Non-finite clauses and root modality: evidence from Russian

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This paper reports a case of belief/intent alternation in Russian attitude verb *dumat'* 'think/intend' and connects Russian data with reported belief/intent alternation found with English verb *persuade*. On a more theoretical side, this paper suggests that contextual allosemy is an appropriate tool for analysing attitude verb alternations. The paper is thus a contribution to the typology of attitude verb alternations and a plea for considering contextual allosemy a viable option for works on attitude predicates. Finally, I suggest that generalizations such as the Implicational Complementation Hierarchy of Wurmbrand & Lohninger (2023) can be used in an explanatory way to rule out possible allosemy rules.

1. Introduction

This paper discusses a case of belief-/intent-report alternation with Russian attitude verb *dumat'* 'think/intend', which is presented in examples in (1) below, which show that the verb *dumat'* denotes a belief report when embedding a finite clause (1a) and an intent report when embedding a non-finite clause (1b). The paper discusses this alternation in light of other work on attitude verb alternations in the Neo-Davidsonian approach to attitude semantics, according to which it is the embedded clause that encodes the attitudinal semantics, while the matrix predicate is just a one-place predicate over states (see Kratzer 2006 and all the subsequent work on Neo-Davidsonian approaches to attitude reports).

(1)   Belief-/intent-report alternation with Russian verb *dumat'*

   a.   Belief report with a finite *čto*-clause
        Vasja dumaet čto my idem pit'   pivo.
        V.   thinks   that we go   drink beer
        'Vasja thinks that we are going to drink beer.'

b.   Intent report with a non-finite clause
Vasja dumaet vypit'   piva.
V.   thinks   drink.INF beer
'Vasja intends to drink beer.'

This paper's goals are as follows. First, I show that the *dumat'*+INF construction denotes intention, giving cross-linguistic support to the claim in Grano (2019) that beliefs and intents form a grammatically natural class in exclusion of desire (giving some level of support to the notion of rational attitude state, closed under conjunction and entailment, see Grano (2019) for elaboration). Thus, I argue that *dumat'* in Russian behaves in a similar fashion to English verbs like *persuade*, which alternate between formation of belief and formation of intent, as shown in (2), where the verb *persuade* denotes forming of a belief with a finite embedded clause (2a), and forming of an intent with a non-finite embedded clause (2b).

(2)   Belief/intent alternation with English verb *persuade*

a.   Mary persuaded John that it was raining.

b.   Mary persuaded John to leave.

Unlike Grano and other contemporary work on attitude predicates (Kratzer 2006; Bogal-Allbritten 2016), however, I wish to suggest that the alternation does not arise in a compositional fashion. As Grano himself writes (Grano 2019:9), it is a hard challenge to give a flexible enough semantics for infinitives, which predicts their occurrence in intent reports, desire reports, and other constructions where non-finite clauses are preferred.

My answer to the challenge is to reject the strictly compositional *desideratum* in the first place. I argue that the most natural understanding of such alternation comes from such notions as coercion (Pustejovsky 1993), co-compositionality (Fodor & Lepore 1998), and contextual allosemy (Marantz 2013) — all of which are ways for two elements to influence each other's interpretation directly and not via the widespread theoretical move of putting almost all the semantic properties of the attitude report into the left periphery of the embedded clause, as it is often done in the literature following the Neo-Davidsonian approach to attitude predicates.

The paper is structured as follows. In section 2, I discuss the two relevant verbs, which undergo a belief/intent alternation (English *persuade* and Russian *dumat'*), and review Grano's own work on the topic and highlight the difficulties which face any linguist that wishes to analyse the discussed alternations compositionally while staying faithful to the observed morphosyntax. In light of these obstacles, section 3 presents an alternative analytical approach, building on contemporary research on 'contextual allosemy', pursued by Distributed Morphology theorists (Marantz 2013; Wood 2015, 2023; Myler 2016). In a way, similar to Wood (2023), I suggest that the contextual allosemy approach presents a reasonable middle alternative to homophony approaches (which fail to account for the observed ambiguity) and strictly compositional approaches (which often end up unfaithful to morphosyntactic facts) in providing a non-compositional way for two syntactic objects to influence each other's interpretation. Finally, I explore some ideas on how to provide analyses based on contextual allosemy with explanatory bite, which they lack by design (see Ramchand (2015) for a critical take on contextual allosemy based on this property), building on recent work on clausal complementation by Wurmbrand & Lohninger (2023).

2. Belief/intent-alternations in English and Russian

This section discusses two cases of belief/intent alternation, in English and in Russian. The discussion of English verb *persuade* is drawn from Grano (2019). The discussion of Russian is built upon my own informal elicitation of 5 Russian native speakers, aged 20-30.

2.1. Russian dumat'

Firstly, to rule out a homophony approach to the alternation, I provide indirect evidence from the suppletive nominalisation *mysl'* 'thought/intention' (or, alternatively, a semantically related nominal, the point still holds). The core observation is that *mysl'* undergoes the very same alternation as *dumat'*, making the homophony analysis much less attractive.

(3)　The noun *mysl'* shows the same alternation

　　a.　*U　menja est' mysl'　čto　Vlad idiot.*
　　　　PREP me　is　thought that Vlad idiot
　　　　'I think that Vlad is an idiot.'

　　b.　*U　menja est' mysl'　vypit'　piva.*
　　　　PREP me　is　thought drink.INF beer
　　　　'I'm thinking about drinking some beer.'
　　　　(='I intend to drink some beer')

The next goal is to pinpoint the semantic properties of the attitude denoted by the *dumat'*+INF construtction. Building on Grano (2022), I use the following diagnostics to establish that the verb *dumat'* expresses an intent when combined with an infinitival clause. Firstly, as argued by Grano, intents differ from, say, desires in their realism — the embedded event should be possible in the real world (as conceived by the attitude holder). Thus, it is felicitous to express a desire to be immortal while such an intent is judged infelicitous or even insane, as shown in the pair of sentences in (4).

