predicates like *dumat* 'think' (311b) as answers to questions like *What happened yesterday?* (311a). Note that activities like 'run around the room' or 'dance on the table' are fine answers to the question in (311a), (311c). This suggests that predicates like *dumat* 'think' are statives.[62]

(311) a. Čto včera proisxodilo?
what yesterday happen.PST.IPFV
'What was happening yesterday?'
b. #Maša dumala /verila /predpologala, čto Katja
Masha think.PST /believe.PST /suppose.PST.IPFV COMP Katya
obraduetsja čerepaxe.
will.be.happy toroise.DAT
'Masha thought/believed/supposed that Katya will be happy (to get) a tortoise.'
c. Maša begala po komnate /tancevala na stole
Masha run.PST.IPFV around room /dance.PST.IPFV on table
/govorila po telefonu (dva časa)
/talk.PST.IPFV on phone (two hours)
'Masha ran around the room/danced on the table/talked on the phone (for two hours).'

[62]With 'think' it is possible to get a dynamic reading if the embedded complement is a question:

(i) a. Čto včera proisxodilo? Počemu ty byla tak zla?
what yesterday happen.PST.IPFV why you were so mad
'What was happening yesterday? Why were you so mad?'
b. Maša dva časa dumala čto ej nadet' na večerinku.
Masha two hours think.PST what she.DAT put.on.INF on party
'Masha was thinking for two hours (about) what to put on for the party.'

With a declarative complement such a reading seems to be very hard, if not impossible, to get.

Perfective predicates like *podumat'* are, expectedly, dynamic and can be answers to questions like *What happened yesterday?* (312).

(312) a. Čto včera proizošlo?
what yesterday happen.PST.PFV
'What happened yesterday?'

b. Maša po-dumala /po-verila /predpoložila, čto Katja
Masha PFV-think.PST /PFV-believe.PST /suppose.PST.PFV COMP Katya
obraduetsja čerepaxe.
will.be.happy toroise.DAT
'Masha had a thought/believed/made an assumption that Katya will be happy (to get) a tortoise.'

Perfective counterparts of verbs like 'think' are telic, as is evidenced for example by their compatibility with *in*-adverbials, (313). Moreover, interpretations of sentences like (313) and (314) suggest that they are achievements.

(313) **Context:** Masha is participating in an escape room quest with her friends.
Maša **za dve minuty** ?**po**-dumala /**po**-verila /predpoložila,
Masha **in two minutes PFV**-think.PST /**PFV**-believe.PST /suppose.PST.**PFV**
čto odin iz igrokov dolžen zalest' v čemodan.
COMP one of players must get.into.INF in suitcase
'Masha had a thought/believed/made an assumption in two minutes that one of the players should get into the suitcase.'
⇒ time **before** Masha had a thought/accepted something as a belief/made an assumption was 2 minutes

(314) **Context:** Masha is participating in an escape room quest with her friends.
Maše potrebovalos' **dve minuty** čto-by **po**-dumat'
Masha.DAT take.PST **two minutes** COMP-SUBJ **PFV**-think.INF
/**po**-verit' /predpoložit', čto odin iz igrokov dolžen
/**PFV**-believe.INF /suppose.INF.**PFV** COMP one of players must
zalest' v čemodan.
get.into.INF in suitcase
'It took Masha two minutes to have a thought/believe/make an assumption that one of the players should get into the suitcase.'

⇒ time **before** Masha had a thought/accepted something as a belief/made an assumption was 2 minutes

While *in*-adverbials like *za dve minuty* 'in two minutes' are acceptable with telic verbs like *podumat'*, they do not describe the duration of the event described by the verb, but the duration of some preparation period preceding the event described by the verb, (313). This suggests that the verb describes an instantaneous event that has a culmination point but no duration, and the predicate is thus an achievement. The *take-time* test, (314), points to the same conclusion: this construction can only describe the time it took to prepare for the event and cannot describe the time that the event itself took, suggesting that the predicates under consideration are achievements. The root *dum* 'think' can however combine with a different preverb, *pri-*, which seems to create an accomplishment 'invent, decide':

(315) **Context:** Masha is creating an escape room quest for her friends.

Maša **za dve minuty pri**-dumala, čto odin iz igrokov dolžen
Masha **in two minutes PFV**-think.PST COMP one of players must
zalest' v čemodan.
get.into.INF in suitcase
'Masha decided/arrived at the idea that one of the players should get into the suitcase in two minutes.'
⇒ time **of Masha's thinking** was 2 minutes, at the end of which she arrived at the idea that one of the players should get into the suitcase

Thus, while imperfective verbs like *dumat'* 'think' are stative, their perfective counterparts can be both achievements and accomplishments, depending on the preverb involved in their formation. Importantly, both of these perfective counterparts do not allow Neg-Raising inferences, as is shown in (316).

(316) **A:** What did you think of the suggestion to buy Katya a tortoise?

B: #Ja ne po-dumala /po-verila /predpoložila /pri-dumala,
I NEG PFV-think.PST /PFV-believe.PST /suppose.PST.PFV /PFV-think.PST
čto Katja obraduetsja takomu podarku.
COMP Katya will.be.happy such present

'I didn't think/believe/suppose Katya will be happy about such present.'

The infelicity of B's response in (316) arises from the fact that the sentences in (316) do not have a reading where negation is interpreted in the embedded clause: *I thought/believed/supposed not-p*. Thus, all that B is saying is that they didn't have a thought/belief/assumption with the content *p*, which is not informative given the question that they were asked—a question asking about what their opinion of the suggestion was—hence the infelicity.

Telic counterparts of verbs like 'think' also cannot, when negated, license strict NPIs in the embedded clause. As we see in (317)-(318), adding minimizers of the form *AND + NP.GEN* to the embedded clause results in ungrammaticality.

(317) *Ira **ne** **po**-verila /**po**-dumala /**pri**-dumala, čto on protjanul
Ira NEG PFV-believe.PST /PFV-think.PST /PFV-think.PST COMP he last.PST
v ètom meste [**i** **nedeli**].
in this place AND **week.NEG**
'Ira didn't believe/think that he lasted in this place (even) a week.'

(318) *Ja **ne** **za**-podozrila /**po**-nadejalas' /predpoložila, čto na eë
I NEG PFV-suspect.PST /PFV-hope.PST /suppose.PST.PFV COMP on her
lice bylo [**i** **gramma**] makijaža.
face be.PST AND **gram.GEN** of.make.up
'I didn't suspect/hope/suppose that on her face there was (even) a gram of make-up.'

Thus, we can conclude that the generalization that was made for English holds for Russian too, (319): predicates must be stative to have the Neg-Raising inference.[63]

[63]The generalization in (305) and the discussion above did not address whether the Neg-Raising inference is possible with activities in Russian, as the verbal roots we considered didn't seem to have forms that easily allow activity readings with declarative clauses. However verbs like *razmyšljat'* 'contemplate' suggest that the Neg-Raising inference is not possible with activities either. The sentence in (i) can be an answer to the question *Čto proisxodilo?* 'What was happening?', which, together with the compatibility with *for*-adverbials, suggests that we are dealing with an activity predicate.

(i) Maša včera dva časa razmyšljala, čto nam skoree vsego sleduet
Masha yesterday two hours contemplate.PST.IPFV COMP we.DAT probably should
poexat' drugim maršrutom.
go.INF other route.INSTR
'Masha was contemplating the thought *"We should probably go the other route"* for two hours yesterday.'

(ii) shows that this predicate does not allow the Neg-Raising inference: the negation that appears

(319) **Neg-Raising & Stativity Correlation in Russian:**
In order to be Neg-Raising, an attitude verb in Russian must be stative:
a. *stative predicates* (e.g., *dumat'*) allow the Neg-Raising inference
b. *eventive predicates* like achievements (e.g. *po-dumat'*) and like accomplishments (e.g., *pri-dumat'*) disallow the Neg-Raising inference

This generalization provides us with another test for the Neg-Raising inference: if a certain negated sentence is possible with eventive matrix predicates as well as stative matrix predicates, it does not have an obligatory Neg-Raising inference. If however a sentence is restricted to stative embedding verbs, such a restriction can be explained if the Neg-Raising inference must be present. Applying this test to the strong NPI subjunctives, we see that they require a stative matrix verb, (320)-(321).

(320) *Ja **ne** **po**-dumala /**pri**-dumala /**po**-verila, **čto-by** Lena pila vodku.
I **NEG PFV**-think.PST /**PFV**-think.PST /**PFV**-believe.PST **COMP-SUBJ** Lena drink.PST vodka
'I didn't think/believe that Lena drank vodka.'

(321) *Olja **ne** **za**-podozrila /predpoložila /**po**-nadejalas', **čto-by** u Viki bylo stol'ko deneg.
Olya **NEG PFV-**suspect.PST /suppose.PST.**PFV** /**PFV**-hope.PST **COMP-SUBJ** by Vika.GEN be.PST so.much money
'Olya didn't suspect/suppose/hope that Vika would have so much money.'

The examples in (320)-(321) show that even in the presence of negation, strong polarity subjunctives are impossible when the matrix embedding predicate is eventive. This restriction is explained if in order to license a strong NPI subjunctive the Neg-Raising inference needs to be derived, and this inference is possible only if the

in the matrix clause cannot be interpreted in the embedded clause.

(ii) Maša ne razmyšljala, čto nam skoree vsego sleduet poexat' drugim maršrutom.
Masha NEG contemplate.PST.IPFV COMP we.DAT probably should go.INF other route.INSTR
'Masha wasn't contemplating the thought *"We should probably go the other route"*.'
↛ 'Masha was contemplating the thought *"We shouldn't probably go the other route"*.'

matrix predicate is stative, (319).

To sum up, in sentences with strong NPI subjunctives we perceive the Neg-Raising inference, the presence of which is additionally corroborated by the ability of strict NPI minimizers *AND + NP.GEN* to occur inside the embedded clause and by the aspectual restriction that the embedding verb must be stative.[64]

The properties of strong NPI subjunctives are thus summarized in (322).

(322) **Strong NPI subjunctives:**

a. occur with stative epistemic verbs like *dumat'* 'think', *verit'* 'believe', *predpolagat'* 'suppose', *podozrevat'* 'suspect' etc.
b. occur exclusively under negation and in no other environment
c. exhibit no temporal or aspectual restrictions
d. exhibit an obligatory Neg-Raising inference

[64] A note about *nadejat'sja* 'hope' is in order with respect to the Neg-Raising inference. With all other verbs of this class, the Neg-Raising inference can be paraphrased as inferring $V\neg p$ from the sentence of the form $\neg Vp$. This characterization however is wrong for 'hope'. Consider the naturally occuring example in (i), which contains negation of 'hope' with the subjunctive complement.

(i) **Context:** A priest speculates that a certain message might have been conveyed to Putin that he considers true and wants Putin to understand.

Ne nadejus', čto-by Putin ponjal èto soobščenie "zdes' i nemedlenno".
NEG I.hope COMP-SUBJ Putin understand.PST this message here and momentarily
Sudja po ego slovam, <...> prezident eščë očen' dalëk ot duxovnogo ponimanija
judging on his words president still very far from spiritual understanding
èt-ix problem. (from http://portal-credo.ru, page no longer exists)
these-GEN problems.GEN

'I don't hope that Putin would understand this message immediately. Judging by his words, <...> the president is still very far away from the spiritual understanding of these problems.'

If the negation was just interpreted in the embedded clause, we would get the interpretation *"The priest hopes that Putin didn't understand this message immediately"*. This is clearly false in the context of this article, as the priest wants Putin to understand the message, and would undoubtedly have no objections to Putin understanding the message immediately if he considered that to be possible. So what kind of Neg-Raising reading is (i) then? It seems that the sentence in (i) functions as a belief report: it conveys that the priest thinks that the negation of the embedded proposition is true—Putin didn't understand this message immediately. This inference is supported by the follow-up, which states that Putin is far away from understanding of the issues. The sentence also conveys that the priest considers the embedded proposition desirable, he would like it to hold.

Thus, it seems that the Neg-Raising reading of 'hope' for a sentence of the form $\neg$ *hope p* is something like *desire* $p \wedge$ (*think* $\neg$ *p*). One hypothesis for how such a Neg-Raising reading would come about could be that 'hope' is a verb that presupposes *desire p* and asserts *think p*, with the desire inference projecting through negation. I leave the Neg-Raising behavior of 'hope' for future research.

5.4.3 Towards an account of strong NPI subjunctives

There are two questions that strong NPI subjunctives raise: a question about their distribution and a question about the class of verbs that allow them, (323).

(323) **Q1:** Why do strong NPI subjunctives have the distribution that they have?

Q2: Which verbs take strong NPI subjunctives, and why only these verbs?

Here I will try to sketch some ideas concerning the first question, but I unfortunately won't be able to address the second one, even though the empirical generalization seems quite clear: strong NPI subjunctives occur with stative epistemic verbs that permit Neg-Raising inferences.

I would like to suggest that the distribution of strong NPI subjunctives can be explained if we postulate a different set of alternatives and a different operator that acts on them. The operator that we will need is in (324): it has a meaning similar to that of *even*, and such an operator for NPI licensing has been proposed in the literature (Krifka 1995, Lahiri 1998, Chierchia 2013, Crnič 2019, a.o.).

(324) $[\![\mathrm{E}_{ALT,i}]\!]^{s,g} =$
λp: $\forall$q[(q$\neq$p $\wedge$ q $\in g(\mathrm{ALT})) \Rightarrow (\mathcal{L}(\mathrm{p},g(\mathrm{i}))_s < \mathcal{L}(\mathrm{q},g(\mathrm{i}))_s)$]. p(s)

This operator has two indices: ALT corresponds to the alternative set of propositions, and i is the index of the attitude holder, who will be the judge of likelihood of propositions in ALT. The operator introduces a presupposition that all propositions q in ALT that are not equivalent to the prejacent p are such that the likelihood of p according to $g(i)$ is less than the likelihood of q.

The alternatives that we are considering will be not subdomain alternatives, but just a set containing the prejacent and its negation:[65]

[65] To derive such a set compositionally, we could postulate the meaning for *by* in (i), and assume that we will be only considering functions of type <t,t> that are not constant, i.e., that depend on the truth of the prejacent. There are two such functions: a function that takes a truth-value and returns it back (λt$_t$.t), and a function that takes a truth-value, and returns the opposite truth-value back (λt$_t$.|t-1|). Thus, the examples of meanings of *by*P under different focus assignment functions will be as is illustrated in (ii). The set of $<2, tt>$-alternatives of *by*P will be the set {{s: Lena drank vodka in s}, {s: Lena didn't drink vodka in s}}.

(i) $[\![by_{F_{<n,tt>}}]\!]^{s,g,h} =$
a. λt$_t$. t — if $<n, tt>$ is not in the domain of h;
b. $h(<n, tt>)$ — otherwise.

(325) **Substitutions = ALT:**
{{s': Lena drank vodka in s'},
{s': Lena did not drink vodka in s'}}

I would like to suggest that we might need *by* to activate {p, ¬p} alternatives and generate the likelihood inference of the kind that $E_{ALT,i}$ does outside of the domain of clausal embedding. Consider (326):

(326) Prinesla **by** Maša pizzu!
bring.PFV.**PST SUBJ** Masha pizza
'If only Masha brought pizza!'
a. ⇒ Masha bringing pizza is desirable for the speaker.
b. ⇒ According to the speaker, Masha bringing pizza is less likely than Masha not bringing pizza.

