

Transfer of Russian Actantial Syntactic Relations into German

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Abstract

Similarities and certain difficulties which arise in the translation of some Russian syntactic constructions into German are discussed. This concerns especially the necessity of transferring several Russian surface syntactic relations into different German relations in a number of cases. A list of German actantial surface syntactic relations is proposed.

Keywords

surface syntactic relation, dependency, transfer, (machine) translation, German, Russian.

1 Introduction

An essential feature of the linguistic processor ÈTAP-3, which was developed by Ju.D. Apresjan, I.M. Boguslavskij, L.L. Iomdin and others, is the machine translation from Russian to English and vice versa (cf. Апресян & al., 1989 and Апресян & al., 2003). The machine translation from Russian to German is an additional feature which has a prototypical character until now. The level that is used for transfer between languages is the so called normalized syntactic representation.¹ The labels for surface syntactic relations which are used to describe dependencies in German in that prototypical version of ÈTAP are borrowed from English². My aim is to introduce a system of syntactic relations for German which should be as similar as possible to the system of Russian relations in ÈTAP to have a basis for a computational implementation of Russian-German translation. Furthermore, I want to introduce German

¹ This is a level that is located between surface and deep syntactic representations. It uses, on the one hand, surface syntactic relations (which are specific for each language) to describe dependencies of words, but on the other hand e.g. Lexical Functions (which are independent of languages) as typical elements of the deep syntactic representation in MTT are used, and certain language specific words (e.g. auxiliary verbs, strongly governed prepositions) are removed at this level.

² Cf. the rules described in RA-TRADUCT.49 of ÈTAP rule manager in version 3.1.91 from the year 2008. This is part of ÈTAP-3 system which I am very grateful that Leonid L. Iomdin placed at my disposal.

labels for the German relations in order to take into account that the exact definitions of syntactic relations are specific for each language. In this paper, I will only consider German surface syntactic relations (= SyntRel) in the field of actantial relations.³ In this field no new relations for German are needed—on the contrary, two of the Russian relations seem to have no counterpart in German (cf. sections 2.6 and 2.7)—whereas in the fields of attributive and auxiliary constructions some new relations will be necessary. In order to find out in which details German relations are different from Russian relations I found it useful to compare the syntactic constructions of Russian phrases and their German translations. As a result of this I will propose a list of German actantial relations⁴ and consider some difficulties in transferring Russian syntactic relations into German relations. In doing so I will not present any ready-made rules, but simply show some possibilities of translations. In a lot of cases there are no (essential) changes necessary, so I will concentrate on some cases where changes are needed.

2 Transfer with some difficulties

(Апресян & al., 2010:24—31) describes seventeen Russian actantial relations. Seven of them, which entail some difficulties at least in some cases when transferred into German, are considered here in section 2. In what follows I'm not always proposing the best possible German translations of Russian phrases but translations that meet two requirements: they should have a syntactic construction as similar to the Russian original as possible and they should be at least acceptable or good German. These requirements are oriented at the needs of a possible implementation in machine translation.

2.1 Predicative Relation

In a lot of cases the Russian *предикативное синтаксическое отношение* (*предик*) 'predicative syntactic relation', which connects the predicate with its grammatical subject, is more or less equivalent to its German counterpart, the *prädikative syntaktische Relation* (*prädik*).⁵ Nevertheless, in some cases there are changes to be made: When there is no copula in Russian present tense the copula has to be inserted in German. This is rather trivial, nevertheless it has to be considered when constructing a dependency tree: there is the German *prädikative Relation* from the copula to the grammatical subject whereas there is the Russian