(4)　Desires and intents differ with respect to realism

　　a.　?I intend to be immortal.　　　　　　　　　　　　　　　　(Grano 2022:25)

　　b.　I want to be immortal.

As shown in the example (5), the Russian verb *dumat'*, when combined with an infinitival clause, behaves as an intent-report with respect to the property of realism. I should note that there seem to be some aspect-related restrictions on this construction (hence, I changed the embedded form *be immortal* to *become immortal*). The precise nature of these restrictions is unclear to me but I do not think that they are of relevance to the problems discussed in this paper.

(5)　?*Ya dumaju　stat'　bessmertnym.*
　　　1SG think.1SG become immortal
　　　'I intend to become immortal'.

Grano's second diagnostic is the property of consistency. Intentions are consistent in the sense that if p is true in all worlds corresponding to the subject's intents (the subject intends p) and q is

true in all worlds corresponding to the subject's intents as well (the subject intends q), then $p \wedge q$ is true in all worlds corresponding to the subject's intents. Combined with the realism property, the property of consistency implies that intents are infelicitous with mutually incompatible actions. As shown in the example (6), expressing the intention to marry two people at the same time is infelicitous.

(6) ??I intend to marry Alice and I intend to marry Sue.   (Grano 2022:25)

As shown in the example (7), the Russian verb *dumat'* when combined with an infinitival clause behaves as an intent-report with respect to the property of consistency.[1]

(7) ?*Ya dumaju ženit'sja na Maše i dumaju ženit'sja na Saše.*
      1SG think.1SG marry   on Masha and think.1SG marry on Sasha
      'I intend to marry Masha and I intend to marry Sasha.'

Third property of intent reports, as argued by Grano, is monotonicity. If John intends p and p implies q, then John intends q as well. This property can be identified by infelicity of claiming that John doesn't intend p but intends $p \wedge q$ (since p implies $p \wedge q$ for all p's and q's). Crucially, not all attitudes are monotonic. Desires have been famously shown by Heim (1992) to not be monotonic, for example. The difference between intents and desires with respect to monotonicity is given in the pair of sentences in (8).

(8)   Desires and intents differ with respect to monotonicity

         a. #I don't intend to teach, but (since I have to) I intend to teach on Tuesdays and Thursdays.

         b.   I don't want to teach, but (since I have to) I want to teach on Tuesdays and Thursdays.

As shown in the example (9), the Russian verb *dumat'* when combined with an infinitival clause behaves as an intent-report with respect to the property of monotonicity.

(9) #*Ya ne dumaju prepodavat', no (raz nado) ya dumayu prepodavat' po*
      1SG NEG think.1SG teach,   but since necessary 1SG think   teach   on
      sredam.
      Wednesdays
      'I don't intend to teach, but (since I have to) I intend to teach on Wednesdays.'

To summarise, Grano's diagnostics show that Russian verb *dumat'* expresses an intention report. If one wants to give a general enough lexical semantics for *dumat'* (in the spirit of Bogal-Allbritten 2016), the infinitival clause needs to encode the necessary semantic components of the intention report. The consequences of such *desideratum* have already been explored by Grano (2019) based on the belief/intent alternation found with the English verb *persuade*. Grano's arguments are reviewed in the next subsection.

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[1] The judgements here are rather intricate, mainly due to the fact that *dumat'*+INF constructions are interpreted as speaker-directed questions with another prosodic pattern (and optional presence of the interrogative particle =*li*).

2.2. English persuade

The basic pattern is shown in the example (10), repeated from the introduction. There are three main questions associated with such alternations: (i) are we dealing with underspecification or polysemy? (ii) why is the belief-forming reading found with finite embedded clause, while the intent-forming reading found with the non-finite embedded clause? (iii) why does the alternation target only beliefs and intents (and not, say, desires)?

(10)   Belief/intent alternation with English verb *persuade*

    a.   Mary persuaded John to leave. ⇒ Mary formed an intent in John.

    b.   Mary persuaded John that it was raining. ⇒ Mary formed a belief in John.

The first question is answered by Grano by applying the zeugma test (Zwicky & Sadock 1975) to the alternation (exemplified in (11)), the idea of which is to force the same token to be interpreted as both belief and intent. The idea is that we are dealing with a single underspecified predicate since the verb *persuade* can embed a conjunction of a finite and non-finite embedded clause without the result sounding 'funny'.

(11)   Zeugma test with *persuade*

    a.   I persuaded John that the city is in danger and to evacuate immediately.

    b.   I persuaded John to evacuate immediately and that the safest place to be is by the sea.

A possible point of worry is that Russian *dumat'* does not behave like *persuade* with respect to the zeugma test, possibly suggesting a homophony analysis, against the conclusion we arrived at based on the behaviour of the nominal *mysl'*. Although I basically ignore this in what follows and leave the issue for further exploration, I urge the reader to keep this observation in mind.

(12)   Zeugma test with *dumat'*

    a. ?*Ya dumaju vypit'   piva i   čto v bare est' mesta.*
       I   think   drink.INF beer and that in bar   are   seats
       Int.: 'I intend to drink beer and think that there are seats at the bar.'

    b. ?*Ya dumaju čto v bare est' mesta i   vypit'   piva.*
       I   think   that in bar   are   seats   and drink.INF beer
       Int.: 'I intend to drink beer and think that there are seats at the bar.'