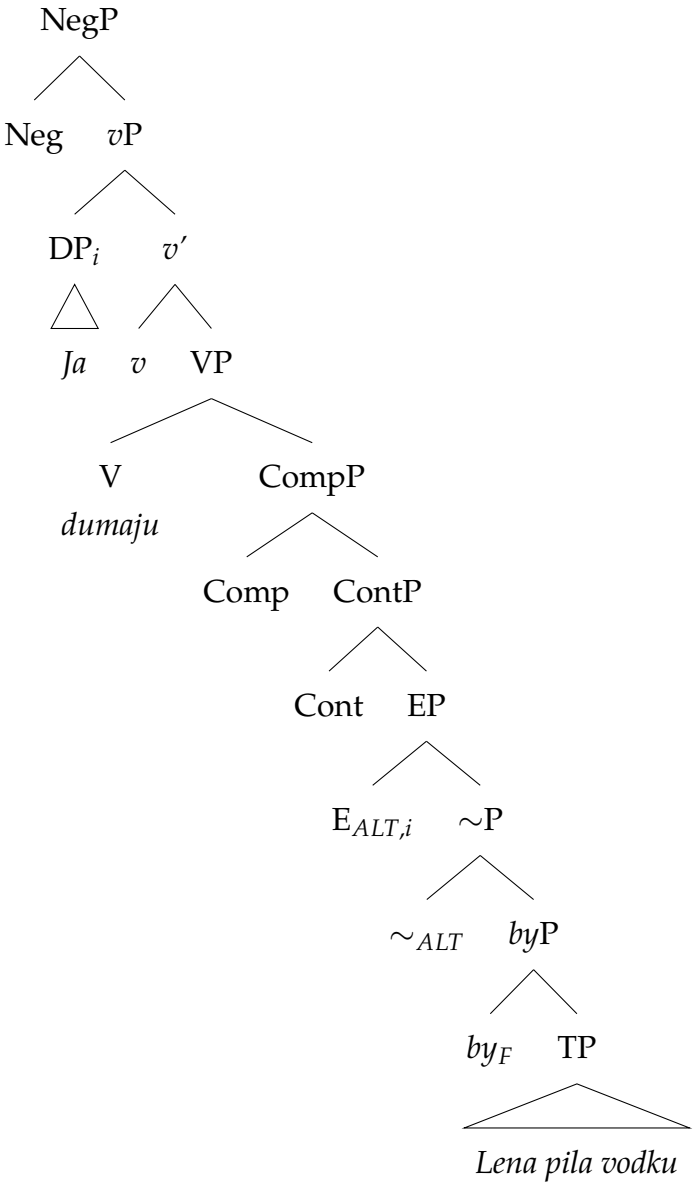
This matrix sentence with the subjunctive particle *by* is interpreted as a desire report: the speaker is expressing that they wish that Masha would bring pizza. In addition to the desire inference, we get a likelihood inference: the speaker considers Masha bringing pizza to be less likely than Masha not bringing pizza. This seems to be the same inference that we described as a Neg-Raising inference in sections above, barring the fact that likelihood in an unembedded clause is evaluated with respect to the speaker. The sentence in (326) however contains no negation and no clausal embedding. If *by* in the sentence in (326) activates {p, ¬p} alternatives, and then $E_{ALT,i}$ operates on them, we will get the observed inference that according to the speaker, *p* is less likely compared to ¬*p*.

I propose that sentences with strong subjunctives like (327) have LFs like (328).

(327) Ja ne dumaju čto-**by** Lena pila vodku.
I NEG think COMP-**SUBJ** Lena drink.PST vodka
'I don't think that Lena drank vodka.'

(ii) ***Examples of meanings of byP under different h***
a. $[\![by_{F_{<2,tt>}} \mathrm{P}]\!]^{s,g,\{\}}$ = 1 iff Lena drank vodka in *s*
b. $[\![by_{F_{<2,tt>}} \mathrm{P}]\!]^{s,g,\{<2,tt>\rightarrow \lambda t.t\}} = [\![[_{TP}\ \textit{Lena pila vodku}]]\!]^{s,g,h}$
= 1 iff Lena drank vodka in *s*
c. $[\![by_{F_{<2,tt>}} \mathrm{P}]\!]^{s,g,\{<2,tt>\rightarrow \lambda t.|t-1|\}} = |[\![[_{TP}\ \textit{Lena pila vodku}]]\!]^{s,g,h}-1|$
= 1 iff Lena didn't drink vodka in *s*

(328) The LF for (327) with *dumat'* 'think'



By will combine directly with the embedded TP, and the operator $E_{ALT,i}$ will combine right on top of it, inside the embedded Cont-CP. If the alternatives {p, ¬p} are activated, then the contribution of $E_{ALT,i}$ will amount to the Neg-Raising inference, (329): the operator will introduce a presupposition that the likelihood of p according to the attitude holder is less than the likelihood of $\neg p$, which, according to our assumptions in (279) about what beliefs are, is equivalent to the presupposition that the attitude holder believes $\neg p$.

(329) **Presupposition of $\mathrm{E}_{ALT,i}$**
$\mathcal{L}(\{\text{s': Lena drank vodka in s'}\},\textsc{ah})_s <$
$\mathcal{L}(\{\text{s': Lena didn't drink vodka in s'}\},\textsc{ah})_s$
$\Leftrightarrow \exists x[x \in BS_{\textsc{ah},s} \wedge \textsc{Cont}(x)=\{\text{s': Lena didn't drink vodka in s'}\}]$

Thus, under the proposal sketched above sentences with strong NPI subjunctives have the same inference as Neg-Raising, but it arises not due to the excluded middle presupposition (Bartsch 1973, Gajewski 2005, 2007, a.o.), but due to an operator like *even* inside of the embedded clause.

The presupposition introduced by $\mathrm{E}_{ALT,i}$ will not lead to any contradictions in the context of negation:

(330) **Prejacent in (328) with Neg:**
$\lambda\text{s}.\neg\exists x[x \in BS_{\textsc{ah},s} \wedge {}^{\Vdash_e}\textsc{Cont}(x)=\{\text{s': Lena drank vodka in s'}\}]$
The attitude holder doesn't have a belief "Lena drank vodka"

Sentence with negation in (328) asserts that it's not the case that the attitude holder has a belief with content *"Lena drank vodka"*. This is compatible with the attitude holder having a belief *"Lena didn't drink vodka"*, and thus the presupposition introduced by $\mathrm{E}_{ALT,i}$ does not lead to a contradictory meaning.

In the absence of negation, $\mathrm{E}_{ALT,i}$'s presupposition will lead to a meaning that is always false:

(331) **Prejacent in (328) with no Neg:**
$\lambda\text{s}.\exists x[x \in BS_{\textsc{ah},s} \wedge {}^{\Vdash_e}\textsc{Cont}(x)=\{\text{s': Lena drank vodka in s'}\}]$
The attitude holder has a belief "Lena drank vodka"
$\Leftrightarrow \mathcal{L}(\{\text{s': Lena drank vodka in s'}\},\textsc{ah})_s >$
$\mathcal{L}(\{\text{s': Lena did not drink vodka in s'}\},\textsc{ah})_s$

By our definition of what it means to be a belief, (279), if the attitude holder has a belief *"Lena drank vodka"*, then they consider Lena drinking vodka more likely than Lena not drinking vodka. $\mathrm{E}_{ALT,i}$'s presupposition on the other hand demands that the attitude holder find Lena drinking vodka less likely than her not drinking vodka, or in other words, it demands that the attitude holder have a belief *"Lena didn't drink vodka"*. Thus, whenever $\mathrm{E}_{ALT,i}$'s presupposition will be met, the sentence will be false. Since it is a functional item ($\mathrm{E}_{ALT,i}$) which makes the meaning

of the sentence trivial, it will be L-analytic, and thus ungrammatical.

Note that sentences with $\text{E}_{ALT,i}$ will be trivial not only in Upward-Entailing environments, but in all sentences that have some "positive" component. For example, sentences with 'only' are SDE, but have a presupposition that the prejacent is true.

(332) **In the scope of 'only':**
λs: $\exists x[x \in BS_{\text{AH},s} \wedge {}^{\Vdash_e}\text{CONT}(x)=\{\text{s': Lena drank vodka in s'}\}]$.
$\forall z\,[(z \neq AH) \Rightarrow \neg\exists y[y \in BS_{z,s} \wedge {}^{\Vdash_e}\text{CONT}(y)=\{\text{s': Lena drank vodka in s'}\}]]$
Presupposes that the attitude holder has a belief "Lena drank vodka", asserts that others do not have such a belief.

$\rightarrow \mathcal{L}(\{\text{s': Lena drank vodka in s'}\},\text{AH})_s >$
$\mathcal{L}(\{\text{s': Lena did not drink vodka in s'}\},\text{AH})_s$

This presupposition will be in contradiction with the presupposition introduced by $\text{E}_{ALT,i}$: it cannot both be the case that the attitude holder has a belief *"Lena drank vodka"* and *"Lena didn't drink vodka"* at the same time (see section 5.4.2.2).

In sentences like *Few thought that Lena drank vodka* and *Everyone who thought that Lena drank vodka was at the party* there might be an existential presupposition that *Someone thought that Lena drank vodka*, which would again violate $\text{E}_{ALT,i}$'s presupposition. Whether there is some "positive" component in conditionals and questions, where strong NPI subjunctives are impossible as well, needs further research.

To sum up, in this section I sketched a direction for analyzing strong NPI subjunctives, which relied on activating different alternatives (prejacent and its negation) and having inside of the embedded clause a focus-sensitive operator $\text{E}_{ALT,i}$, which has a meaning similar to *even* and introduces a presupposition that in the opinion of the attitude holder, the prejacent is less likely than the other proposition in the alternative set—its negation. Such a presupposition will be in conflict with any "positive" component of the meaning, and the conjecture is that this will give us the distribution of strong NPI subjunctives.

Much more work needs to be done on strong NPI subjunctives. If the sketch provided above is on the right track, the main question that emerges is: what is the relation between $\text{E}_{ALT,i}$ and belief-describing attitude verbs, why is $\text{E}_{ALT,i}$ only possible in embedded clauses of such verbs (stative epistemic Neg-Raisers)? Why do we activate different alternatives with these verbs, and can't activate {p, $\neg$p} alternatives in other cases? Does the fact that these verbs combine the embedded

clause *via the Situation argument* path play a role? Furthermore, it would be good to understand how exactly the individual argument of this focus operator (the person who evaluates the likelihood) is linked to the attitude holder.

5.5 Concluding remarks

In this chapter I have looked at a case of environment-sensitivity in clausal embedding: the phenomenon of subjunctive clauses in Russian behaving like polarity items with some verbs. I have discussed two kinds of polarity subjunctives, which I called weak and strong respectively.

Weak NPI subjunctives occur with verbs like *pomnit'* 'remember' as long as the sentence is SDE with respect to the embedded proposition. I argued that embedded clauses in such sentences are existential quantifiers over situations, with the embedded proposition as a restrictor. The subjunctive morpheme in such cases activates the subdomain alternatives of the embedded proposition, which are later acted upon by the operator O_{ALT}, which requires that the prejacent entails all of its alternatives. I argued that the meaning of the embedded clause is an important factor of whether a verb could combine with weak NPI subjunctives: clauses that contain the Cont head disrupt the monotonicity, so, unless there is an independent way to restore it, such clauses cannot be weak NPIs.

Strong NPI subjunctives occur with verbs like *dumat'* 'think' exclusively under negation. I argued that in such clauses the set of alternatives that are activated by *by* consists just of the prejacent and its negation. I suggested that there is an operator inside of the Cont-CP which has a meaning similar to *even*: it says that the prejacent is less likely than its alternative—the negation of the prejacent. Unless the sentence is negated, the presupposition of the embedded focus operator will contradict other components of the meaning of the sentence (e.g., *Lena thinks that p* and *Lena thinks that p is less likely than not p*), leading to ungrammaticality.

Many open questions remain. For example, we might wonder how many meanings does the subjunctive particle *by* generally have, and whether there is a way to unify them somehow? For example, could we think of *by* as the spell-out of the focus feature *F* on some other syntactic heads? Also some more general questions emerge at this point: What determines which alternatives are activated? And what kinds of focus operators that operate on alternatives exist in natural languages?

For example, one hypothesis we could pursue is that there is only one silent focus operator, which always presupposes that the prejacent is less likely than its alternatives ($L(p)_s < L(q)_s$), but what exactly that means depends on the set of alternatives that it receives, (333). If it gets a set of alternatives that are ordered by entailment, it requires that the prejacent entails all the alternatives in the set ($=O_{ALT}$), but if it gets a set of mutually incompatible alternatives, it requires that the prejacent is less likely than the other alternatives in the set ($= E_{ALT,i}$).

(333) **A single operator based on O_{ALT} and $E_{ALT,i}$:**
λp: $\forall q[(q \neq p \wedge q \in ALT) \Rightarrow (L(p)_s < L(q)_s)]$. $p(s)$
a. if $\forall q \neq p$ in ALT: $(p \Rightarrow_s q) \vee (q \Rightarrow_s p)$, then
$(L(p)_s < L(q)_s)$ iff $p \Rightarrow_s q$
b. if $\forall q \neq p$ in ALT, $\forall s$: $(p(s)=1 \rightarrow q(s)=0)$, then
$(L(p)_s < L(q)_s)$ iff for the $g(i)$, $(\mathcal{L}(p,g(i))_s < \mathcal{L}(q,g(i))_s)$

This would still leave the question of why *by* activates different alternatives in the two kinds of polarity subjunctives open.[66] Why can't we have O_{ALT} in clauses with *dumat'* 'think', and $E_{ALT,i}$ in clauses with *pomnit'* 'remember'? Another important question is whether the path of integration of an embedded clause matters for which alternatives could be activated: do *via the Theme path* and *via the Situation* path allow different alternatives to be activated?

5.6 Supplementary materials

Here I provide some additional materials related to the topic of polarity subjunctives. Section 5.6.1 discusses other uses of the particle *by* in the Russian grammar. Section 5.6.2 provides data on weak polarity subjunctives in Italian and French. Section 5.6.3 illustrates the distribution of different kinds of indefinites in Russian that are not possible in episodic Upward-Entailing environments. Section 5.6.4 discusses the Bagel Problem in Russian in more detail. Section 5.6.5 discusses another apparent exception to the licensing condition for weak NPIs in Russian: non-monotone quantifiers like *rovno* 'exactly'.

[66] There is an aspect of this question that is especially curious: why verbs like *dumat'* 'think', which are monotonic in the virtue of describing beliefs, do not allow weak NPI subjunctives, even though they allow pronominal weak NPIs inside of the embedded clause?

5.6.1 Russian *by*

Subjunctive in Russian is a particle *by* that surfaces in multiple kinds of expressions within the Russian grammar (for discussion of *by*'s distribution and uses see Švedova 1980, Brext 1985, Šeljakin 1999, Dobrushina 2012, Pekelis 2014, Dobrushina 2016a,b, a.o.). Here are some of its uses. First, *by* can occur in some root clauses:

(334) ***By* in root clauses: expressing a wish**

a. *Finite clauses*

Končilsja **by** semestr uže!
finish.PST **SUBJ** semester already
'(I wish) that the semester would be over already!'

b. *Infinitives*

Vypit' **by** chaju!
drink.INF **SUBJ** tea
'(I wish) to drink tea!'