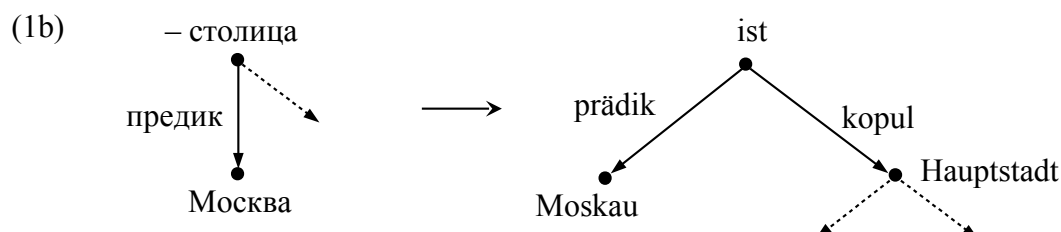
³ Further relations, i.e. in the fields of attributive, coordinate and auxiliary constructions will be considered in future papers. I also will not deal here with the problem of word order in German; for a discussion on that, see e.g. (Gerdes & Kahane, 2007)

⁴ For the names and definitions of German relations I follow in a first step the Russian and English relations that are used in ÈТАР, cf. (Апресян & al., 2010:24—43) and (Апресян & al., 1989:71—121), and then adapt them to the requirements of German syntax. German linguists, like e.g. (Heringer, 1996), often do not use any labels for syntactic relations, whereas (Specht, 2003) uses partially different labels. I, nevertheless, will use a terminology as close to ÈТАР as possible in order to facilitate a computational implementation.

⁵ The definitions of these two relations, however, are different in detail: in the simplest construction, the Russian predicative relation connects a finite verb with the grammatical subject in the nominative case; this also holds for the German equivalent. In Russian constructions, however, the subject can also be e.g. a noun in the genitive or partitive case, which is not possible in German; cf. the definition of the Russian predicative relation in (Апресян & al., 2010:25). Differences of this kind are also to be found in the definitions of the other Russian relations and their German equivalents.

предикативное отношение from the nominal or attributive predicate to the grammatical subject.⁶ The German equivalent of the Russian predicate is a dependent of the *kopulative Relation* (*kopul*) ‘copulative relation’, which connects the copula with its object (cf. section 2.4), as illustrated in (1a) with the dependency tree of (1b)⁷:

- (1a) Москва – столица России.⁸ ‘*lit.* Moscow – capital of Russia’ → Moskau ist die Hauptstadt Russlands. ‘Moscow is the capital of Russia’



The broken lines represent relations to lexemes which are not relevant for the transfer of the Russian *предикативное отношение*.

In translating Russian verbs with the reflexive particle *-ся/-сь* which express passive voice, an auxiliary verb has to be inserted in German. This auxiliary is the syntactic head of the phrase; the participle of the full verb is connected to the auxiliary via the *passiv-analytische Relation* (*pass-anal*) ‘passive analytical relation’:⁹

- (2) Заявка [Y] изучается [X]. ‘*lit.* The request audits-*reflexive*’ – Der Antrag [Y] wird [X] [–pass-anal→] geprüft. ‘The request is audited’¹⁰

Russian constructions with *есть* ‘to be’ as an existential verb have to be translated into a different German construction, e.g. with *es gibt* ‘*lit.* it gives, *i.e.* there is’; the expletive *es* ‘it’ is then grammatical subject (and thus the dependent of the *prädikative Relation*), the German equivalent of the Russian subject is dependent on the verb via the *1. kompleteive Relation* (*1.kompl*) ‘1. completeive relation’, which connects a predicate with its first object:¹¹

- (3a) Есть внешний повод для этого. ‘*lit.* Is an external cause for it’ – Es gibt einen äußeren Anlass dafür. ‘There is an external cause for it’

⁶ Cf. rule RA-EXPANS.08 of ÈTAP.

⁷ In the dependency trees I will use inflected forms of lexemes for a better reading instead of the names of lexemes plus morphological characteristics that are standard in MTT.