It should be noted, however, that the zeugma test is far from perfect and has been criticised in the literature, especially when the lack of zeugma is taken to indicate the lack of ambiguity (Viebahn 2018; Moldovan 2021). Crucially, Viebahn (2018) argues that the zeugma test only identifies homophony and not other types of ambiguity. For example, the so-called 'logical' polysemy (which is argued to be ambiguity, see Falkum & Vicente 2015) is in fact identified by the same token being compatible with the word's different interpretations (e.g., in example 13, the token *the book* is interpreted both as a piece of fiction, to which the predicate *interesting* is applicable, and as a physical object, to which the predicate *heavy* is applicable).

(13)   The book is really interesting but is too heavy for me to bring it to vacation.

For the purposes of exposition, however, we shall take Grano's argument as convincing. The second question (the distribution of readings across syntactic structures) is answered by Grano in a way similar to the recent literature on the Neo-Davidsonian approach to attitude reports (Kratzer 2006; Bogal-Allbritten 2016) — the difference lies in the types of modality encoded in finite and non-finite embedded clauses. He argues that the non-finite clauses encode a modal base of preference (goals, desires, intents, etc.), while the finite clauses encode a modal base of information (beliefs, etc.). This semantics ensures that belief readings map onto structures with finite embedded clauses and intent readings map onto structures with non-finite embedded clauses.

(14)   Semantics of embedded clauses per Grano (2019)

    a. $[\![\text{PRO to leave}]\!] = \lambda e.\forall w \in \text{PREF}(e): \exists e'$ [leave(e') $\wedge$ AG(e') = PRO in w]

    b. $[\![\text{that it is raining}]\!] = \lambda e.\forall w \in \text{INFO}(e): \exists e':$ [rain(e') in w]

The third question is the most interesting one, in my opinion. Should the semantics of non-finite embedded clauses be as provided above, what restricts the verbs like *persuade* to intents specifically? A solution seems to require there to be a semantically natural class of attitudes, which includes intents and beliefs but excludes desires and similar attitudes. Grano argues that the relevant class is what he calls the class of rational attitudes, identified by the following properties: closure under entailment and closure under conjunction.

    As shown in (15), beliefs and intents are closed under conjunction while desires are not. It is possible to have a desire to go to Rome, a desire to go to Paris, but not have a desire to go to both cities, while having such collection of beliefs and intents is incoherent.

(15)   Closure under conjunction in beliefs, intents, but not desires

    a.   John wants to go to Paris this summer, and he wants to go to Rome this summer, but he doesn't want to go to both Paris and Rome this summer.

    b.   #John believes he'll go to Paris this summer, and he believes he'll go to Rome this summer, but he doesn't believe he'll go to both Paris and Rome this summer.

    c.   #John intends to go to Paris this summer, and he intends to go to Rome this summer, but he doesn't intend to go to both Paris and Rome this summer.

As shown in (16), beliefs and intents are closed under entailment while desires are not. It is possible to not have a desire to teach next semester, but have a desire to teach on Tuesdays and Thursdays, while having such collection of beliefs and intents is incoherent.

(16)   Closure under entailment in beliefs, intents, but not desires

    a.   John doesn't want to teach next semester, but given that he has to, he wants to teach Tuesdays and Thursdays.

    b.   #John doesn't believe he'll teach next semester, but given that he has to, he believes he'll teach Tuesdays and Thursdays.

    c.   #John doesn't intend to teach next semester, but given that he has to, he intends to teach Tuesdays and Thursdays.

To make the reference to English justified, the same patterns are found with Russian verbs *xotet'* 'want', *dumat'* 'think', and *namerevat'sja* 'intend'. Examples in (17) show that closure under conjunction groups *dumat'* 'think' and *namerevat'sja* 'intend' together in exclusion of *xotet'* 'want'.

(17) Closure under conjunction in beliefs, intents, but not desires (Russian)

a. *Vasja xočet poexat' v Pariž etim letom,   a   eščë on xočet poexat' v*
   V.   wants go.INF to Paris this summer and also he wants go.INF to

   Rim   etim letom,   no on ne   xočet poexat' i   v Pariž, i   v Rim
   Rome this summer, but he NEG wants go.INF and to Paris and to Rome

   etim letom.
   this summer
   'Vasja wants to go to Paris this summer, and he wants to go to Rome this summer, but he doesn't want to go to both Paris and Rome this summer.'

b. #*Vasja dumaet čto on poedet v Pariž etim letom,   a   eščë on dumaet čto*
   V.   thinks that he goes to Paris this summer and also he thinks that

   on poedet v Rim   etim letom,   no on ne   dumaet čto on poedet i
   he goes to Rome this summer but he NEG thinks that he goes and

   v Pariž, i   v Rim   etim letom.
   to Paris and to Rome this summer
   Int.: 'Vasja thinks he'll go to Paris this summer, and he thinks he'll go to Rome this summer, but he doesn't think he'll go to both Paris and Rome this summer.' (note that the example is # in English as well)

c. #*Vasja namerevaetsja poexat' v Pariž etim letom,   a   eščë on namerevaetsja*
   V.   intends go.INF to Paris this summer and also he intends

   poexat' v Rim   etim letom,   no on ne   namerevaetsja poexat' i   v
   go.INF to Rome this summer, but he NEG intends go.INF and to

   Pariž, i   v Rim   etim letom.
   Paris and to Rome this summer
   Int.: 'Vasja intends to go to Paris this summer, and he intends to go to Rome this summer, but he doesn't intend to go to both Paris and Rome this summer.' (note that the example is # in English as well)

Examples shown in (18) show that the closure under entailment works the same in Russian: *dumat'* 'believe' and *namerevat'sja* 'intend' are grouped together in exclusion of *xotet'* 'want'.