As we see in (334), root clauses with *by* are interpreted as exclamatives which express the speaker's wish. In (334a) the verb is finite, in (334b) it is an infinitive, and in the latter case the speaker is not only the holder of the wish, but also the agent of the infinitival predicate. Morphologically *by* is an enclitic, which usually occupies either the second position in the sentence, or occurs after the main predicate (see discussion in Dobrushina 2016b for more details). When it occurs in a finite clause, the verb has to surface with the past tense morphology regardless of the interpretation of the sentence (see von Fintel & Iatridou To appear on X-marking). This is illustrated in (335), where we see that the verb in the past tense is compatible with any temporal adverbs (335a), but using present or future tense forms results in ungrammaticality (335b)-(335c). Fake past occurs in all tensed clauses with *by*.[67]

(335) a. Vyigrali **by** my včera /seičas /zavtra!
win.**PST** **SUBJ** we yesterday /now /tomorrow
'(I wish) that we won yesterday/would win now/tomorrow!'

[67] Diachronically, the particle *by* is a form of the verb 'be'. Sičinava (2004) argues that finite clauses with *by* have their origin in a plurperfect form consisting of an auxiliary and a participle: *by* was the past tense of 'be', and what is currently a verb in the past tense used to be a participle.

b. *Vyigryvaem **by** my seičas!
win.**PRS** **SUBJ** we now
'(I wish) that we would win now!'

c. *Vyigraem **by** my zavtra!
win.**FUT** **SUBJ** we tomorrow
'(I wish) that we would win tomorrow!'

By in root exclamatives seems to come with an inference that according to the speaker, the proposition expressed by the clause is less likely to hold than the opposite proposition, as is illustrated in (336).

(336) Prinesla **by** Maša pizzu!
bring.PFV.**PST** **SUBJ** Masha pizza
'If only Masha brought pizza!'

a. ⇒ Masha bringing pizza is desirable for the speaker.
b. ⇒ According to the speaker, Masha bringing pizza is less likely than Masha not bringing pizza.

Second, we obligatorily see *by* in complements of some embedding verbs, for example with *xotet'* 'want', *neobxodimo* 'nesessary' and *prikazat'* 'order', (337).

(337) *"Selected" subjunctives*

a. Ja xoču čto-**by** /*čto moi tezisy prinjali na konferenciju.
I want COMP-**SUBJ** /COMP my abstract accept.**PST** on conference
'I want my abstract to be accepted at the conference.'

b. Neobxodimo, čto-**by** /*čto byla izmenena sudebnaja
necessary COMP-**SUBJ** /COMP be.**PST** changed judicial
praktika.
practice
'It's necessary that the judicial practice is changed.'

c. Ira prikazala, čto-**by** /*čto vse šli zavtrakat'.
Ira ordered COMP-**SUBJ** /COMP everyone go.**PST** to.breakfast
'Ira ordered that everyone would go have breakfast.'

Here we see that *by* attaches to the complementizer *čto*. I refer to embedded clauses that have *by* attached to the complementizer as subjunctive clauses, and to

čto-clauses that lack *by* as indicative clauses. As we see, subjunctive complement clauses come with fake past tense just as other uses of *by* do, suggesting that it is plausible to decompose *čto-by* into two distinct elements, the complementizer *čto* and the particle *by* that cliticizes to it.

Third, we see the subjunctive particle inside of expressions that function as weak NPIs. Russian has a series of pronouns that are formed by attaching a number of particles to *wh*-words: the subjunctive particle *by*, the particle *to*, which often marks specificity, expletive negation *ni*, and the verb 'be' in the form of the past tense. The whole complex has the distribution of the *wh*-word, and occurs in contexts which admit weak NPIs, (338a)-(338b).

(338) *Inside the structure of weak NPIs*

a. Každyj, kto sdelaet na uroke [kakoj **by** to ni bylo]
everyone who do.FUT on lesson what.kind **SUBJ** SPEC NEG be.PST
doklad, polučit xorošuju ocenku.
presentation get.FUT good grade
'Everyone who will do any presentation during the lesson will get a good grade.'

b. Tol'ko Lena prinesla v gosti [čto **by** to ni bylo].
only Lena brought in guests what **SUBJ** SPEC NEG be.PST
'Only Lena brought anything while visiting.'

Fourth, *by* also occurs in counterfactual conditionals, both in the antecedent and in the consequent:

(339) *Counterfactual conditionals*

Esli **by** vypal sneg, studenty ne pošli **by** na pary.
if **SUBJ** fall.down.PST snow students NEG go.PST **SUBJ** on lessons

'If the snow had fallen, the students wouldn't have gone to classes.'

Fifth, the subjunctive particle can occur in several kinds of relative clauses, for example in free relatives (340a) and in relatives under intensional verbs (340b).

(340) **Certain relative clauses**

a. *Free relatives*
Ja s"em čto **by** ty ni prigotovil.
I eat.FUT what **SUBJ** you NEG cook.PST
'I will eat whatever you cook.'

b. *Relatives under intentional verbs*
Ja išču devušku, kotoraja **by** razgovarivala na vengerskom.
I seek young.woman REL.FEM **SUBJ** speak.PST on Hungarian
'I am looking for a young woman who speaks Hungarian.'
(✓ there might not be such a girl)

Finally, *by* also occurs in purpose clauses, (341), and causative constructions, (342). In the former case the particle is obligatory, and the clause looks identical to subjunctive complement clauses, with *by* being attached to the complementizer *čto*.

(341) *Purpose clauses*
Mitja podnjal ruku čto-**by** /*čto zadat' vopros.
Mitya raise hand COMP-**SUBJ** /COMP ask.INF question
'Mitya raised his hand in order to ask a question.'

In the latter case the subjunctive particle is optional. In (342) and (343) we see naturally occuring examples with subjunctive and indicative clauses in the causative construction respectively.

(342) *Causative construction with Subjunctive* <Link-to-source>
On sdelal tak, **čto-by** ob ix mukax uznal ves' mir.
he made so **COMP-SUBJ** about their suffering find.out.PST whole world
'He made it so that the whole world would learn about their suffering.'

(343) *Causative construction with Indicative* <Link-to-source>
Saša sdelal tak, **čto** ves' šou-biznes kategoričeski rezko
Sasha made so **COMP** whole show-business categorically abruptly
ot menja otvernulsja.
from me turn.away.PST
'Sasha made it so that the whole show business abruptly and categorically turned away from me.'

This diverse set of environments in which we see *by* is quite similar to environments in which subjunctive mood appears in other languages (cf., for example Catalan subjunctive clauses (Quer 1998)), which begs the question whether a uniform treatment of subjunctive markers is possible. My hope is that what unifies all of these uses is that they involve considering alternatives to the prejacent and saying something about them (see, e.g., Villalta 2000, 2008).

5.6.2 Polarity Subjunctives with 'remember' in Italian and French

This section provides the data that is summarized in the table 5.1. For the French data discussed in this chapter, (344)-(352), I thank Keny Chatain, Adele Mortier, and Vincent Rouillard. For the Italian data, (353)-(362) and (16)-(17), I thank Enrico Flor, Lorenzo Pinton, Giovanni Roversi and Stanislao Zompì.

In (344) we see that in the "positive" context in French 'remember' cannot take a subjunctive complement. In (345)-(347) we see that subjunctive becomes possible when 'remember' occurs under negation, in the scope of *seul* 'only' and *peu* 'few'.

(344) *"Positive" context*

Jean se rappelle que Marie **a** **/*ait** dessiné des
Jean REFL remembers COMP Marie **has.IND** **/has.SUBJ** drawn of.the
montagnes.
mountains
'Jean remembers that Maria drew the mountains.'

(345) *Under negation*

Jean ne se rappelle pas que Marie **a** **/ait** dessiné
Jean NEG1 REFL remembers NEG2 COMP Marie **has.IND** **/has.SUBJ** drawn
des montagnes.
of.the mountains
'Jean doesn't remember that Maria drew the mountains.'

(346) *Scope of seul 'only'*

Seul Jean se rappelle que Marie **a /ait** dessiné des
only Jean REFL remembers COMP Marie **has.IND /has.SUBJ** drawn of.the
montagnes.
mountains
'Only Jean remembers that Maria drew the mountains.'

(347) *Scope of peu 'few'*

Peu d'enfants se rappellent que Marie **a /ait** dessiné
few children REFL remember COMP Marie **has.IND /has.SUBJ** drawn
des montagnes.
of.the mountains
'Few children remember that Maria drew the mountains.'

Whether subjunctive can appear with 'remember' in questions seems to depend on the strategy of forming a question. All of my consultants agreed that the question strategy in (348), which feels very informal, cannot license subjunctive, and that the question strategy in (350), which feels very formal, can license subjunctive. I got mixed results with the question strategy in (349), which was reported to be of an intermediate level of formality: some of the speakers I consulted thought that subjunctive sounds there as good as in (350), while others did not like it.

(348) *Question: least-formal*

Tu te rappelles que Marie **a /*ait** dessiné des
you REFL remember COMP Marie **has.IND /has.SUBJ** drawn of.the
montagnes?
mountains
'Do you remember that Marie drew the mountains?'

(349) *Question: somewhat-formal*

Est-ce que tu te rappelles que Marie **a /*/✓ ait** dessiné
is-it COMP you REFL remember COMP Marie **has.IND /has.SUBJ** drawn
des montagnes?
of.the mountains
'Do you remember that Marie drew the mountains?'

(350) *Question: most-formal*

Te rappelles-tu que Marie **a /ait** dessiné des
REFL remember-you COMP Marie **has.IND /has.SUBJ** drawn of.the
montagnes?
mountains
'Do you remember that Marie drew the mountains?'

Examples (351) and (352) show that subjunctive with 'remember' can also appear in the restrictor of *chaque* 'every' and in antecedents of conditionals.

(351) *Restrictor of chaque 'every'*

Chaque enfant qui se rappelait que Marie **a /ait**
every child REL REFL remembered COMP Marie **has.IND /has.SUBJ**
dessiné des montagnes, m'a appelé.
drawn of.the mountains me called
'Every child who remembered that Maria drew the mountains, called me.'

(352) *Antecedent of a conditional*

Si tu te rappelles que Marie **a /ait** dessiné des
if you REFL remember COMP Marie **has.IND /has.SUBJ** drawn of.the
montagnes, dis-le-moi.
mountains tell-this-me
'If you remember that Marie drew mountains, tell me.'

Turning to Italian, the overall pattern that we see is the same as in French and Russian. Subjunctive complements are not possible with 'remember' in "positive" contexts, (353), but are available in environments such as under negation, (354), in the scope of *solo* 'only', (355) and *pochi* 'few', (356), as well as in questions, (357).

(353) *"Positive" context*

Gianni ricorda che Maria **ha /*abbia** disegnato delle
Gianni remembered COMP Maria **has.IND /has.SUBJ** drawn of
montagne.
mountains
'Gianni remembered that Maria drew mountains.'

(354) *Under negation*
Gianni non ricorda che Maria **ha /abbia** disegnato delle
Gianni NEG remembered COMP Maria **has.IND /has.SUBJ** drawn of
montagne.
mountains
'Gianni doesn't remember that Maria drew mountains.'

(355) *Scope of solo 'only'*
Solo Gianni ricorda che Maria **ha /abbia** disegnato delle
only Gianni remembered COMP Maria **has.IND /has.SUBJ** drawn of
montagne.
mountains
'Only Gianni remembered that Maria drew mountains.'

(356) *Scope of pochi 'few'*
Pochi studenti ricordano che Maria **ha /abbia** disegnato delle
few students remember COMP Maria **has.IND /has.SUBJ** drawn of
montagne.
mountains
'Few students remember that Maria drew mountains.'

(357) *Question*
Ricordi che Maria **ha /abbia** disegnato delle
remember.2SG COMP Maria **has.IND /has.SUBJ** drawn of
montagne?
mountains
'Do you remember that Maria drew mountains?'

Subjunctive also becomes possible in the restrictor of *ogni* 'every', (359), in addition to the indicative option, (358).

(358) *Restrictor of ogni 'every': IND*

Ogni ragazzo [che ricorda che Maria **ha** disegnato delle
every boy COMP remembers.IND COMP Maria **has.IND** drawn of
montagne] mi ha chiamato.
mountains me has called
'Every boy who remembers that Maria drew the mountains called me.'

(359) *Restrictor of ogni 'every': SUBJ*

Ogni ragazzo [che ricordi che Maria **abbia** disegnato
every boy COMP remembers.SUBJ COMP Maria **has.SUBJ** drawn
delle montagne] mi ha chiamato.
of mountains me has called
'Every boy who remembers that Maria drew the mountains called me.'

One thing to note about (358)-(359) is that the verb 'remember' in them also occurs in different moods, indicative and subjunctive respectively. Mismatching patterns, where 'remember' differs in mood from the clause it embeds, are unacceptable:

(360) *IND 'remember' + SUBJ complement*

* Ogni ragazzo [che **ricorda** che Maria **abbia** disegnato
every boy COMP **remembers.IND** COMP Maria **has.SUBJ** drawn
delle montagne] mi ha chiamato.
of mountains me has called
'Every boy who remembers that Maria drew the mountains called me.'

(361) *SUBJ 'remember' + IND complement*

?? Ogni ragazzo [che **ricordi** che Maria **ha** disegnato
every boy COMP **remembers.SUBJ** COMP Maria **has.IND** drawn
delle montagne] mi ha chiamato.
of mountains me has called
'Every boy who remembers that Maria drew the mountains called me.'

This puzzle needs further investigation.[68] Note that Russian differs from Italian in this respect: 'remember' is indicative when it occurs in the restrictor of 'every',

[68] Lorenzo Pinton (p.c.) notes that this ban on mood mismatches vanishes when 'remember' is in the so-called *Imperfetto* tense and the embedded verb is in the so-called *Trapassato Prossimo*:

while the embedded clause can be either indicative or subjunctive, (24). Adding *by* to 'remember' seems to be possible only under the counterfactual conditional interpretation (*"every boy who (if some condition held) would remember..."*), which is not what we get in Italian when subjunctive occurs on 'remember', (359).

Finally, Italian 'remember' can also take subjunctive complements when it occurs in the antecedent of a conditional, (362).

(362) *Antecedent of a conditional*
Se ricordi che Maria **ha /abbia** disegnato delle
if remember.2SG COMP Maria **has.IND /has.SUBJ** drawn of
montagne, chiama-mi.
mountains call.IMP-me
'If you remember that Mary drew mountains, call me.'

Thus, we have seen that in French and Italian, just like in Russian, subjunctive complements with 'remember' have the distribution of weak NPIs: they are not possible in "positive" contexts, but become available in many contexts that license weak NPIs. Whether subjunctive clauses in these languages have the same semantics as they do in Russian remains to be investigated.