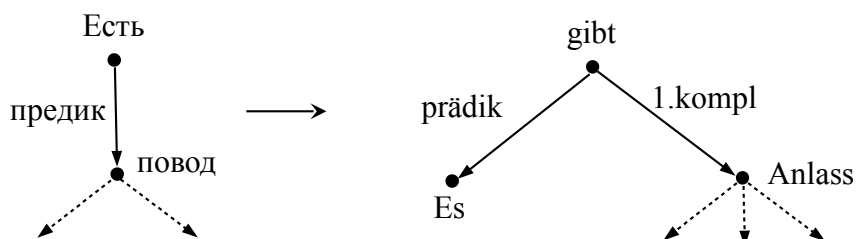
⁸ Russian examples are taken from (Апресян & al., 2010) and from <http://www.ruscorpora.ru>.

⁹ The *passiv-analytische Relation* is not an actantial but an auxiliary syntactic relation which is not treated here; cf. rule RA-EXPANS.54 of ÈTAP.

¹⁰ Because of lack of space it is not possible to contribute dependency trees for all examples. To show the syntactic relation in question Latin letters are used to indicate the syntactic governor [X] and dependent [Y].

¹¹ Here we have a mismatch at the deep syntactic level between the two constructions, as they are described in (Mel’čuk & Wanner, 2006): the Russian construction includes a support verb *Func₀*, whereas the German construction is a rare case with the support verb *Oper₀*; cf. (Reuther, 2003).

(3b)

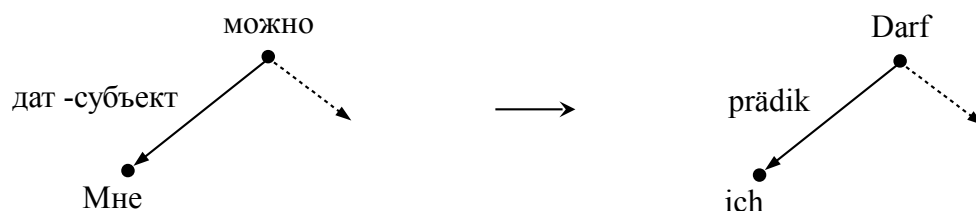


2.2 Dative-subject Relation

In certain cases no changes are necessary in the transfer of the Russian *дательное-субъектное отношение* (*дат-субъект*) ‘dative-subject relation’ which has the German counterpart *Dativ-Subjekt-SyntRel* (*dat-subjekt*). Some Russian constructions, however, e.g. with *можно* ‘lit. it is possible, i.e. one can, one may’ or *должно* ‘lit. it is obligatory, i.e. one should, one ought’ or an impersonal modal verb entail a transfer of the *дат-субъект* relation into a German *prädikative Relation*. Russian *можно* (cf. example 4) or *должно* or the impersonal modal verb (cf. example 5) respectively is translated into a personal verb in German. The Russian dative subject is translated into a German nominative subject which is a syntactical dependent of the personal verb via the *prädikative Relation*:

(4a) Мне можно уйти? ‘lit. To-me it-is-possible to go?’ – Darf ich gehen? ‘May I go?’

(4b)

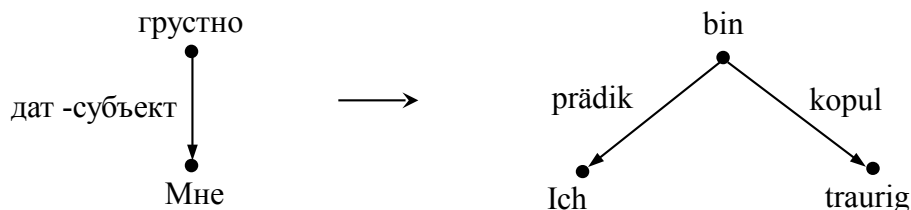


(5) Мне [Y via дат-субъект] пришлось [X] сказать больным. ‘To-me had-reflexive to report sick’ – Ich [Y via prädik] musste [X] mich krank melden. ‘I had to report sick’

In some cases when the Russian predicate is an adjective, the copula has to be inserted in German and with that a *kopulative Relation* ‘copulative relation’ to the adjective (cf. also (1)):