(18) Closure under entailment in beliefs, intents, but not desires (Russian)

a. *Vasja voobšče ne   xočet prepodavat' v etom godu, no, raz   on dolžen, on*
   V.   at.all NEG wants teach.INF in this year but since he has.to he

   xočet prepodavat' po vtornikam.
   wants teach.INF on tuesdays
   'Vasja doesn't want to teach next semester, but given that he has to, he wants to teach Tuesdays.'

b. #*Vasja voobšče ne   namerevaetsja prepodavat' v etom godu, no, raz   on*
  V. at.all NEG intends   teach.INF in this year but since he

  dolžen, on namerevaetsja prepodavat' po vtornikam.
  has.to he intends   teach.INF on tuesdays

  Int.: 'Vasja doesn't intend to teach next semester, but given that he has to, he intends
  to teach Tuesdays.' (note that the example is # in English as well)

c. #*Vasja ne   dumaet, čto on budet   prepodavat' v   etom godu, no,   ras*
  V. NEG thinks that he teaches in   this year but since he

  on   dolžen, on   dumaet, čto on   budet prepodavat' po vtornikam.
  has.to he thinks that he teaches on tuesdays

  Int.: 'Vasja doesn't think he'll teach next semester, but given that he has to, he think
  he'll teach Tuesdays.' (note that the example is # in English as well)

So far, so good. It would seem that all one needs is to encode the rational attitude restriction in the lexical semantics of alternating verbs like English *persuade* and Russian *dumat'*. The problem is, however, that the properties of closure under entailment and conjunction follow from the Hintikkian semantics for attitude predicates. Both closures are due to universal quantification over the modal base. The fact that desires show a non-Hintikkian behavior is not news, however, and has been analysed either as desires having non-Hintikkian semantics (Heim 1992) or having context-sensitive semantics that neutralises Hintikkian properties (von Fintel 1999).

However, according to the Neo-Davidsonian wave in the literature on attitude reports, the modal quantification part of attitudinal semantics should be encoded by the embedded clause. If the characteristic properties of the class of rational attitudes (closure under entailment and closure under conjunction) follow from specific configuration of quantification over possible worlds, an attitude report is a rational attitude reports due to semantics of its embedded clause and not the lexical semantics of the verb. This point raises two problems. First question: what kind of semantics should the embedded non-finite clause have in order to be compatible with both Hintikkian and non-Hintikkian behavior with respect to inferences? The second question: what kind of semantics should the lexical verb have in order to be restricted to attitude reports with Hintikkian behavior with respect to inferences (i.e., being restricted to rational attitudes)?

The first question, of course, could be answered by positing different silent operators in the syntax of embedded non-finite clauses in desire reports and in intention reports. It is, however, a clearly unsatisfactory solution in absence of detectable syntactic differences between embedded non-finite clauses in desire reports and in intention reports — I am not aware of such differences and have been unable to find any. In my opinion, the presented considerations show that the core logic of modern Neo-Davidsonian approaches to attitude reports seems inapplicable in solving the belief/intent alternations presented in this section. This conclusion, I believe, motivates my own search for alternatives to a strictly decompositional approach to attitude alternations. A specific proposal for a plausible alternative is articulated in the next section.

3. Another approach to attitude alternations

In this section, I wish to suggest that contextual allosemy, the idea of structurally-conditioned polysemy found in the Distributed Morphology literature (Marantz 2013), should not be left out of the picture when discussing analytical options for alternations such as the belief/intent

report alternation found with verbs like Russian *dumat'* and English *persuade*. This section is structured as follows. First, I introduce the notion of contextual allosemy and show why a version of it is unavoidable in the theory of grammar (largely following Preminger 2021). From that, it follows that if such a mechanism is available in the grammar, it makes perfect sense to have the mechanism do as much work as possible.

Then, I turn to the domain of attitude alternations and argue that while the contextual allosemy itself is a non-explanatory mechanism, it can be constrained by other generalizations in the domain of clausal embedding, taking the tenets of the synthesis model of clausal complementation as an example (Wurmbrand & Lohninger 2023). The main idea is that contextual allosemy open the door for a variety of explanations regarding syntax-semantics correspondences, not only the strictly compositional analyses common in the literature.

3.1. Contextual allosemy: why and how

Contextual allosemy is a subspecies of polysemy (a single syntactic object being associated with multiple lexical meanings), which is conditioned by the structural context of the polysemous syntactic object. It has been used in the literature to account for the ambiguity found in nominalisations (Wood 2023), proper names (Saab & Lo Guercio 2020), possessive sentences (Myler 2016), number morphology (Schwarzschild 2022), voice morphology (Wood 2015), and other phenomena.

The idea is simple. Similarly to Vocabulary Insertion (see review articles in Bonet & Harbour 2012 and Gouskova & Bobaljik 2020), which maps syntactic objects to their respective morphophonological realizations in a one-to-many fashion depending on the structural context, there is Sense Insertion, which maps syntactic objects to their respective semantic interpretations in a one-to-many fashion depending on their structural context (that is called contextual allosemy). For example, the [PL] feature in English exhibits contextual allomorphy: it is realised as *-z* in the general case but as *-en* when combined with the noun *ox*. These observations are encoded in the following rules of Vocabulary Insertion.