5.6.3 Distribution of different indefinites in Russian

This section provides the data that illustrates the distribution of different kinds of indefinites in Russian summarized in table 5.3. First, none of the indefinites under

(i) *IND.IMPF 'remember' + SUBJ.TRPR complement*
Ogni ragazzo [che **ricordava** che Maria **avesse** disegnato
every boy COMP **remember.IND.IMPF.3SG** COMP Maria **have.SUBJ.TRPR.3SG** drawn
delle montagne] mi ha chiamato.
of mountains me has called
'Every boy who remembered that Maria had drawn the mountains called me.'

(ii) *SUBJ.IMPF 'remember' + IND.TRPR complement*
Ogni ragazzo [che **ricordasse** che Maria **aveva** disegnato
every boy COMP **remember.SUBJ.IMPF.3SG** COMP Maria **have.IND.TRPR.3SG** drawn
delle montagne] mi ha chiamato.
of mountains me has called
'Every boy who remembered that Maria had drawn the mountains called me.'

With this combination of tenses, it is also possible for both verbs to be indicative, while both verbs being subjunctive is somewhat degraded. This interaction of tense and mood is puzzling.

consideration can appear in episodic Upward-Entailing (UE) contexts, (363).

(363) *Episodic UE context*

*Včera ja uvidel ni-kogo /kogo-libo /[kogo by to ni
yesterday I saw NCI-who.GEN /who.ACC-LIBO /who.ACC SUBJ SPEC NEG
bylo] /[čto-by Anja kurila] /kogo-nibud' /ljubogo soseda.
be.PST /COMP-SUBJ Anya smoked /who.ACC-NIBUD' /FCI neighbor

'I saw no one/someone/that Anya smoked/any neighbor yesterday.'

In the context of clausemate negation, only negative concord items can be used among the five pronominal series of indefinites under consideration, (364)-(367).

(364) On ne ubedil ni-kogo /*kogo-libo.
he NEG convince.PST NCI-who.GEN /who.GEN/ACC-LIBO
'He didn't convince anyone.' (Paducheva 2011: 5, ex. (13b))

(365) *On ne ubedil [kogo by to ni bylo].
he NEG convince.PST who.GEN/ACC SUBJ SPEC NEG be.PST
'He didn't convince anyone.'

(366) *Ona ne videla kogo-nibud' utrom.
she NEG see.PST who.GEN/ACC-NIBUD' morning.INSTR
'She did not see anyone in the morning.' (Pereltsvaig 2000: ex. (8))

(367) *Ona ne videla ljubogo soseda utrom.
she NEG see.PST FCI neighbor morning.INSTR
'She didn't see any neighbor in the morning.'

Weak NPI subjunctives however are possible in such a context, as we have seen in (20), repeated below as (368).

(368) Mitja ne zamečal /videl /slyšal čto-**by** Lena smotrela futbol.
Mitya NEG noticed /saw /heard COMP-**SUBJ** Lena watch.PST soccer
'Mitya didn't notice/see/hear that Lena watched soccer.'

Negative concord items are possible only under clausemate negation. (369) illustrates that these indefinites cannot occur in the scope of 'only', in the scope of 'few', in questions, in the restrictor of 'every' and in antecedents of conditionals.

(370) shows that they are also not possible in imperatives, under existential modals, in sentences with future tense and under non-monotone predicates like 'want'.

(369) a. *Scope of tol'ko 'only'*
*Tol'ko Adam čital ni-kakoj žurnal.
only Adam read.PST NCI-what.kind journal
'Only Adam has read any journal.' (Pereltsvaig 2000: ex. (1e))

b. *Scope of nemnogie 'few'*
*Nemnogie studenty čitali ni-kakoj žurnal.
few students read.PST NCI-what.kind journal
'Few students read any journal.' (Pereltsvaig 2000: ex. (1f))

c. *Scope of malo 'few'*
*Malo kto čital ni-kakoj žurnal.
few who read.PST NCI-what.kind journal
'Few read any journal.'

d. *Question*
*Vy čitali ni-kakoj žurnal?
you read.PST NCI-what.kind journal
'Have you read any journal?'

e. *Restrictor of každyj 'every'*
*Každyj, kto videl ni-kakuju pticu, govoril ob ètom.
every who saw NCI-what.kind bird.ACC talked about it
'Everyone who saw any bird talked about it.'

f. *Antecedent of a conditional*
*Esli vy vstretite ni-kogo, pozvonite mne.
if you meet NCI-who.ACC call.IMP I.DAT
'If you meet anyone, call me.' (Pereltsvaig 2000: ex. (1d))

(370) a. *Imperatives*
*Spojte nam ni-kakuju pesnju.
sing.IMP we.DAT NCI-what.kind song.ACC
'Please sing us any/some song.'

b. *Existential modals*
*Vy možete vzjat' ni-kakuju knigu.
you may take.INF NCI-what.kind book.ACC
'You may take any/some book.'

c. *Future*
*My vstretimsja ni-gde.
we meet.FUT NCI-where
'We will meet anywhere/somewhere.'

d. *Under non-monotone predicates like 'want'*
*Ja xoču, čto-by ty ni-kuda poexal.
I want COMP-SUBJ you NCI-where travel.PST
'I want you to travel anywhere/somewhere.'

With the exception of the clausemate negation, the distribution of weak NPI subjunctives and the distribution of pronominal weak NPIs are identical. Both *-libo* indefinites and *by to ni bylo* indefinites are possible in the scope of 'only', (371), and 'few', (372), in questions, (373), in the restrictor of 'every', (374), and in antecedents of conditionals, (375). In section 5.2.1.1 we have seen that weak NPI subjunctives are licensed in all of these contexts, (21)-(25).

(371) *Scope of tol'ko 'only'*

a. Tol'ko Adam čital kakoj-libo žurnal.
only Adam read.PST what.kind-LIBO journal
'Only Adam has read any journal.' (Pereltsvaig 2000: ex. (3d))

b. Tol'ko Petja ponjal [čto by to ni bylo] v ètom
only Petya understand.PST what SUBJ SPEC NEG be.PST in this
doklade.
report
'Only Petya understood anything in this report.'
(Paducheva 2015: 147, ex. (131))

(372) *Scope of 'few'*

a. Nemnogie studenty čitali kakoj-libo žurnal.
few students read.PST what.kind-LIBO journal
'Few students read any journal.' (Pereltsvaig 2000: ex. (3e))

b. Malo kto čital kakoj-libo žurnal.
few who read.PST what.kind-LIBO journal
'Few read any journal.'

c. Malo kto imel /nemnogie studenty imeli [kakoe by
few who have.PST /few students have.PST what.kind SUBJ
to ni bylo] predstavlenie o predmete.
SPEC NEG be.PST idea about subject
'Few /few students had any idea about the subject.'
(Paducheva 2015: 145, ex. (113))

(373) *Question*

a. Vy čitali kakoj-libo žurnal?
you read.PST what.kind-LIBO journal
'Have you read any journal?' (Pereltsvaig 2000: ex. (3f))

b. Zadaval li on tebe [kakie by to ni bylo] kaverznye
pose.PST Q he you.DAT what.kind SUBJ SPEC NEG be.PST tricky
voprosy?
questions
'Has he posed you any tricky questions?'
(Paducheva 2015: 146, ex. (123))

(374) *Restrictor of každyj 'every'*

a. Každyj, kto videl kakuju-libo pticu, govoril ob ètom.
every who saw what.kind-LIBO bird.ACC talked about it
'Everyone who saw any bird talked about it.'

b. Každyj, kto videl [kakuju by to ni bylo] pticu, govoril
every who saw what.kind SUBJ SPEC NEG be.PST bird.ACC told
mne ob ètom.
me about it
'Everyone who saw any bird told me about it.'

(375) *Antecedent of a conditional*

a. Esli vy kogo-libo vstretite, pozvonite mne.
if you who.ACC-LIBO meet call.IMP I.DAT
'If you meet anyone, call me.' (Pereltsvaig 2000: ex. (3b))

b. ...(v) slučae, esli vozniknut [kakie by to ni bylo]
(in) case if arise.FUT what.kind SUBJ SPEC NEG be.PST

èkonomičeskie problemy, vinovat budet Kudrin.
economic problems guilty be.FUT Kudrin
'...if any economic problems arise, it will be Kudrin's fault.'
(Paducheva 2015: 145, ex. (117))[69]

Both pronominal NPIs are ungrammatical in imperatives, (376), under existential modals, (377), in sentences with future tense, (378), and under non-monotone predicates like 'want', (379). In section 5.2.1.1 we observed that weak NPI subjunctives are also ungrammatical in all of these contexts, (26)-(29).

(376) *Imperatives*

a. *Spojte nam kakuju-libo pesnju.
sing.IMP we.DAT what.kind-LIBO song.ACC
'Please sing us any/some song.' (Pereltsvaig 2000: ex. (4a))

b. *Spojte nam [kakuju by to ni bylo] pesnju.
sing.IMP we.DAT what.kind SUBJ SPEC NEG be.PST song.ACC
'Please sing us any/some song.'

(377) *Existential modals*

a. *Vy možete vzjat' kakuju-libo knigu.
you may take.INF what.kind-LIBO book.ACC
'You may take any/some book.' (Pereltsvaig 2000: ex. (5a))

b. *Vy možete vzjat' [kakuju by to ni bylo] knigu.
you may take.INF what.kind SUBJ SPEC NEG be.PST book.ACC
'You may take any/some book.'

(378) *Future*

a. *My vstretimsja gde-libo.
we meet.FUT where-LIBO
'We will meet anywhere/somewhere.' (Pereltsvaig 2000: ex. (4b))

b. *My vstretimsja [gde by to ni bylo].
we meet.FUT where SUBJ SPEC NEG be.PST
'We will meet anywhere/somewhere.'

[69] The example is cited from (Paducheva 2015: 145, ex. (117)), but it is originally from the Russian National Corpus: M. Blant. Kassandra v range sovetnika. *Eženedel'nyj žurnal*, 2003.03.08.

(379) *Under non-monotone predicates like 'want'*

a. *Ja xoču, čto-by ty kuda-libo poexal.
I want COMP-SUBJ you where-LIBO travel.PST
'I want you to travel anywhere/somewhere.'

b. *Ja xoču, čto-by ty [kuda by to ni bylo] poexal.
I want COMP-SUBJ you where SUBJ SPEC NEG be.PST travel.PST
'I want you to travel anywhere/somewhere.'

Thus, *-libo* items, *by to ni bylo* items and *čto-by*-clauses under predicates like *pomnit'* 'remember' have essentially the same distribution.[70]

Now let us turn to the data illustrating the distribution of *wh-nibud'* indefinites and the free choice item *ljuboj*. As we have seen in (363), (366) and (367), *wh-nibud'* items and FCIs are not possible in episodic upward-entailing contexts and under negation. In weak negative contexts, such as in the scope of *tol'ko* 'only', (380a)-(380b), *malo* 'few', (381a)-(381b), in questions, (382a)-(382b), in the restrictor of *každyj* 'every', (383a)-(383b),[71] and in antecedents of conditionals, (384a)-(384b), *wh-nibud'* indefinites are allowed, but FCIs are impossible.

(380) *Scope of tol'ko 'only'*

a. Tol'ko s ètoj pozicii kakoe-nibud' izučenie mediciny
only from this position what.kind-NIBUD' studying medicine.GEN
ženščinami prevraščalos' v revoljucionnyj, podryvnoj akt.
women.GEN become.PST in revolutionary disruptive act
'Only from this point of view some studying of medicine by women became a revolutionary, disruptive act.' <Link-to-source>

[70] There might be some subtle differences in the distribution of the two pronominal weak NPIs, see for example discussion in (Paducheva 2011: p. 13). However, I haven't found any reliable differences that most speakers would agree on. It seems that the choice between the series is primarily stylistic in nature, with some people having a general preference for using one series over the other.

[71] Here is an additional naturally occurring example of a *wh-nibud'* in the restrictor of 'every':

(i) Každyj raz, kogda na kakoj-nibud' kuxne ja vižu tarakana <...>, mne
every time when on what.kind-NIBUD' kitchen I see cockroach I.DAT
vspominaetsja geroj gollivudskogo fil'ma. <Link-to-source>
remember.PASS.PRS hero Hollywood film.GEN
'Every time when I see a cockroach on some kitchen...I recall a hero of a Hollywood film.'

b. *Tol'ko Adam čital ljuboj žurnal.
only Adam read.PST FCI-what.kind journal
'Only Adam has read any journal.'

(381) *Scope of malo 'few'*

a. Malo kto videl (xot') čto-nibud'.
few who see.PST (even) what-NIBUD'
'Few saw anything.' (Paducheva 2015: 145, ex. (112))

b. *Malo kto videl (xot') ljubogo soseda.
few who see.PST (even) FCI neighbor
'Few saw any neighbor.'

(382) *Question*

a. Zadaval li on tebe kakie-nibud' voprosy?
pose.PST Q he you.DAT what.kind-NIBUD' questions
'Has he posed you any questions?' (Paducheva 2015: 147, ex. (135))

b. *Zadaval li on tebe ljubye voprosy?
pose.PST Q he you.DAT FCI questions
'Has he posed you any questions?'

(383) *Restrictor of každyj 'every'*

a. Každyj, kto videl kakuju-nibud' pticu, govoril ob ètom.
every who saw what.kind-NIBUD' bird.ACC talked about it
'Everyone who saw some bird talked about it.'

b. *Každyj, kto videl ljubuju pticu, govoril ob ètom.
every who saw FCI bird.ACC talked about it
'Everyone who saw any bird talked about it.'

(384) *Antecedent of a conditional*

a. Esli on čto-nibud' utail, on za èto poplatitsja.
if he what-NIBUD' hide.PST he for it pay.a.price.FUT
'If he hid something, he will pay a price for it.'
(Paducheva 2015: 136, ex. (17))

b. *Esli on utail ljubuju detal', on za èto poplatitsja.
if he hide.PST FCI detail he for it pay.a.price.FUT
'If he hid any detail, he will pay a price for it.'

In what is often described as *irrealis* contexts, both *wh-nibud'* indefinites and the FCI *ljuboj* are grammatical. In (385) we see that both kinds of pronouns can be used in imperatives. Examples in (386) illustrate that both indefinites can occur under existential modals. (387) shows that both indefinites are also possible in sentences with future tense, and (388) demonstrates that they are both grammatical under non-monotone predicates like 'want'.