(6a) Мне грустно. ‘lit. To-me sad’ – Ich bin traurig. ‘I am sad’

(6b)



In some cases when in Russian there is no modal verb but an infinitive plus dative subject, a modal verb has to be inserted in German (e.g. *dürfen*, *können*, *müssen* ‘may, can, must’). The full verb which is syntactic head of the subject in the Russian phrase depends on the modal verb in German via the *1. komplete Relation*:

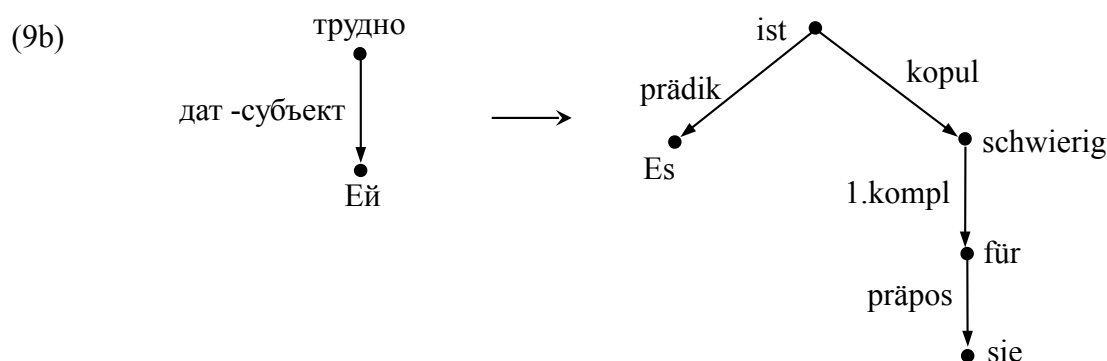
(7) Мне [Y via дат-субъект] сейчас выходить [X]. ‘lit. To-me go now’ – Ich [Y via prädik] muss [X] nun gehen. ‘I must go now’

When translating some Russian constructions, the copula, and the preposition *für* ‘for’ and with that the *präpositionale Relation* (*präpos*) ‘prepositional relation’ (cf. section 2.5) have to be inserted in German.¹² This means that the Russian dative subject is translated into a German prepositional group where the preposition is a dependent of the adjective via the *1. komplete Relation* and at the same time the head of the noun via the *präpositionale Relation*:

- (8) Пете [Y via дат-субъект] это совсем неинтересно [X]. ‘*lit.* To-Petja this absolutely uninteresting’ – Das ist völlig uninteressant [X] für [Y via 1.kompl] Petja. ‘That is absolutely uninteresting for Petja’

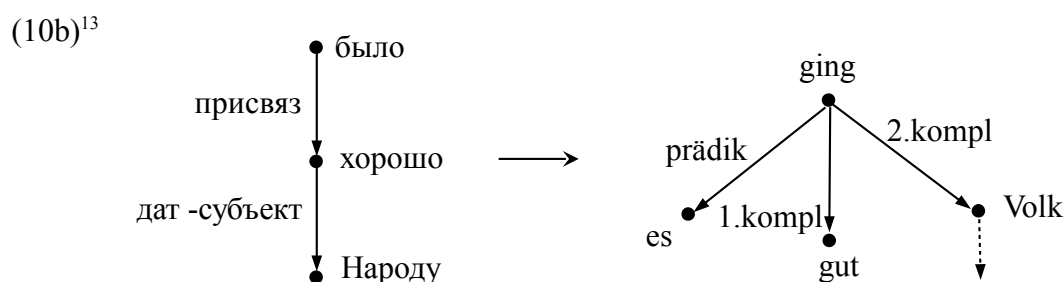
Sometimes an additional expletive *es* ‘it’ as grammatical subject has to be inserted in German:

- (9a) Ей трудно. ‘*lit.* To-her difficult’ – Es ist schwierig für sie. ‘It is difficult for her’