(19) Vocabulary Insertion rules for English plural (partial)

    a.   [PL] $\leftrightarrow$ /-en/ / $\sqrt{\text{OX-}}$]__

    b.   [PL] $\leftrightarrow$ /-z/

Similarly to [PL] feature getting two distinct morphophonological interpretations, some syntactic objects (mostly roots) are prone to having multiple distinct interpretations. A classic case is the English root $\sqrt{\text{TERRIF-}}$ found in such words as *terrify* (a synonym of *scare*) and *terrific* (a synonym of *great*). Clearly, the two interpretations of the root are unrelated to each other, but the morphological relatedness requires to treat the *terrif-* as the exponent of the same object (especially if one assumes phonological individuations of roots, see Borer 2013). One can provide the following rules of Sense Insertion (the term comes from Schwarzschild 2022), according to which the default interpretation of the root $\sqrt{\text{TERRIF-}}$ is related to meaning of *scary* somehow (I do not wish to make any substantive claim about the nature of lexical meanings), while the interpretation in the context of an adjectivizing head *a* is related to the meaning of *great*.

(20)   Sense Insertion rules for English $\sqrt{\text{TERRIF-}}$

    a. $\sqrt{\text{TERRIF-}}$ ↔ GREAT /__] *a*]

    b. $\sqrt{\text{TERRIF-}}$ ↔ SCARY

Following Preminger (2021), I want to argue that some version of divergence from the one-to-one mapping architecture of syntax-semantics interface is unavoidable. The argument, of course, comes from idioms but, crucially, idioms that do not form a constituent (constituent idioms are much easier accommodated into a compositional framework). For example, the idiom presented in examples like *read the shit out of that book*. As shown in example (21), [the shit] and [out of] do not form a constituent in exclusion to the direct object, which could be mapped onto the meaning component of, say, intensity. The non-constituency is supported by the observation that the *the shit out of* idiom can undergo a certain kind of passivization in English, which would have been impossible, if the *the shit* constituent was a part of a larger *the shit out of* constituent, which were the sister of *that book*. The construction appears to be structurally parallel to sentences like (21c). The fact that the parts of the idiom do not form a constituent rules out an analysis, in which the meaning of intensity comes from a non-terminal syntactic object.

(21)   The idiomatic interpretation comes from a non-constituent *the shit out of*

    a.   She read the shit out of that book.

    b.   The book had [the shit]$_1$ read t_1 [out of it].

    c.   She drank [some coffee] [out [of that cup]].

This single example makes it necessary to have a mechanism that allows the interpretation of an item to vary depending on the syntactic context. So, for example, the verb, when composed 'next to' *the shit out of*, is interpreted as an intensive action (see Preminger 2021 for precise technicalities). If such a mechanism is independently necessary in the grammar, I believe it makes perfect sense to use it as much as possible — especially if it simplifies the syntactic/semantic analysis. In the next subsection, I wish to sketch an approach to attitude verb alternations which makes use of the mechanism of contextual allosemy.

3.2. An allosemy approach to attitude verb alternations
3.2.1. The proposal

The formal implementation for an allosemy approach to attitude alternations should be rather straightforward: we list possible meaning and the configurations they arise in, as in (22). The provided Sense Insertion rules aim to capture the fact that using the non-finite clause is a 'marked' option. I use 'non-finite clause' as a placeholder label in order not to commit to a particular analysis of non-finite clauses: all that matters is that Sense Insertion be sensitive to the finiteness distinction.

(22)   Sense Insertion rules for $\sqrt{\text{DUMAT'}}$

    a. $\sqrt{\text{DUMAT'}}$ ↔ $\lambda e.\text{intention}(e)$ /__non-finite clause

    b. $\sqrt{\text{DUMAT'}}$ ↔ $\lambda e.\text{belief}(e)$

Circumstantial evidence for the belief interpretation being the unmarked one comes from the ability of the nominal *mysl'* to refer to the attitude (or the corresponding attitudinal object, see Moltmann 2020). The nominal *mysl'*, when not embedding a clause, can refer to a previous belief report but not to a previous intent report, suggesting that structural proximity to a non-finite clause is necessary for an intent interpretation of $\sqrt{\textsc{dumat}}$'.[2]

(23) The belief interpretation is the default

   a. Belief interpretation is available for bare nominal *mysl'*
       Vasja dumaet čto Petja ubijca. Ego mysl' ne daët mne pokoja. Možet,
       V.   thinks that P.   killer his thought NEG give me   rest   maybe

       Vasja prav?
       V.   right
       'Vasja thinks that Petja is the killer. His thought bothers me. Maybe, Vasja is right?'

   b. Intention interpretation is available for bare nominal *mysl'*
       Vasja dumaet ženit'sja na moej sestre. Ego mysl' ne daët mne pokoja.*
       V.   thinks marry.INF on my sister. His thought NEG give me rest
       'Vasja intends to marry my sister. His intent bothers me.'

The question lies in the explanatory value of such an approach — it is immediately clear that the mappings from syntactic terminals to lexical meanings are not constrained by anything except some notion of locality on the syntactic context influencing the lexical interpretation (see Marantz 2013). The issue is, then, what rules out a hypothetical variant of Russian (call it Naissur), which has the same sort of alternation, but the distribution of interpretations is mirrored: Naissur *dumat'* is interpreted as intention with finite clauses instead of non-finite clauses. As it stands, there is no principled reason for such a language not to exist. Although it is non-obvious that one would wish to rule out such a language, I still take the putative impossibility of such a language something to account for. I do so primarily to argue against a common objection raised to allosemy-based analyses.