(385) *Imperatives*

a. Spojte nam kakuju-nibud' pesnju.
sing.IMP we.DAT what.kind-NIBUD' song.ACC
'Please sing us a song.' (Pereltsvaig 2000: ex. (7a))

b. Prinesi ljuboj stul.
bring.IMP FCI chair
'Bring any chair.' (Paducheva 2018: 300, ex. (38))

(386) *Existential modals*

a. Vy možete vzjat' kakuju-nibud' knigu.
you may take.INF what.kind-NIBUD' book.ACC
'You may take a/any book.' (Pereltsvaig 2000: ex. (7c))

b. Ljuboj tromb možet otorvat'sja.
FCI blood.clot can tear.off.INF
'Any blood clot can tear off.' (Paducheva 2015: 142, ex. (83))[72]

(387) *Future*

a. My vstretimsja gde-nibud'.
we meet.FUT where-NIBUD'
'We will meet somewhere.' (Pereltsvaig 2000: ex. (7b))

[72]The example is cited from (Paducheva 2015: 142, ex. (83)), but it is originally from the Russian National Corpus: *Russkij reportër*, 3(181), 2011.01.27.

b. Zavtra ja kuplju tebe ljubuju igrušku.
tomorrow I buy.FUT you.DAT FCI toy
'Tomorrow I will buy you any toy.' (Paducheva 2018: 302, ex. (61))

(388) *Under non-monotone predicates like 'want'*

a. Ja xoču, čto-by ty kuda-nibud' poexal.
I want COMP-SUBJ you where-NIBUD' travel.PST
'I want you to travel somewhere.' (Paducheva 2015: p. 158)

b. Savonarola poščady prosil, xotel podpisat' ljubye bumagi.
Savonarola mercy ask.for.PST want.PST sign.INF FCI papers
'Savonarola was asking for mercy, wanted to sign any papers.'
(Paducheva 2018: 298, ex. (17))[73]

For more discussion and analyses of *wh-nibud'* indefinites, see (Pereltsvaig 2000, Yanovich 2005, Paducheva 2011, Eremina 2012, Paducheva 2015, 2018). For discussion and analysis of the free choice item *ljuboj*, see (Paducheva 2018).

5.6.4 The Bagel Problem

As was mentioned in section 5.2.1.1, Russian is a language with *the Bagel Problem*: weak NPIs cannot occur under the clausemate negation, and negative concord items (NCIs) must be used instead, (364)-(365), repeated below as (389)-(390).

(389) On ne ubedil ni-kogo /*kogo-libo.
he NEG convince.PST NCI-who.GEN /who.GEN/ACC-LIBO
'He didn't convince anyone.' (Paducheva 2011: 5, ex. (13b))

(390) *On ne ubedil [kogo by to ni bylo].
he NEG convince.PST who.GEN/ACC SUBJ SPEC NEG be.PST
'He didn't convince anyone.'

This raises the question of whether our conclusion that weak NPIs are licensed in Strawson Downward-Entailing environments is wrong. In particular, we could consider the hypothesis in (391), which still formulates the licensing condition by only appealing to the entailment properties of the context.

[73]The example is cited from (Paducheva 2015: 298, ex. (17)), but it is originally from Ju. Azarov's *Podozrevaemyj* [Suspected offender] 2002.

(391) *Hypothesis 1 about the Bagel Problem (to be rejected):*
Weak NPIs in Russian are licensed in environments that are Strawson Downward-Entailing, but not anti-morphic.

For an environment to be *anti-morphic*, it has to show additional entailment properties. Pereltsvaig (2004) formulates them in the following way:[74]

(392) *Downward-Entailing vs. Anti-morphic operators (from Pereltsvaig 2004)*

a.	$f(X \vee Y) \Rightarrow f(X)$ and $f(Y)$	*DE, anti-morphic*
b.	$f(X)$ and $f(Y) \Rightarrow f\ (X \vee Y)$	*anti-morphic*
c.	$f(X$ and $Y) \Rightarrow f(X) \vee f(Y)$	*anti-morphic*
d.	$f(X) \vee f(Y) \Rightarrow f(X$ and $Y)$	*anti-morphic*

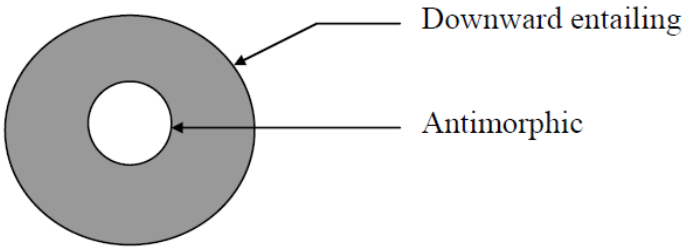
The condition in (392a) holds if an operator creates a Downward-Entailing environment.[75] For an operator to be considered anti-morphic, the three conditions in (392b)-(392d) have to be met in addition to (392a). This means that the set of environments that are anti-morphic is a subset of the environments that are Downward-Entailing. This is why the problem is called *the Bagel Problem*, (393): the distribution of weak NPIs in languages with negative concord items looks like a bagel, with anti-morphic environments being the hole in which weak NPIs cannot appear.

[74] Note that in the definitions in (392) being DE or anti-morphic is a property of an operator. But these definitions could be restated so that being DE or anti-morphic are properties of syntactic constituents instead (which is what I have been assuming so far).

[75] This relates to our definition in (53), repeated in (i) below, in the following way. If a certain element $z \in X$, then $z \in X \cup Y$, or in other words $X \Rightarrow (X \vee Y)$. Thus, X and Y from (392a) are our X′ from the definition (i). In this case the original sentence S is $f(X \vee Y)$, and the sentences with substitution S[X/X′] are $f(X)$ and $f(Y)$.

(i) **Strawson Downward-Entailing (SDE)** (from Crnič 2019: p.4, (7))
A Constituent S is *Strawson Downward-Entailing* with respect to a subconstituent X iff for every X′ such that $[\![X']\!] \Rightarrow_s [\![X]\!]$, it holds that $[\![S]\!] \Rightarrow_s [\![S[X/X']]\!]$ (where S[X/X′] is identical to S except that X′ replaces X).

(393) ***The Bagel:*** *the anti-morphic environments are a subset of the DE environments*



(Pereltsvaig 2004: p. 13)

Most contexts in which weak NPIs are licensed will not meet the additional properties in (392b)-(392d) and thus will not be anti-morphic. For example, 'few' violates the property in (392c):

(394) *Example: 'few' violates (392c) ⇒ not anti-morphic*
Few students met Helen and Susi.
⇏ Few students met Helen or Few students met Susi.

It could be that many students met Helen, and many met Susi, but few met both of them. Sentential negation, on the other hand, has all the necessary properties to be considered anti-morphic, as is illustrated in (395a)-(395d) for the properties in (392a)-(392d) respectively.

(395) a. Anya didn't meet Helen or Susi.
⇒ Anya didn't meet Helen and Anya didn't meet Susi.
b. Anya didn't meet Helen and Anya didn't meet Susi.
⇒ Anya didn't meet Helen or Susi.
c. Anya didn't meet Helen and Susi.
⇒ Anya didn't meet Helen or Anya didn't meet Susi.
d. Anya didn't meet Helen or Anya didn't meet Susi.
⇒ Anya didn't meet Helen and Susi.

While it captures the fact that weak NPIs cannot occur under the clausemate negation, the hypothesis in (391) faces a problem which seems insolvable on a purely semantic account: there are anti-morphic contexts in which weak NPIs are possible (Pereltsvaig 2004, Erschler To appear). In particular, weak NPIs are licensed in anti-morphic contexts when an NCI cannot occur in their place.

Let us consider three such cases. The first case was described by Pereltsvaig

(2004): while the preposition *bez* 'without' creates an anti-morphic context, negative concord items are impossible in its complement, and weak NPIs can be used. (396) shows that *bez* 'without' is an anti-morphic operator:

(396) *Bez 'without' is an anti-morphic operator* (*Pereltsvaig 2004: 14, ex.* (*29*)):
(396a) ↔ (396b), (396c) ↔ (396d)

a. Ivan s''el sup bez soli ili perca.
Ivan ate soup without salt or pepper
'Ivan ate the soup without salt or pepper.'

b. Ivan s''el sup bez soli i bez perca.
Ivan ate soup without salt and without pepper
'Ivan ate the soup without salt and without pepper.'

c. Ivan prišël na urok bez učebnika i tetradi.
Ivan came to class without textbook and notebook
'Ivan came to class without a textbook and a notebook.'

d. Ivan prišël na urok bez učebnika ili bez tetradi.
Ivan came to class without textbook or without notebook
'Ivan came to class without a textbook or without a notebook.'

The sentence in (396a) entails the one in (396b) and vice versa, satisfying the conditions in (392a)-(392b). The sentences in (396c) and (396d) also mutually entail each other, satisfying the conditions in (392c)-(392d).

When negative concord items occur in complements of prepositions, the negative particle *ni* occurs before the preposition, separated by it from the *wh*-word, (397). (398) shows that NCIs can't occur in the complement of *bez* 'without'.[76]

(397) On ne delal ètogo ni s kem.
he NEG did this NCI with who.INSTR
'He didn't do this with anybody.' (Pereltsvaig 2004: 15, ex. (32))

[76]The other order, with *ni* being adjacent to *kakoj* 'what.kind', is ungrammatical as well:

(i) *Ivan opozdal na urok bez ni-kakoj pričiny.
Ivan came.late to class without NCI-what.kind reason
'Ivan came to class late for no reason.'

(398) *Ivan opozdal na urok ni bez kakoj pričiny.
Ivan came.late to class NCI without what.kind reason
'Ivan came to class late for no reason.' (Pereltsvaig 2004: 14, ex. (30))

Unlike NCIs, weak NPIs are grammatical in the complement of *bez* 'without':

(399) Ivan opozdal na urok bez kakoj-libo pričiny.
Ivan came.late to class without what.kind-LIBO reason
'Ivan came to class late for no reason.' (Pereltsvaig 2004: 14, ex. (30))

Thus, *bez* 'without' shows us two things. First, it's not true that negative concord items are licensed in *any* anti-morphic environment in Russian. Their distribution is more restricted: they seem to need to be in the same clause as the sentential negation *ne*. Second, weak NPIs can in principle occur in anti-morphic environments, as long as NCIs are banned from occuring in them.

The second case, which illustrates the same point, has to do with the emphatic sentential negation *xuj* 'dick' (Erschler To appear). Just as a regular sentential negation, *xuj* 'dick' creates an anti-morphic environment. However, as we have seen in (102)–(103), repeated below as (400)–(401), *xuj* 'dick' cannot license negative concord items, but can license weak NPIs.

(400) *Xuj Anja ela ni-kakoe moroženoe.
NEG$_3$ Anya ate NCI-what.kind ice-cream
'Anya didn't eat any ice-cream.'

(401) ?Xuj Anja ela kakoe-libo /kakoe by to ni bylo
NEG$_3$ Anya ate what.kind-LIBO /what.kind SUBJ SPEC NEG be.PST
moroženoe.
ice-cream
'Anya didn't eat any ice-cream.'

Finally, the third case concerns weak NPI subjunctives. As we saw in (20), repeated below as (402), subjunctive clauses that behave like weak NPIs can be licensed under the sentential negation *ne*.

(402) Mitja ne zamečal /videl /slyšal čto-**by** Lena smotrela futbol.
Mitya NEG noticed /saw /heard COMP-**SUBJ** Lena watch.PST soccer
'Mitya didn't notice/see/hear that Lena watched soccer.'

Russian does not have an NCI complementizer that could have been used instead of *čto-by* in (402), and thus the weak NPI subjunctive CP is grammatical.

What the three cases discussed above illustrate is that weak NPIs seem to be competing with NCIs. If a negative concord item can be used, it is preferred, and weak NPIs are not acceptable. If in a certain configuration an NCI is impossible or an NCI of the relevant sort does not exist, weak NPIs become grammatical.

This leads us to the hypothesis in (403), a variant of which has been first proposed by Pereltsvaig (2004). The main intuition behind this hypothesis is that the semantic licensing condition for weak NPIs should include anti-morphic environments, but that some process of morphological competition between the two series of pronouns rules out weak NPIs in some anti-morphic cases.

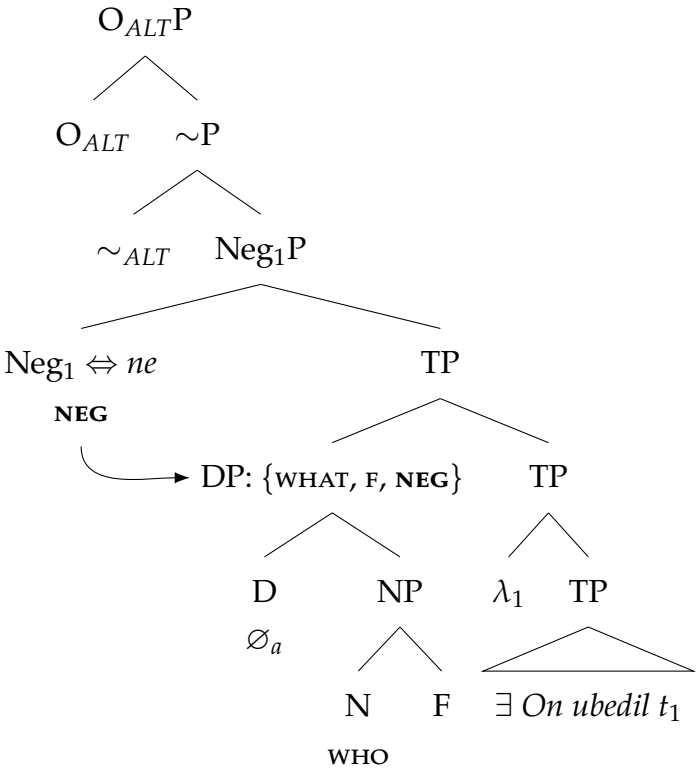
(403) *Hypothesis 2 about the Bagel Problem* (*the final one*)*:*
Weak NPIs in Russian are licensed in environments that are Strawson Downward-Entailing (including anti-morphic ones). They are impossible under clausemate negation due to the fact that there is a more specific lexical item that "wins" due to the rules of Vocabulary Insertion.

If (403) is right, we need to develop a concrete proposal about the competition between NCIs and NPIs in the Vocabulary Insertion process. Here I present a very rough sketch based on the ideas presented in (Pereltsvaig 2004, Erschler To appear) that assumes the theory of NPI licensing argued for in the previous sections.

I will assume that sentences like (404) have LFs as in (405).

(404) On ne ubedil ni-kogo /*kogo-libo.
he NEG convince.PST NCI-who.GEN /who.GEN/ACC-LIBO
'He didn't convince anyone.' (Paducheva 2011: 5, ex. (13b))

(405) LF for (404)



I hypothesize that the only difference between NCIs and NPIs is the presence of negative concord with the syntactic head Neg$_1$ hosting negation *ne* (see Erschler To appear).[77,78] Otherwise the structure of the pronominal expression is the same. For example, when it is based on the wh-word *kto* 'who', we can hypothesize that an abstract item WHO with the meaning in (406) combines with the feature F, which activates the subdomain alternatives,[79] and then with a null existential quantifier.

[77] I am not committed to this operation being negative concord as opposed to agreement; I think some kinds of agreement might be adopted to capture this relationship as well.

[78] I assume that Neg$_1$ is the *ne* negation, and the *xuj* 'dick' negation is introduced by a distinct Neg.

[79] In a system with focus assignment functions, F will have the denotation in (i), and the NP will have the denotation in (ii).

(i) $[\![F_{<n,et>}]\!]^{s,g,h}$ =

a.	λx: x $\in$ D$_e$. $\top$	if $<n,et> \notin$ dom(h);
b.	$h(<n,et>)$	otherwise.

(ii) $[\![\text{WHO-}F_{<n,et>}]\!]^{s,g,h}$ =

a.	λx: x $\in$ D$_e$. animate(x)$_s$	if $<n,et> \notin$ dom(h);
b.	λx: x $\in$ D$_e$. animate(x)$_s \wedge h(<n,et>)$(x)	otherwise.