In other cases a completely different syntactic construction is needed in German with *es geht* ‘*lit.* it goes’ – a phrase which has two syntactic complements:

- (10a) Народу было хорошо. ‘*lit.* To-people was well’ – Dem Volk ging es gut. ‘*lit.* To-the people it went well; *i.e.* people felt well’



2.3 Agentive Relation

There are no big difficulties in the transfer of the Russian *агентивное СинтО* (*агент*) ‘agentive relation’ into the German *agentive Relation* (*agent*). Some changes, nevertheless,

¹² To be precise, this preposition, being semantically empty, is not inserted at the transfer phase, but during the expansion from the normalized to the surface syntactic representation (cf. also rules RA-EXPANS.05 and RA-EXPANS.06 of ETAP). Nevertheless, since this paper is dealing with surface syntactic relations, I only will compare these levels of representation in both languages.

¹³ The Russian *присвязочное СинтО* (*присвяз*) ‘copulative relation’ is the equivalent of the German *kopulative Relation* (cf. section 2.4).

are needed in all cases. If a verb is the head of the Russian *агентивное СунтО* ‘agentive relation’, in German there has to be inserted the preposition *von* ‘from, by’ or *durch* ‘by’¹⁴ which is then dependent on the verb via the *agentive Relation*. The preposition is the head of the noun via a *präpositionale Relation* (cf. section 2.5). The agentive Russian noun that is in the instrumental case will become a German noun in the dative case if the preposition *von* is inserted, or in the accusative case if the preposition *durch* is inserted (these details, of course, are defined in the government patterns of the two prepositions):

- (11) рассматриваемый [X] комиссией [Y] вопрос ‘*lit.* considered by-commission issue’ – die von [Y] der Kommission betrachtete [X] Frage ‘the issue considered by the commission’

The Russian participle used in (11) alternatively can be translated into a German subordinate relative clause; but this does not have any further influence on the transfer of the agentive relation as described above – it only has influence on the translation of the participle itself:

- (12) вопрос рассматриваемый [X] комиссией [Y] ‘*lit.* The issue considered by-commission’ – die Frage, die von [Y] der Kommission betrachtet [X] wurde ‘the issue that is considered by the commission’

In a sentence where a reflexive verb is used to express passive voice in Russian, an analytical verb form is used in German which again does not have any further influence on the transfer of the agentive relation; see the following example (cf. also example 2):

- (13) Вопрос рассматривается [X] комиссией [Y]. ‘*lit.* The issue considers-*reflexive* by-commission’ – Die Frage wird von [Y] der Kommission betrachtet [X]. ‘The issue is considered by the commission’

If a noun is the head of the Russian *агентивное СунтО* ‘agentive relation’, this relation has to be transferred into a German *quasi-agentive Relation* (*quasi-agent*) because this better meets the definitions of these two relations.¹⁵ In this case the government pattern of the noun defines which preposition (*von*, *durch* ‘from, by’ etc.) has to be inserted:

- (14) приём [X] президентом [Y via агент] делегации ‘*lit.* the welcome by-president of the delegation’ – der Empfang [X] der Delegation durch [Y via quasi-agent] den Präsidenten ‘the welcome of the delegation by the president’

2.4 Copulative Relation

When a Russian copula is translated into a German copula, in a lot of cases there are no essential changes needed. When the dependent noun or adjective in Russian is in the instrumental

¹⁴ Cf. footnote 12 and rule RA-EXPANS.07 of ÈТАР.