(24) SI rules for $\sqrt{\textsc{dumat}}$' in Naissur

   a. $\sqrt{\textsc{dumat}}$' $\leftrightarrow$ $\lambda e.\text{intention}(e)$ /__finite clause
   b. $\sqrt{\textsc{dumat}}$' $\leftrightarrow$ $\lambda e.\text{belief}(e)$

I should emphasize that the highlighted problem is relevant to any approach that encodes the alternation in the lexicon in any way and does not derive the distribution of interpretations across syntactic structures compositionally. Some authors (e.g. Ramchand 2015) make the argument that non-compositional theories thus lack any explanatory value and should be disregarded. However, I wish to build on recent work on structural properties of complementation to argue that the range of possible allosemy schemata can be constrained by more general linguistic properties, which, however, cannot be accounted for by a strictly compositional approach.

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[2] I should note that the presented data seems to make a case for blocking at LF. Although it is not directly relevant to the plot of the paper, such phenomena can be construed as arguments for parallel treatment of LF and PF. I thank Mal Shah, Veronika Gvozdovaitė, and an anonymous reviewer for discussion of this point.

3.2.2. Synthesis model of clausal embedding

As stated earlier, I suggest that other generalizations may be at work in ruling out such allosemy schemata. To make the argument more substantive, I recap Implicational Complementation Hierarchy (ICH) of the synthesis model of clausal complementation laid out by Wurmbrand & Lohninger (2023) and apply the ideas to the domain of attitude alternations. The core notion behind ICH is the split of the embedded clauses into three types, based on their semantic properties: propositions, situations, and events (see Ramchand & Svenonius 2014). Clauses interpreted as propositions are temporally independent and have no subject restrictions, clauses interpreted as situations are somewhat constrained temporally (in having future orientation) and have some subject restrictions, and clauses interpreted as events are fully dependent on the matrix tense and matrix subject (Wurmbrand & Lohninger 2023:30).

MOST INDEPENDENT		LEAST INDEPENDENT
LEAST TRANSPARENT	Proposition >> Situation >> Event	MOST TRANSPARENT
LEAST INTEGRATED		MOST INTEGRATED

Table 1. The implicational complementation hierarchy

The main finding motivating the ICH is the observation that various inter-clausal syntactic phenomena respect the hierarchy in their distribution: basically, no inter-clausal phenomenon (like indexical shift, long passives, long distance agreement, etc.) will be found in clauses denoting propositions or events but not in clauses denoting situations. More narrowly, the proposition class of clauses is often found displaying properties associated with structural independence (opacity for non-local dependencies, overtness of the subject, and so on), while the event class of clauses is often found displaying properties associated with structural integration of two clauses (transparency for non-local dependencies, covertness of the subject, and so on).

Wurmbrand & Lohninger (2023) use complementation in Buryat as an example. Buryat has three types of embedded clauses: full CPs, nominalisations, and eventive converbs, exemplified in (25). The examples shown here link CPs with proposition-type clauses, nominalisations with situation-type clauses and eventive converbs with event-type clauses.

(25)   Three types of embedded clauses in Buryat

    a.   Eventive converbs in Buryat
       bagšə   honin   ju:mə xö:rə-žə ürd-jə
       teacher interesting thing tell-CONV manage-PST
       'The teacher managed to tell an interesting story.'   (Bondarenko 2018:44–45)

    b.   Nominalisations in Buryat
       lenə   lizə-də   üšö   nʒgə konfətə ʒdi-x-ijə-n'   zübšö-gö
       Lena Liza-DAT more one   sweet   eat-FUT-ACC-ʒ allow-PST
       'Lena allowed Liza to eat one more sweet.'   (Wurmbrand & Lohninger 2023:26)

    c.   CP-size clauses in Buryat
       sajənə bi   tʒrgə ʒmdəl-ʒ-b   gʒžə   mʒd-ʒ
       Sajana 1SG.NOM cart   break-PST-1SG COMP know-PST
       'Sajana found out that I broke the cart.'   (Bondarenko 2018:44–45)

The so-called 'ICH signature' is seen once one looks at the distribution of overt nominative subjects and long passives across the three types of embedded clauses. Overt nominative subjects are a property of 'independent' clauses and is, accordingly, found only with CP-size complements. Examples in (26) show that overt nominative subjects are impossible with eventive converbs and nominalisations, while the example (25c) found above already shows that overt nominative subjects are licit in CP-size embedded clauses of Buryat.

(26) Overt nominative subjects in Buryat are impossible with eventive converbs and nominalisations

  a. Eventive converbs in Buryat
      *bagšə badmə   honin   ju:mə xö:rə-žə ürd-jə
      teacher Badma.NOM interesting thing tell-CONV manage-PST
      'The teacher managed to do so that Badma/someone told an interesting story.'
      (Bondarenko 2018:44–45)

  b. Nominalisations in Buryat
      bi *sajənə   / sajən-in / sajən-ijə du: du:lə-žə   bɛ:-x-ijə   šagən-a-b
      1SG Sajana.NOM / S-GEN   / S-ACC   song sing-CONV be-FUT-ACC hear-PST1-1SG
      'I heard that/how Sajana sang a song.'   (Wurmbrand & Lohninger 2023:27)

Long passive, on the other hand, is a property of 'integrated' clauses and is, accordingly, found only with eventive converbs, as shown in examples in (27). When taken together, these phenomena present the ICH signature: nominalisations are 'in the middle' with respect to integration, while CP-size clauses are less integrated and eventive converbs are most integrated.