(406) $[\![\text{WHO}]\!]^{s,g} = \lambda x\text{: } x \in D_e\text{. animate}(x)_s$

Under the assumption that WHO and F project to the DP layer, the DP will be specified as {DP, WHO, F} at this point. Presence of the focus feature will mean that there'll have to be some operator higher up that acts upon the alternatives that this feature activates, together with the $\sim$ below it.

How the DP under consideration will be lexicalized will depend on whether there is Neg_1 present in the clause. If there is Neg_1 present in the structure, it will trigger negative concord with all maximal projections within the clause that are "visible" to Neg_1: if a maximal projection is a phase, we do not expect Neg_1 to be able to look inside of it, but otherwise Neg_1 should spread the NEG feature to all XPs. As (407) illustrates, negative concord can occur with multiple elements:

(407) On ne ubeždal ni-kogo ni v čëm ni-kogda.
he NEG convince.PST NCI-who.GEN NCI in what NCI-when
'He never convinced anyone of anything.'

Thus, if our DP has undergone negative concord with Neg_1, it will have {DP, WHO, F, NEG} as its set of features. Now here is how the lexical items that are potential candidates for Vocabulary Insertion might look like:[80]

(408) a. *ni-kto* $\Leftrightarrow$ {DP, WHO, F, NEG}
b. *kto-libo* $\Leftrightarrow$ {DP, WHO, F}
c. *kto by to ni bylo* $\Leftrightarrow$ {DP, WHO, F}

Under the common assumption that the vocabulary item that has the most features of the given syntactic object "wins", the NCI *nikto* will be selected in a sentence like (404). If however Neg_1 was not present in the structure and would not have triggered negative concord, the DP would have only {DP, WHO, F} as its set of features. Due to *the Subset Principle*, which says that the features of the exponent have to be the subset of the features of the syntactic object being exponed, the NCI *nikto* would not have been able to be used, and one of the weak NPIs would have to be used instead. Thus, the sketched account derives the fact that weak NPIs are blocked by NCIs under clausemate negation.[81]

[80] There might be other features that distinguish *-libo* series from *by to ni bylo* series, for example features marking some stylistic information.

[81] Erschler (To appear) notes that weak NPIs are not absolutely excluded under the clausemate

5.6.5 Non-monotone Quantifiers

The account of NPI licensing presented in the preceding sections predicts that NPIs should not be licensed in non-monotonic contexts: in such cases the requirement of O_{ALT} that the prejacent entails all of its alternatives will not be met, leading to L-analyticity and thus ungrammaticality. This might be a welcome prediction given that weak NPIs are not licensed under non-monotone predicates like 'want' in Russian, (379) and (29), repeated below as (409) and (410).

(409) *Weak NPIs under non-monotone predicates like 'want'*

a. *Ja xoču, čto-by ty kuda-libo poexal.
I want COMP-SUBJ you where-LIBO travel.PST
'I want you to travel anywhere/somewhere.'

b. *Ja xoču, čto-by ty [kuda by to ni bylo] poexal.
I want COMP-SUBJ you where SUBJ SPEC NEG be.PST travel.PST
'I want you to travel anywhere/somewhere.'

negation. For example, the natually occuring example in (i) seems grammatical.

(i) Po povodu finala kar'ery xokkeist ne skazal čego-libo opredelënnogo.
on subject end.GEN career.GEN hockey.player NEG said what-LIBO definite
'Regarding the end of his career, the hockey player didn't say anything definite.'
(Erschler To appear: ex. (28c)), <Link>

Interestingly, removing the adjective *opredelënnyj* 'definite' from (i) recreates the ungrammaticality for most speakers (ii).

(ii) Po povodu finala kar'ery xokkeist ne skazal ni-čego /??čego-libo.
on subject end.GEN career.GEN hockey.player NEG said NCI-what /what-LIBO
'Regarding the end of his career, the hockey player didn't say anything.'

The question of how the structure of the DP influences the acceptability of weak NPIs under clausemate negation needs further research. But one might hypothesize that if a DP could have a structure in which {WHO, F} and NEG are not bundled together on a single syntactic object undergoing lexicalization, it would be possible to insert a weak NPI as an exponent of {WHO, F} and leave NEG unexponed, creating configurations in which weak NPIs are fine under clausemate negation.

(410) *Weak NPI subjunctive under non-monotone predicates like 'want'*
* Ja xoču čto-by Mitja pomnil /zamečal čto-**by** Anja
I want COMP-SUBJ Mitya remember.PST /notice.PST COMP-**SUBJ** Anya
prixodila domoj posle polunoči.
came home after midnight
'I want Mitya to remember/notice Anya coming home after midnight.'

Note that in this respect Russian might be different from English, where it has been argued that desire predicates create contexts that allow licensing *any*:[82]

(411) a. Mary wishes anyone had talked to her about this.
(Crnič 2019: p. 26, (113d))
b. They would like to reach any consensus at all.
(Crnič 2019: p. 26, (113c))

However, there is a case that is more complicated and constitutes an apparent exception: the case of sentences with non-monotone quantifiers like *rovno dva studenta* 'exactly two students'. In English, non-mononotone quantifiers like *exactly* have been observed to license NPIs (Linebarger 1980, 1987):

(412) *Englsh 'exactly' licensing NPIs*
a. Exactly four people in the whole world have ever read that dissertation: Bill, Mary, Tom, and Ed. (Linebarger 1987: p. 373)
b. Exactly three people did any work at all.
(Rothschild 2006: p. 229)
c. Exactly three students said anything in my seminar.
(Gajewski 2008: p. 73)

Acceptability of sentences like (412) have also been argued to be context-sensitive. One particular aspect of context-sensitivity that has been observed in the literature (Linebarger 1987, Crnič 2014) is that felicity of sentences with NPIs in the scope of *exactly* decreases with the magnitude of the number experession modified by *exactly* increasing. This is illustrated in (413).[83]

[82]Thus, accounts that successfully derive the distribution of English *any* will overgenerate for Russian. For example, Crnič (2019) proposes an *even*-based account of the distribution of weak NPIs, which predicts that weak NPIs should be licensed in non-monotone environments. Adopting it for Russian would face problems in light of the ungrammaticality of sentences like (409)-(410).

[83]As I understand it, sentences like in (413) are pragmatically odd rather than ungrammatical.

(413) a. ?Exactly two million people have ever been to this forest. (Rothschild 2006: p. 234)
b. #Exactly ten of my twelve students said anything. (Gajewski 2008: p. 73)
c. #Exactly eleven players on our soccer team had any contact with the ball. (Crnič 2014: p. 197)

Rothschild (2006) and Crnič (2014, 2019) take the acceptability of NPIs with *exactly* in sentences like (412) to suggest that we should abandon the idea that NPIs are licensed in Strawson Downward-Entailing environments. According to them, non-monotonic contexts should be included in the licensing condition of *any*. The unacceptability of (413) then needs some additional explanation.

Crnič (2014) proposes that it follows from a general mechanism of NPI licensing: NPIs are licensed by an operator similar to *even*, which requires that the likelihood of the prejacent proposition is less than the likelihood of all of its alternatives. Such an operator doesn't create trivial meanings in non-monotone contexts, but requires the likelihood inference to be true for the sentence to be felicitous. The degradedness of examples like in (413), according to Crnič, arises because the likelihood inference that is derived is pragmatically implausible. Consider (414).

(414) **Context:** There are 12 students in the program. (Crnič 2019: ex. (109))
a. Exactly two students read any book this semester.
b. ?Exactly ten students read any book this semester.

According to Crnič, the operator that licenses NPIs gives rise to the following likelihood inference for the sentences in (414): for any subset D′ of the set of books, it is less likely that *exactly n students read some book* than that *exactly n students read a book from D′*, (415). The explanation for the infelicity of high numerals is then as follows. Our usual expectation is that the bigger group of students we choose, the "wider" would have to be the subdomain of books D′ such that each of the students read a book from D′. If we take a small group of students on the other hand, we should be able to find a rather small subdomain of books D′ such that each of the students read a book from D′. These are our general expectations.

(415) $\forall D' \subset (D \cap \text{book})$: ^(exactly 2/10 students read a book in D this semester)

This suggests that we do not want to attribute degradedness of these sentences to L-analyticity.

$<_c$ ^(exactly 2/10 students read a book in D' this semester)
where $<_c$ ('less likely than') = likelihood relation relativized to context c

If that is the case, then the likelihood of a big number of students reading some book is high, and the likelihood of a big number of students reading a book from a small set is low, (416a), and so the condition in (415) is unlikely to be true when we consider high numerals. On the other hand, the likelihood of the number of students reading some book being small is small, and the likelihood of the number of students reading a book from a small subset being small is big, (416b), and so (415) is likely to be true for low numerals.

(416) a. $\hat{}|$ students $\cap$ read-a-book $| = 10 >_c$
$\hat{}|$ students $\cap$ read-a-book-from-a-small-subset $| = 10$
b. $\hat{}|$ students $\cap$ read-a-book $| = 2 <_c$
$\hat{}|$ students $\cap$ read-a-book-from-a-small-subset $| = 2$

Russian data is quite similar to the English data—the two phenomena might turn out to be identical under closer comparison. However, I would like to suggest that NPI licensing under non-monotone quantifiers does not immediately warrant rejection of Strawson Downward-Entailingness as the condition for licensing NPIs.

Whether NPIs are licensed in the scope of non-monotone quantifiers is indeed sensitive to context. However, I would like to suggest that the main source of context-sensitivity is that whether NPIs are licensed in sentences with *exactly* or not depends on the question under discussion (QUD, C. Roberts 1996). This is illustrated with the Russian data in (417)-(418).

(417) **Context A–Q about QP:** How many girls bought food in the canteen? Was it just two girls or more?
[Rovno dve devočki], (ne bolee) pokupali v stolovoj kakuju-libo
exactly two girls (not more) bought in canteen what-LIBO
/kakuju by to ni bylo edu.
/what SUBJ SPEC NEG be.PST food
'Exactly two girls, (not more), bought any food in the canteen.'

(418) **Context B–Q about VP:** What did exactly two girls do?
* Rovno dve devočki [POKUPALI V STOLOVOJ KAKUJU-LIBO /KAKUJU BY
exactly two girls bought in canteen what-LIBO /what SUBJ

TO NI BYLO EDU.]
SPEC NEG be.PST food
'Exactly two girls bought any food in the canteen.'

In (417) the main QUD is the question of how many girls bought the food in the canteen. However, there is also a subquestion of the main question that interests the questioner: was the number of girls who bought the food in the canteen 2 or bigger than 2?[84] The person who responds can then felicitously utter the response in (417), which contains an NPI in the scope of 'exactly'. The prosodic prominence seems to fall on each word of the QP in (417).[85] The interpretative result of this prosodic prominence is that the addressee stresses that it was *exactly two* girls, not *two and more* girls. This can be emphasized by adding the phrase *ne bolee* 'not more' after the QP. In (418) the QUD is the question of what activity exactly two girls did. In this case the whole VP is in focus. Interestingly, NPIs inside the VP are completely ungrammatical. Thus, it seems that the prominence on the QP, and the interpretation that we get in (417), is necessary for the successful licensing of NPIs.

Similar sensitivity to the QUD seems to hold in English as well.[86] Consider the same sentence with an NPI in the scope of *exactly* in two contexts, (419) and (420).

(419) **Context:** A librarian (B) is upset that most students (47 out of 50 students) have not returned their books to the library after they have been asked to a couple of week ago.

A: How many students returned their books?

[84]This subquestion does not have to be explicitly asked, as far as I can tell, it just needs to be easy to recover from the context.

[85] More research is needed on what this prosodic pattern tells us about the placement of focus features. As we'll see, I will suggest that the actual focus feature is placed just on *rovno* 'exactly', despite there also being prominence on *dve* and *devočki*. I do not know why this would be the case. A potentially relevant fact is that it seems quite unnatural to stress just *rovno* 'exactly', even when no NPI licensing is involved, (i); adding prominence on *dve* and *devočki* would improve the sentence. My hope is that better understanding of the general rules of mapping between focus features and prosodic prominence would help solve this puzzle.

(i) # [ROVNO] dve devočki kupili dessert. (*own judgement*)
exactly two girls bought dessert
'EXACTLY two girls bought dessert.'

[86]I am grateful to Kai von Fintel and Danny Fox for suggesting that the same context-sensitivity holds in English as well, and to Patrick Elliott, Yadav Gowda, and Frank Staniszewski for providing their judgements.

Was it around 10 students who did?

B: Exactly three students returned any books!

(420) **Context:** We are thinking of rewarding our students for the good things they've done. We have a list of things that could be rewarded with the names of students next to them: some students participated in outreach activities, some students helped organize the library, some students returned some books to the library that the department borrowed, etc.

Among other rewards, we have exactly 3 museum tickets that we could give to some students, so now we need to find a good thing from the list that exactly 3 students did.

A: What did exactly three students do?

B: *Exactly three students returned any books.

It is not obvious why such context-sensitivity should exist on an account where non-monotone quantifiers should generally license NPIs. For example, on a theory in which NPIs are licensed by a covert *even* (Crnič 2014, 2019), all we need for (420) to be acceptable is that it be unlikely that the the cardinality of the intersection of individuals who are students and of the individuals who returned some book is three (compared to other propositions, according to which three is the number of individuals at the intersection of the set of students and the set of individuals who returned a book from some subset of books). We could easily supplement the context in (420) to fulfill this requirement: we just need to add an expectation that a high number of students might have been involved in book-returning activities, and thus the likelihood of exactly three students returning some book ($D \cap$ book) is smaller than the likelihood of exactly three students returning a book in any subset of the set of books. This is compatible with (420), and so the NPI should be licensed.

Before I sketch out some ideas as to why the QUD and focus on the QP might play a role for NPI licensing, I'd like to mention that Russian also has the sentisivity to the magnitude of the numeral disucssed for English (Linebarger 1980, 1987, Rothschild 2006, Gajewski 2008, Crnič 2014, 2019). This is illustrated in (421).

(421) **Context:** There are 50 students in this class.

[Rovno pjat' /#sorok pjat' studentov] pročitali kakuju-libo /kakuju by
exactly five fourty five students read what-libo /what subj

to ni bylo knigu.
SPEC NEG be.PST book.ACC
'Exactly five/#fourty five students (out of 50) read any book.'

I would like to propose that focus is important for NPI licensing with non-monotone quantifiers because of the existential presupposition that it creates (Abusch 2002, Geurts & Sandt 2004, Beaver & Clark 2008, Abusch 2009, Abrusán 2016, Simons et al. 2017, Jeong 2021, a.o.): the presupposition saying that there exists at least one alternative in the set that is true, (422).

(422) **Existential presupposition:**
For any set of alternatives ALT and any situation of evaluation s,
$\exists p \in \text{ALT}\ [p(s)=1]$

This idea (suggested to Crnič by Danny Fox, p.c.) is briefly discussed in (Crnič 2014: p. 197), but refuted because it does not immediately provide an account of the data like in (421). But now that we have seen the sensitivity of NPI licensing with *exactly* to focus and QUD, this idea becomes more appealing.

Let us try to flesh it out. I hypothesize that the prosodic prominence on the QP reflects the presence of the focus feature on *rovno*$_F$ 'exactly'.[87] This hypothesis is supported by the alternatives that seem to be intuitively invoked: e.g., in (417) we're comparing ***at least two girls*** (*potentially more*) *buying food in the canteen* to ***exactly two girls*** *buying food in the canteen*, and asserting that the latter is true—it was no more than two girls who bought some food. In other words, we are comparing *"exactly two"* to *"inexactly two"*. Thus, I propose that *rovno* and *exactly* bear the focus feature F when an NPI occurs in their scope, (423).