(27) Long passive in Buryat are:

  a. Licit with eventive converbs
      bʒšəg   tumən-ʒr   bʒšə-žə   ʒxilə-gd-ʒ
      letter.NOM Tumen-INSTR write-CONV begin-PASS-PST
      Lit. 'The letter was begun to write by Tumen.'
      'Tumen began to write the letter.'   (Wurmbrand & Lohninger 2023:29)

  b. Illicit with nominalisations
      *bi sajən-ar badm-in xarə-h-ijə(-n')   mʒdə-gd-ʒ-b
      1SG S-INSTR B-GEN   see.PFCT-ACC(-3SG) know-PASS-PST-1SG
      Lit. 'I was known by Sajana that Badma saw (me).'
      Intended: 'Sajana found out that Badma saw me.'
      (Wurmbrand & Lohninger 2023:29)

  c. Illicit with CP-size clauses
      *bi sajən-ar badmə   xar-a gʒžə mʒdə-gd-ʒ-b
      1SG S-INSTR Badma.NOM see.PST COMP know-PASS-PST-1SG
      Lit. 'I was known by Sajana that Badma had seen (me).'
      Intended: 'Sajana found out that Badma had seen me.'
      (Wurmbrand & Lohninger 2023:29)

So far, so good. The crucial point, however, is that CP-size clauses are freely available with situation-type complements as well, which shows that a clean one-to-one syntax-semantics mapping cannot be established. Wurmbrand and Lohninger, however, do not conclude that the

syntax-semantics correspondences constitute an unlawful domain where everything goes. Instead, they establish a 'minimal structure requirement' for semantic classes of embedded clauses. In the spirit of Ramchand & Svenonius (2014) (and other works, such as Grohmann 2003), they argue that events require the vP domain (the thematic domain, the domain of event description), situations require the TP domain (the TAM domain, the domain of temporal anchoring), propositions require the CP domain (the operator domain, the domain of discourse properties). Importantly, the 'minimal structure requirements' seem to follow from general semantic considerations about containment of the three semantic types posed by Wurmbrand and Lohninger. To quote their work, 'Situations are elaborations of Events, Propositions are elaborations of Situations. More specifically, Situations are created by combining time/world parameters with an existentially closed Event, and Propositions combine speaker-oriented/discourse-linking parameters with an existentially closed Situation. The ranking and implicational nature of the ICH can then be seen as a reflex of the resulting semantic complexity scale.'

Despite the clear semantic underpinnings, one should not forget that the core idea behind the 'minimal structure requirement' is that semantics 'tolerates' bigger structures (such as CP-size clauses with situations in Buryat). The resulting system is dubbed by Wurmbrand and Lohninger as the 'synthesis' model: the syntax is not determined by semantics and, as a result, the interaction between the verb (which determines the semantic class of the embedded clause) and the syntax of the embedded clause (which determines the syntactic class of the embedded clause) is more idiosyncratic than allowed by strictly compositional proposals in the domain of clausal embedding.

3.2.3. Synthesis model of attitude alternations

What I wish to propose is to extend the guiding ideas of the synthesis model to the domain of attitude alternations and strengthen the explanatory bite of the synthesis model. As put forth in the previous sections, my technical solution to the belief/intent alternation was to use the idea of contextual allosemy put forth in the Distributed Morphology literature. The Sense Insertion rules (in parallel to Vocabulary Insertion rules) for the Russian verb *dumat'* are repeated below.

(28)   Sense Insertion rules for $\sqrt{\text{DUMAT}}$'

    a. $\sqrt{\text{DUMAT}}$' $\leftrightarrow \lambda e.\text{intention}(e)$ /__non-finite clause

    b. $\sqrt{\text{DUMAT}}$' $\leftrightarrow \lambda e.\text{belief}(e)$

My main claim here is that the range of possible Sense Insertion rules is constrained by more general semantic considerations, such as the 'minimal structure requirement' proposed by Wurmbrand & Lohninger (2023). Although the distribution of the interpretations of Russian $\sqrt{\text{DUMAT}}$' does not naturally fall out from semantic composition, it is still constrained by semantic considerations, which underlie the minimal structure requirement: there is 'not enough' structure in the non-finite cluase for putative Sense Insertion rules in (29) to be possible, which meets the explanatory concern laid out earlier.

(29)   Mirror Sense Insertion rules for $\sqrt{\text{DUMAT}}$'

    a. $\sqrt{\text{DUMAT}}$' $\leftrightarrow \lambda e.\text{belief}(e)$ /__non-finite clause

    b. $\sqrt{\text{DUMAT}}$' $\leftrightarrow \lambda e.\text{intention}(e)$

The case study of $\sqrt{\text{DUMAT'}}$ presented in this work has put forth a novel way to approach the intricate syntax-semantics interactions in the domain of clausal embedding where the syntactic properties of the embedded clause influence the semantic interpretation of the lexical verb of the main clause. I believe that the constrained contextual allosemy analysis presented in this paper is an adequate third way between homophony analyses and strictly compositional analyses and does not suffer from the problems of either extreme. Encoding the alternation in the Encyclopaedia (the list of lexical syntax-semantics correspondences) allows to circumvent the evidence against an approach with homophonous lexical items. Having the alternation encoded as idiosyncratic and not deriving the alternation via compositional means allows to circumvent the overgeneration problem faced by an approach employing a silent left periphery operator and the inability to give constrained semantics to non-finite embedded clauses faced by a compositional approach without silent operators in the embedded clause.

Finally, I should note that the reasoning in the style of Wurmbrand & Lohninger (2023) is not the only way in which the presented system can be constrained. As an anonymous reviewer notes, I have not really given an account for the fact that intentions and beliefs seemingly form a natural class (see 'rational attitudes' of Grano 2019). I suggest that such considerations be given a diachronic spin: the common semantic properties of intentions and beliefs underlie the emergence of alternations such as the one discussed in this paper, but they are not necessarily given an important role in the synchronic analysis. To take stock, I suggest that the impoverished explanatory power of mechanisms like contextual allosemy opens the pathway to other explanations, which can lie outside the domain of semantic composition and rules of synchronic grammar.

4. Conclusions

This paper has discussed a belief/intent report alternation found with Russian verb *dumat'*. I have connected the data to other work on similar alternations (Grano 2019) and have thus extended the existing typology of belief/intent alternations across langauges. On a more theoretical side, I have suggested that the alternation under discussion (and, possibly, other attitude alternations as well) can be understood via contextual allosemy without running into the problems faced by a strictly compositional account of attitude alternations. The somewhat arbitrary nature of contextual allosemy (argued to be its main flaw, see Ramchand 2015) has been argued to be constrained by more general syntactic-semantic considerations, such as the Implicational Complementation Hierarchy of Wurmbrand & Lohninger (2023).

Acknowledgements

Abbreviations

1,2,3	first, second, and third person	NEG	negation
ACC	accusative case	NOM	nominative case
COMP	complementiser	SG	singular
CONV	converb	PASS	passive voice
FUT	future tense	PFCT	perfect
GEN	genitive case	PREP	preposition
INF	infinitive	PST	past tense
INSTR	instrumental case		

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References

Bogal-Allbritten, E. A. (2016). *Building meaning in Navajo*. [PhD thesis]. UMass Amherst.

Bondarenko, T. I. (2018). Passivization in the *ža*-converb construction in Barguzin Buryat: On the syntactic representation of voice. *Voprosy Jazykoznanija* 54:3, pp. 40–71.

Bonet, E. & D. Harbour (2012). Contextual allomorphy. Trommer, J. (ed.), *The morphology and phonology of exponence*, Oxford University Press, Oxford, pp. 195–235.

Borer, H. (2013). *Structuring Sense: Volume 3: Taking Form*. Oxford University Press, Oxford.

Falkum, I. L. & A. Vicente (2015). Polysemy: Current perspectives and approaches. *Lingua* 100:157, pp. 1–16.

von Fintel, K. (1999). NPI licensing, Strawson entailment, and context dependency. *Journal of Semantics* 16:2, pp. 97–148.

Fodor, J. A. & E. Lepore (1998). The emptiness of the lexicon: reflections on James Pustejovsky's The Generative Lexicon. *Linguistic Inquiry* 29:2, pp. 269–288.

Gouskova, M. & J. D. Bobaljik (2020). Allomorphy and vocabulary insertion. [Ms., submitted to Handbook of Distributed Morphology, CUP], https://ling.auf.net/lingbuzz/005388.

Grano, T. (2019). Belief, intention, and the grammar of persuasion. Ronai, E., L. Stigliano & S. Yenan (eds.), *Proceedings of the 54th annual meeting of the Chicago linguistic society*, Chicago Linguistic Society, Chicago, pp. 25–136.

Grano, T. (2022). Intention reports and eventuality abstraction in a theory of mood choice. [Ms]. https://www.dropbox.com/s/brxs5gpyvib9ltr/intend_mood_distr_f22.pdf.

Grohmann, K. K. (2003). *Prolific domains: On the anti-locality of movement dependencies*. John Benjamins Publishing, Amsterdam.

Heim, I. (1992). Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9:3, pp. 183–221.

Kratzer, A. (2006). Decomposing attitude verbs. [Talk given at the Hebrew University of Jerusalem].

Marantz, A. (2013). Locality domains for contextual allomorphy across the interfaces. Matushansky, O. & A. Marantz (eds.), *Distributed morphology today: Morphemes for Morris Halle*, MIT Press, Cambridge, Massachusetts, pp. 95–115.

Moldovan, A. (2021). Descriptions and tests for polysemy. *Axiomathes* 31, pp. 229–249.

Moltmann, F. (2020). Truthmaker semantics for natural language: Attitude verbs, modals, and intensional transitive verbs. *Theoretical Linguistics* 46:3–4, pp. 159–200.

Myler, N. (2016). *Building and interpreting possession sentences*. MIT Press, Cambridge.

Preminger, O. (2021). Natural language without semiosis. [Unpublished slides, UMD], https://go.lingsite.org/symslides.

Pustejovsky, J. (1993). Type coercion and lexical selection. Pustejovsky, J. (ed.), *Semantics and the Lexicon*, Kluwer, Dodrecht, pp. 73–96.

Ramchand, G. (2015). Allosemy — No thanks. [Blogpost], http://generativelinguist.blogspot.com/2015/09/allosemy-no-thanks.html.

Ramchand, G. & P. Svenonius (2014). Deriving the functional hierarchy. *Language sciences* 46, pp. 152–174.

Saab, A. & N. Lo Guercio (2020). No name: The allosemy view. *Studia Linguistica* 74:1, pp. 60–97.

Schwarzschild, R. (2022). Pure Event Semantics. [Ms]. https://ling.auf.net/lingbuzz/00688.

Viebahn, E. (2018). Ambiguity and zeugma. *Pacific Philosophical Quarterly* 99:4, pp. 749–762.

Wood, J. (2015). *Icelandic morphosyntax and argument structure*. Springer, New York.

Wood, J. (2023). *Icelandic nominalizations and allosemy*. Oxford University Press, Oxford.

Wurmbrand, S. & M. Lohninger (2023). An implicational universal in complementation–theoretical insights and empirical progress. Hartmann, J. M. & A. Wöllstein (eds.), *Propositionale Argumente im Sprachvergleich*, Narr Francke Attempto Verlag, Tübingen.

Zwicky, A. M. & J. M. Sadock (1975). Ambiguity tests and how to fail them. Kimball, J. P. (ed.), *Syntax and Semantics (volume 4)*, Brill, Boston, pp. 1–36.