(423) a. Exactly$_F$ two students read any book.
b. Rovno$_F$ dva studenta pročitali kakuju-libo knigu.
exactly two students read what.kind-LIBO book
'Exactly two students read any book.'

To think about what alternatives the focus feature on *exactly* could possibly generate, we need to first have some working hypothesis about what the ordinary meaning of *exactly* is and what LF it occurs in. Here I sketch a working hypothesis

[87] See discussion in footnote 85 about the prosodic prominence not matching with the placement of focus exactly.

that is inspired by the work by Buccola & Spector (2016) on modified numerals and maximality. Truth-conditions of sentences with *exactly* can be paraphrased as a conjunction of the minimality requirement and the maximality requirement:

(424) Exactly two students read a book.

a. **Minimality-requirement:** At least two students read a book.

b. **Maximality-requirement:** At most two students read a book.

If it is true that at least two students read a book, and it is true that at most two students read a book, then it follows that the cardinality of the intersection of the set of students and the set of individuals who read a book is two.

I would like to suggest that the contribution of *exactly* is the maximality requirement, whereas the minimality requirement is independently present in sentences with numerals. Examples like (425) provide motivation for this assumption.

(425) **Context:** A quorum of 100 people is required to make the election valid.

A: Did 100 people vote?

B: Yes, 100 people voted. In fact, almost 200 did.

We could imagine the meanings in (426a) and (426b) for the B's response.[88]

(426) a. $|\text{ people} \cap \text{voters }| = 100$

b. $\exists x\,[\text{people}(x) \wedge |x| = 100 \wedge \text{voted}(x)]$

(426a) says that the cardinality of the intersection of the people with the voters is 100, whereas (426b) has an existential meaning: it only says that there is a group of people who voted whose cardinality is 100. (426b), but not (426a), allows there to be groups of people who voted whose cardinality is bigger than 100. Given the B's follow-up that almost 200 people voted, (426b) has to be the right meaning for sentences with unmodified numerals. This meaning already has the minimality requirement built in: there has to be a group of at least 100 people who voted for the sentence with a non-modified numeral to be true.

[88] We could also imagine writing down the meaning in (i) as B's response:

(i) $\exists x\,[\text{people}(x) \wedge |x| \geqslant 100 \wedge \text{voted}(x)]$

As far as I can tell, this is equivalent to (426b): if (i) is true, so is (426b), and vice versa.

I will assume that numerals denote numbers, which are of type d—degrees. For example, *two* denotes the number (degree) 2:

(427) $[\![\text{two}]\!]^{s,g} = 2$

Following (Buccola & Spector 2016), I will assume that numerals combine with a silent syntactic operator isCard. This operator maps a degree-denoting numeral n to a predicate of pluralities with the cardinality n. When isCard combines with a numeral *two* and then with a nominal predicate 'students', (429), we get the set of plural individuals who are students and whose cardinality is 2, (430).

(428) $[\![\text{isCard}]\!]^{s,g} = \lambda \text{n: n} \in \text{D}_d.\ \lambda \text{x: x} \in \text{D}_e.\ |\text{x}| = \text{n}$

(429) $[\![\text{students}]\!]^{s,g} = \lambda \text{x.}\ \text{student}(\text{x})_s$

(430) $[\![\text{isCard two students}]\!]^{s,g} = \lambda \text{x.}\ \text{student}(\text{x})_s \wedge |\text{x}| = 2$

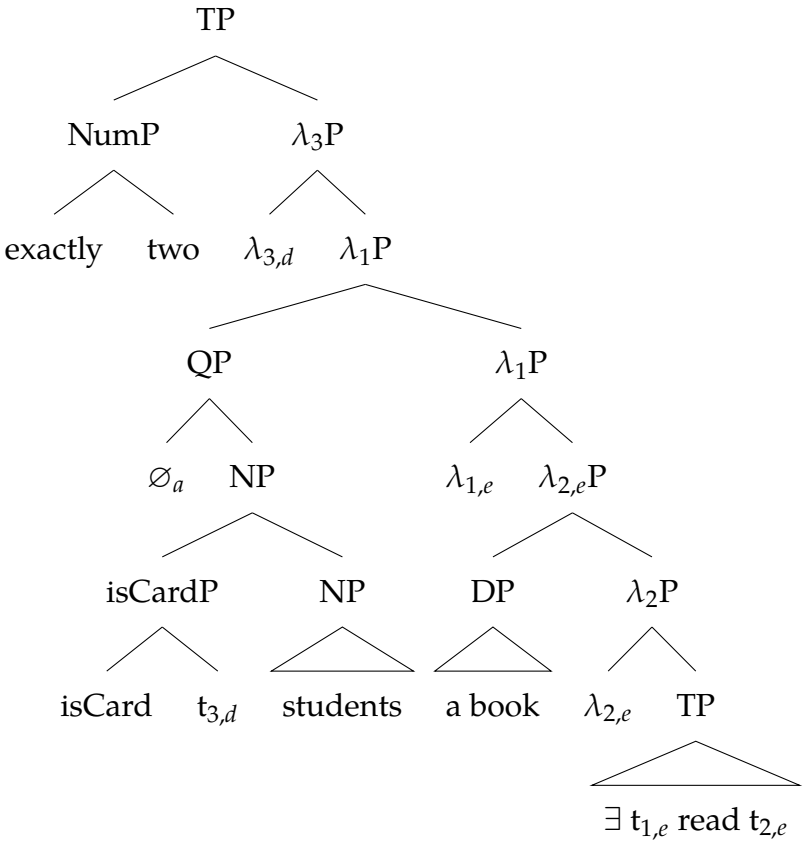
I propose that *exactly* has the meaning in (431). Syntactically, it is a modifier of the numeral: it combines directly with *two*. It denotes a function that takes a number n and a set of degrees P and returns 1 iff the number is in this set of degrees and there is no number higher than n that is in the set of degrees P, (431).

(431) $[\![\text{exactly}]\!]^{s,g} = \lambda \text{n: n} \in \text{D}_d.\ \lambda \text{P: P} \in \text{D}_{dt}.\ \text{P}(\text{n}) = 1 \wedge \neg\exists \text{m} > \text{n}\ [\text{P}(\text{m}) = 1]$

I hypothesize the LF in (433) for the sentence in (432) without focus.

(432) Exactly two students read a book.

(433) LF for (432)



The sentence contains two nominal phrases with existential quantifiers (*a* and $\varnothing_a$ for English, $\varnothing_a$ and $\varnothing_a$ for Russian),(434), both of which undergo QR.

(434) $[\![\text{a}]\!]^{s,g} = [\![\varnothing_a]\!]^{s,g} = \lambda\text{k}.\ \lambda\text{f}.\ \exists\text{x}[\text{k}(\text{x})=1 \wedge \text{f}(\text{x})=1]$

After *exactly* modifies *two*, the resulting NumP can no longer combine with isCard due to a type mismatch, and so the NumP undergoes further movement, leaving a trace of type d. Here is how the derivation of this sentence proceeds. The QP, which has the meaning in (435), will combine with its sister that has the meaning in (436), and after we do a λ-abstraction over the degree variable, we get (437).

(435) $[\![\text{QP}]\!]^{s,g} = \lambda\text{f}.\ \exists\text{x}[\text{student}(\text{x})_s \wedge |\text{x}| = g(3) \wedge \text{f}(\text{x})=1]$

(436) $[\![\lambda_1\text{P}]\!]^{s,g} = \lambda\text{x}.\ \exists\text{y}[\text{book}(\text{y})_s \wedge \exists\text{s}'[{}^{|\vdash_e}\text{read-x-y}(\text{s}')_s]]$

(437) $[\![\lambda_3\text{P}]\!]^{s,g} =$
$\lambda\text{n}.\ \exists\text{x}[\text{student}(\text{x})_s \wedge |\text{x}| = \text{n} \wedge \exists\text{y}[\text{book}(\text{y})_s \wedge \exists\text{s}'[{}^{|\vdash_e}\text{read-x-y}(\text{s}')_s]]]$

The meaning in (437) is an appropriate argument for the NumP, (438), and after they combine, we get the meaning of the TP in (439).

(438) $[\![\text{exactly two}]\!]^{s,g} = \lambda P\text{: } P \in D_{dt}.\ P(2) = 1 \wedge \neg\exists m > 2\ [P(m) = 1]$

(439) $[\![\text{Exactly two students read a book}]\!]^{s,g} =$
$\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m > 2\ [\exists x[\text{student}(x)_s \wedge |x| = m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]]$

(439) is true iff there is a plurality of students with the cardinality 2 who read a book, and there is no plurality of students with the cardinality higher than 2 who read a book. I.e., it is true if exactly two students read a book.

Now let us consider what kinds of alternatives *exactly* could have. *Exactly* is of the type <d,<dt,t>>, but I would like to suggest that we are not considering all possible functions of that type when *exactly* is in focus. We are considering only two alternatives of this type: *"exactly n"* and *"inexactly n"*, (440).[89]

(440) **Substitutions:**
$\{\lambda n.\ \lambda P.\ P(n){=}1 \wedge \neg\exists m > n\ [P(m) = 1],$
$\lambda n.\ \lambda P.\ P(n){=}1\}$

Thus, a sentence with focus on *exactly* like in (441) will have the set of alternatives to the prejacent in (442).

(441) Exactly$_F$ two students read a book.

(442) **ALT in (441):**
$\{\lambda s.\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m > 2\ [\exists x[\text{student}(x)_s \wedge |x| = m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]],$
$\lambda s.\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]\}$

[89] There are several ways to write the set of substitutions that would give the desired inference under the assumption that one of the alternatives in the set is true. For example, the sets of alternatives in (i) and (ii) would also work.

(i) $\{\lambda n.\ \lambda P.\ P(n){=}1 \wedge \neg\exists m > n\ [P(m) = 1],$
$\lambda n.\ \lambda P.\ P(n){=}1 \wedge\ \ \exists m > n\ [P(m) = 1]\}$

(ii) $\{\lambda n.\ \lambda P.\ P(n){=}1 \wedge \neg\exists m > k\ [P(m) = 1]\text{: } k \geq n\}$

The set in (442) contains two alternatives: *Exactly 2 students read a book*, and *Two students read a book*. According to the existential presupposition, one of the alternatives in this set must be true. Note that both alternatives in our set entail that two students read a book, hence, if one of the alternatives is true, it must be the case that two students read a book, (443).

(443) **The existential presupposition of (441):**
$\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash}{}_e\text{read-x-y}(s')_s]]]$

If we do not focus *exactly*, but instead place focus on something else, we will not generate such a presupposition. For example, if we focus the predicate, (444), we will get the alternative set in (445): a set of propositions of the form *Exactly 2 students did P*, where P is some predicate of individuals.

(444) Exactly two students [read a book]$_F$.

(445) **ALT in (444):**
$\{\lambda s.\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge P(x)] \wedge$
$\neg\exists m > 2\ [\exists x[\text{student}(x)_s \wedge |x| = m \wedge P(x)]]\text{: } P \in D_{et}\}$

The existential presupposition in this case will just say that there is something that exactly two students did:

(446) **The existential presupposition of (444):**
$\exists P \in D_{et}[\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge P(x)]$
$\wedge \neg\exists m > 2\ [\exists x[\text{student}(x)_s \wedge |x| = m \wedge P(x)]]]$

If we generate the presupposition in (443) and take it into account when looking at the subdomain alternatives of an NPI like *any*, we will get that *Exactly$_F$ 2 students read a book* Strawson-entails *Exactly$_F$ 2 students read a book in D'* for all D' that are subsets of the set of books. This is illustrated in (447).

(447) For any $D' \subseteq \{y\text{: book}(y)_s\}$:
$\lambda s:\exists x[\text{student}(x)_s \wedge |x|{=}2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash}{}_e\text{read-x-y}(s')_s]]].$
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x|{=}m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash}{}_e\text{read-x-y}(s')_s]]]$
$\Rightarrow_s$
$\lambda s:\exists x[\text{student}(x)_s \wedge |x|{=}2 \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash}{}_e\text{read-x-y}(s')_s]]].$
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x|{=}m \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash}{}_e\text{read-x-y}(s')_s]]]$

a. **Antecedent is true for *s*:**
$\exists x[\text{student}(x)_s \wedge |x|{=}2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m{>}2, \exists x[\text{student}(x)_s \wedge |x|{=}m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$

b. **Presupposition of the consequent is true for *s* and D':**
$\exists x[\text{student}(x)_s \wedge |x|{=}2 \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$

c. **Consequence of (447a) and (447b) taken together:**
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x|{=}m \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$

If the prejacent is true in a situation *s*, then there is a plurality of students with cardinality 2 such that they read a book, and there is no plurality of students with the cardinality of more than 2 such that they read a book, (447a). If the presupposition of the consequent is true, then there is a plurality of students with the cardinality 2 such that there is a book in some subdomain of the domain of books D' that they read, (447b). Taken together, this means that there is no plurality of students with the cardinality of more than 2 such that they read a book in D', (447c). Thus, we expect NPIs in the restrictor of an indefinite to be licensed in sentences in which *exactly* is focused and the existential presupposition is derived, giving us the set of alternatives in (448) that O_{ALT} will act upon.

(448) $\{\lambda s{:}\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]].$
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x| = m \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]:$
$D' \subseteq \{y{:}\ \text{book}(y)_s\}\}$

Note that the existential presupposition that we would derive in a sentence with predicate focus, for example, (446), wouldn't help us license an NPI in the restrictor of the indefinite. This is shown in (449): for any $D' \subseteq \{y{:}\ \text{book}(y)_s\}$, *Exactly 2 students* $[\textit{read a book}]_F$ does not Strawson-entail *Exactly 2 students* $[\textit{read a book in D'}]_F$.

(449) For any $D' \subseteq \{y{:}\ \text{book}(y)_s\}$:
$\lambda s{:}\ \exists P{\in}D_{et}[\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge P(x)] \wedge \neg\exists m > 2, \exists x[\text{student}(x)_s$
$\wedge |x| = m \wedge P(x)]].$
$\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x| = m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$
$\not\Rightarrow_s$
$\lambda s{:}\ \exists P{\in}D_{et}[\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge P(x)] \wedge \neg\exists m > 2, \exists x[\text{student}(x)_s$
$\wedge |x| = m \wedge P(x)]].$

$\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m > 2, \exists x[\text{student}(x)_s \wedge |x| = m \wedge \exists y[y \in D' \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$

a. **Antecedent is true for *s*:**
$\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]] \wedge$
$\neg\exists m{>}2, \exists x[\text{student}(x)_s \wedge |x|{=}m \wedge \exists y[\text{book}(y)_s \wedge \exists s'[{}^{|\vdash_e}\text{read-x-y}(s')_s]]]$

b. **Presupposition of the consequent is true for *s* and D':**
$\exists P{\in}D_{et}[\exists x[\text{student}(x)_s \wedge |x| = 2 \wedge P(x)]$
$\wedge \neg\exists m{>}2, \exists x[\text{student}(x)_s \wedge |x| = m \wedge P(x)]]$

Note that the assertion of the prejacent entails its presupposition: if exactly 2 students read a book, then there is something that exactly 2 students did. Thus, the prejacent is true if exactly 2 students read a book, (449a). The presupposition of the consequent does not reference the subdomain D' at all: all it requires is, again, that there be something that exactly 2 students did. Whenever the prejacent is true, the presupposition of the consequent will be satisfied. But the prejacent being true and the presupposition of the consequent being satisfied does not allow us to conclude that *exactly 2 students read a book in D'*. It could be that no student read a book in D'. Thus, the prejacent will not entail any of its focus alternatives. This means that the presupposition introduced by O_{ALT} will never be satisfied, and the NPI in the restrictor of an indefinite will not be licensed. Hence the ungrammaticality of sentences like (418) and (420) with *exactly* in which the verbal phrase is focused.

This is the general idea of why NPIs can sometimes occur with non-monotone quantifiers like *exactly*: under the right QUD, such quantifiers are focused-marked, this focus triggers an existential presupposition that one of the alternatives is true, and this presupposition makes sentences like *Exactly$_F$ 2 students read a book* Strawson-entail sentences like *Exactly$_F$ 2 students read a book in D'* $\subseteq \{x\text{: book}(x)_s\}$, leading to the NPI in the restrictor of the indefinite being licensed by O_{ALT}.[90]

[90]Note that having focus assignment functions will be necessary for implementing this idea formally, because we need to have two different focus operators operating on distinct sets of alternatives. For example, in Rooth's semantics (Rooth 1985, 1992), it is not possible to have two different operators that each associate with a different set of alternatives: any constituent can have only one focus value, and the focus value of the prejacent will be "disactivated" (i.e., it will be trivial) after we hit the first focus-sensitive operator. But we do need two different focus operators: one that deals with the focus on *exactly*, and one that deals with the subdomain alternatives of the indefinite—O_{ALT}. These two sets of alternatives should be kept separate, but the existential presupposition generated once dealing with alternatives of *exactly* should be factored in into the alternatives that we generate due to the presence of the focused-marked *any*.

There is a remaining question of why the cardinality of the numeral involved has to be small for the sentence to be felicitous:

(450) **Context:** There are 50 students in this class.
[Rovno pjat' /#sorok pjat' studentov] pročitali kakuju-libo /kakuju by
exactly five fourty five students read what-libo /what subj
to ni bylo knigu.
spec neg be.pst book.acc
'Exactly five/#fourty five students (out of 50) read any book.'

I would like to note that we see the same effect in sentences with Downward-Entailing quantifiers like *ne bolee* 'not more than':

(451) **Context:** There are 50 students in this class.
[Ne bolee pjati /#soroka pjati studentov] pročitali kakuju-libo /kakuju
not more five fourty five students read what-libo /what
by to ni bylo knigu.
subj spec neg be.pst book.acc
'Not more than five/#fourty five students (out of 50) read any book.'

Thus, I suggest that the sensitivity to the cardinality of the number should not be attributed to the presence of a non-monotone quantifier. One hypothesis, which I thank Danny Fox for suggesting to me, is that the infelicity of high numerals could arise because they require the addressee to accommodate a presupposition that is very specific and is unlikely to be in the common ground. For example, in (450) in order to license the NPI, the speaker needs to presuppose that there is a plurality of students with the cardinality of 45 who read a book. A presupposition like that might be harder to accommodate than the presupposition that five students read a book. To unify (450) and (451), this hypothesis would need to assume that the sentence with *ne bolee* 'not more than' also generates the existential presupposition.

Chapter 6

Conclusion

In this thesis I've tried to argue that there is no reason to think that there are propositional arguments: neither nouns nor verbs directly select for propositions. Embedding predicates can have arguments that denote individuals or situations, and embedded clauses are predicates that can be true of such arguments.

I proposed that tensed embedded CPs differ at least along the following two dimensions (table 6.1): they differ in whether the left periphery of the embedded CP contains the Cont projection, and in whether the clauses are nominalized or bare.

	Syntax	*Semantics*
CP-internal	+Cont (=Cont-CP)	displacement
	–Cont (=Sit-CP)	no displacement
CP-external	nominalized	argument (individual/GQ)
	bare	modifier (predicate)

Table 6.1: Typology of tensed embedded clauses

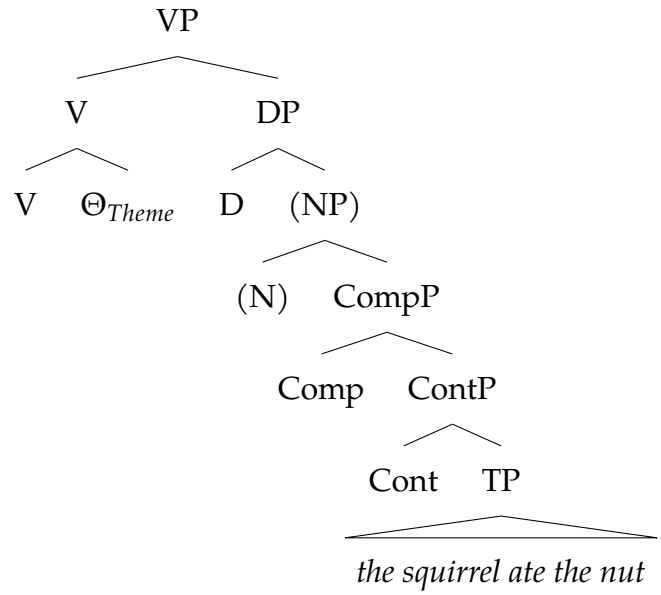
These two differences in the structure of embedded clauses go hand in hand with differences in how they are interpreted. Meanings of clauses that contain the Cont head involve displacement: the embedded proposition will be evaluated at the situations the CONT function projects. Clauses without ContP do not involve any shift to other situations different from the situation of evaluation.

Clauses that are nominalized can be definite or indefinite descriptions, and they are semantic arguments of verbs introduced by Θ-projections. Bare clauses are semantically verbal modifiers: they combine with the verb by Predicate Modification and modify the situation argument of the verbal predicate.

The two parameters give us a typology of four possible complementation patterns, illustrated below: nominalized Cont-CPs, (1), nominalized Sit-CPs, (2), bare Cont-CPs, (3), bare Sit-CPs, (4).

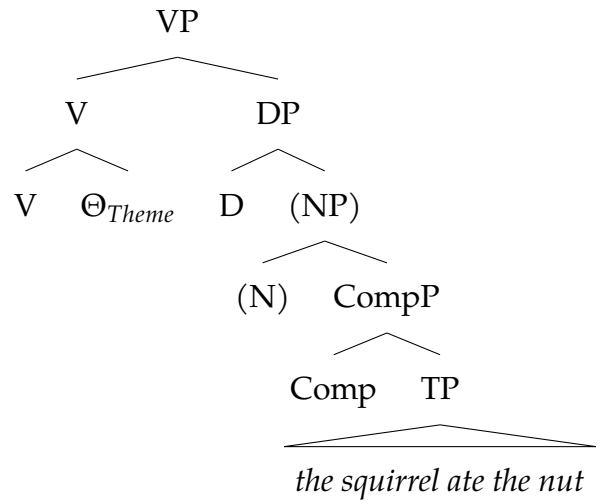
(1) *Nominalized Cont-CP, argument*

$[\![\text{VP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}(s')_s \wedge \textsc{Theme}(s')=\iota x(x \sqsubseteq s \wedge x \Vdash_e \{y\text{: } \textsc{Cont}(y)=$ $\{s\text{: the squirrel ate the nut in } s\}\})$



(2) *Nominalized Sit-CP, argument*

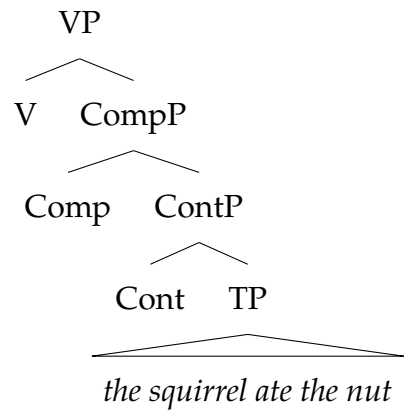
$[\![\text{VP}]\!]^{s,g,t} =$
$\lambda s'.\ {}^{\Vdash_e}\text{verb}(s')_s \wedge \textsc{Theme}(s')=\iota x(x \sqsubseteq s \wedge x \Vdash_e \{s\text{: the squirrel ate the nut in } s\})$



(3) *Bare Cont-CP, modifier*

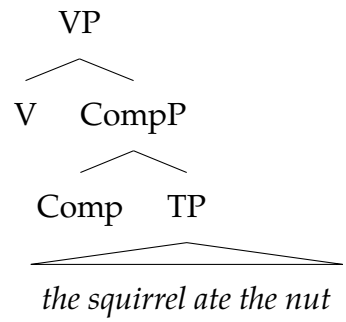
$[\![\text{VP}]\!]^{s,g,t}$ =

$\lambda s'.\ {}^{\Vdash_e}\text{verb}(s')_s \wedge s' \Vdash_e$ {s'': $\textsc{Cont}(s'')$={s: the squirrel ate the nut in s}}



(4) *Bare Sit-CP, modifier*

$[\![\text{VP}]\!]^{s,g,t} = \lambda s'.\ {}^{\Vdash_e}\text{verb}(s')_s \wedge s' \Vdash_e$ {s: the squirrel ate the nut in s}



The nominalized clauses in (1) and (2) are illustrated above with definite determiners and with the Θ_{Theme} head introducing them, but as discussed before (see chapters 4 and 5), nominalized clauses can also be indefinite, and can be introduced by a variety of argument-introducing heads, just like regular DPs.[1]

I argued that with attitude and speech verbs, only 3 out of the 4 patterns presented above are attested: bare Sit-CPs cannot be complements of verbs like 'think' or 'claim' (see chapter 4). This follows from the fact that predicates like 'think' denote predicates true of situations that exemplify thinking. Combining a bare Sit-CP in (4) with 'think' would thus result in a predicate true of situations that at the same time exemplify thinking and exemplify the squirrel eating the nut. I pro-

[1] In (3) and (4) I do not write separately that $s' \sqsubseteq s$ (the requirement that comes from the meaning of Comp) because that already follows from ${}^{\Vdash_e}\text{verb}(s')_s$.

posed that since no possible situation can satisfy that requirement, such sentences will always be false, leading to their ungrammaticality. Bare Sit-CPs however can be modifiers of verbs of occurence like Russian *byvat'* 'happen' or *slučat'sja* 'occur', as they do not lead to contradictory meanings with these verbs due to the almost vacuous semantics of these verbal predicates (see section 4.3.3 of chapter 4).

I argued that the variation in the structure and meaning of tensed embedded clauses summarized above affects many properties that the clauses exhibit. For example, whether we will perceive factive inferences can depend on what meaning the clause has and how it is integrated with the verb. If a nominalized Sit-CP scopes high, we will get a factive inference even if the clause is indefinite and the verb does not introduce a lexical presupposition (chapter 5). Whether clauses are transparent for movement is also sensitive to the internal structure of CPs and how they are integrated with the verb (chapter 4). For example, nominalized Cont-CPs seem to be islands even when the DP combines directly with the verbal head, but nominalized Sit-CPs in the same configuration can be moved out of. Bare Cont-CPs on the other hand are transparent for movement as long as they are sisters to verbs.

Another result of this thesis is new arguments in favor of *the equality semantics* of displacement in clausal embedding (Moulton 2009, Elliott 2020, Bassi & Bondarenko 2021). Based on the data from clauses that combine with nouns (chapter 2), from clausal conjunction and disjunction (chapter 3) and from subjunctive clauses that behave like weak NPIs (chapter 5), I concluded that displacement in clausal embedding should not be treated as arising due to the presence of a universal modal. Matrix clauses and embedded clauses can of course contain modal elements, but modal semantics is not part of the semantics of clausal embedding itself.

Finally, this dissertation provided further support for the perspective according to which many restrictions in the domain of clausal embedding arise because the meanings of certain structures are semantically ill-formed (see Mayr 2018, 2019, T. Roberts 2019, Theiler, Roelofsen & Aloni 2019, Uegaki & Sudo 2019, a.o.). Thus, we do not have to appeal to selection to encode, for example, that verbs like 'think' cannot combine with bare Sit-CP clauses, or that Korean conjunction *-ko* cannot conjoin two ContPs, or that Russian *pomnit'* 'remember', but not *vyskazyvat'sja* 'state' can combine with subjunctive clauses in SDE environments. Given the syntactic elements involved, and the meanings associated with them, we can exclude such unattested patterns without the need to appeal to syntactic selection.

I believe there are many research questions that the proposal I have put forward raises. Here I will only briefly discuss three of them.

The equality semantics for displacement in attitude and speech reports raises an immediate question of how entailment in attitude and speech reports should be modeled. For example, how do we ensure that *Mitya believes that Lena watched soccer in a bar* entails *Mitya believes that Lena watched soccer* in a system where this does not follow from the semantics of clausal embedding itself? Within the outlined framework, this question transforms into the question of what are the mereologies of different attitudinal/speech eventualities and objects. For example, Elliott (2020) discusses how we could model entailment for belief states by suggesting that when it comes to verbs like *believe*, Cont is a homomorphism between the Boolean algebra of belief states and the Boolean algebra of propositions. But there are many things we need to work out in order to have a general theory of how propositional content of individuals is related to the propositional content of their parts.

Another pressing question concerns the interaction between aspectual properties of embedding verbs and clausal selection. There has been recent work showing that the lexical aspect of the verb can influence whether it embeds questions (Grohne 2016, 2017, White & Rawlins 2018, Özyıldız 2021, White 2021) , and also whether Neg-Raising inferences are observed (Bervoets 2014, 2020, Özyıldız 2021). In section 4.9 of chapter 4 I showed that lexical aspect and event structure of verbs like *ob"jasnit'* 'explain' in Russian correlate with the integration path of the embedded clause—whether it is nominalized and describes an internal argument of the verb or describes its situation argument. Since lexical aspect in general is sensitive to the verb's argument structure, the view that there are two paths of clausal integration (*via the Situation argument* and *via the DP argument*) raises a question: how do these paths of integration affect aspectual composition? What restrictions on combinations of types of clauses and types of aspectual specification do we find, and can all of them be made to follow from independently needed restrictions on how verbal arguments and modifiers interact with lexical aspect?

Finally, with a richer typology of clausal embedding at our disposal, we are in a position to ask how different types of embedded clauses affect various syntactic processes. Are cross-clausal dependencies sensitive to the integration path of the embedded clause? Are they sensitive to the distinction between Cont-CPs and Sit-CPs? Do we find differences between different kinds of cross-clausal dependen-

cies? For example, in chapter 4 we observed that both the internal structure of the clause and how it is integrated with the verb played a role for A-bar processes like cross-clausal *wh*-movement and scrambling in languages like Russian and Buryat. Do A-dependencies show the same sensitivity? Finally, the view that embedded clauses are never direct arguments of verbs raises the question of whether restrictions on cross-clausal dependencies that we find are reducible to restrictions on dependencies into nominal arguments and into verbal modifiers, or whether there are some restrictions that are unique to clausal embedding.

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