¹⁵ I propose to use the German *agentive Relation* for verbs in passive voice and the *quasi-agentive Relation* for nouns, whereas in ÈТАР-3 the Russian *агентивное* ‘agentive’ relation is used both for verbs in passive voice and for nouns as syntactic heads if the dependent is a noun in the instrumental case; cf. the Russian definitions by (Апресян & al., 2010:26). Another possible approach would be to differentiate between nouns with a meaning of artefacts and others according to the definitions of the related English relations developed by (Апресян & al., 1989:77f.).

case, this dependent always will be in the nominative case in German. However, this does not have any influence on the syntactic relations and the Russian *присвязочное СинтО* (*присвяз*) ‘copulative relation’ is transferred into a German *kopulative SyntRel* (*kopul*):

- (15) Он был [X] учителем [Y,instr]. – Er war [X] Lehrer [Y,nom]. ‘He was a teacher’

An important difference, however, between Russian and German is that there are more copulative verbs in Russian. In ÈТАР seven Russian verbs are marked with the syntactic feature ‘СВЯЗ’ as copula verbs, namely *бывать* ‘to be, to visit, to happen, to take place’, *быть* ‘to be, to exist etc.’, *делаться* ‘to become’, *казаться* ‘to seem’, *оказываться* ‘to turn out to be’, *оставаться* ‘to continue to be, to remain, to stay’, *становиться* ‘to become’. In German there are only three copula verbs: *sein* ‘to be’, *werden* ‘to become’ and *bleiben* ‘to continue to be’. Five of the Russian verbs can be translated into German copula verbs, whereas two of them, namely *казаться* ‘to seem’ and *оказываться* ‘to turn out to be’ are translated into German full verbs and thus the Russian *присвязочное СинтО* is transferred into a German *1. kompletive Relation*, cf. (16). This also holds for some translations of the five remaining Russian copula verbs into German verbs other than copula.

- (16) Он казался [X] больным [Y via присвяз]. – Er wirkte [X] krank [Y via 1.kompl]. ‘He seemed sick’

Depending on the verb that is used in German in some cases the adjective has to be extended to a construction with a full verb plus the particle *zu* ‘to’ and an infinitive of the copula; the predicative adjective then is a dependent of this newly inserted copula:

- (17) Он казался [X] больным [Y via присвяз]. – Er schien [X] krank zu [Y via 1.kompl] sein. ‘He seemed to be sick’

In some cases an expletive *es* ‘it’ is needed, which is a dependent of the copula via the *prädikative Relation*; this does not have any influence on the *kopulative Relation*:

- (18) Жаль [Y] было [X] расставаться с ним. ‘lit. A pity was to part with him’ – Es war [X] schade [Y], sich von ihm zu trennen. ‘It was a pity to part with him’

2.5 Prepositional Relation

The Russian *предложное СинтО* (*предл*) ‘prepositional relation’ is transferred into its German counterpart, the *präpositionale Relation* (*präpos*) quite often. In some special cases, however, the Russian preposition is translated into a German adverb which entails a change of syntactic construction: instead of the Russian prepositional relation from the preposition to the noun, we find that the direction of the German relation, which is an (*eigentliche*) *attributive Relation* (*attrib*) ‘attributive relation proper’, is reversed, namely from the noun to the adverb:

- (19) Спортсмен бегал по [X] 20 километров [Y via предл] в день. – Der Sportler lief jeweils [Y via attrib] 20 Kilometer [X] am Tag. ‘The sportsman ran 20 kilometers a day’

In (20) we have a situation similar to (19): an appropriate translation again includes the transfer of the *предложное* ‘prepositional’ into a German (*eigentliche*) *attributive Relation* by

reversing the direction of dependency, but here a numeral is the syntactic head of the adverb *über* ‘over’¹⁶ via the (*eigentliche*) *attributive Relation*:

- (20) Свыше [X] ста человек [Y via предл] явилось на субботник. – Über [Y via attrib]
100 [X] Menschen erschienen zum Subbotnik. ‘Over a hundred people came to the
subbotnik’

In (21) we again have an example where the Russian preposition is translated into a German adverb, but here the adverb is connected to the numeral as dependent of a *restriktive Relation* (*restr*) ‘restrictive relation’, which connects a word with a restrictive particle or adverb:

- (21) около [X] десяти [Y via предл] – ungefähr [Y via restr] zehn [X] ‘about ten’

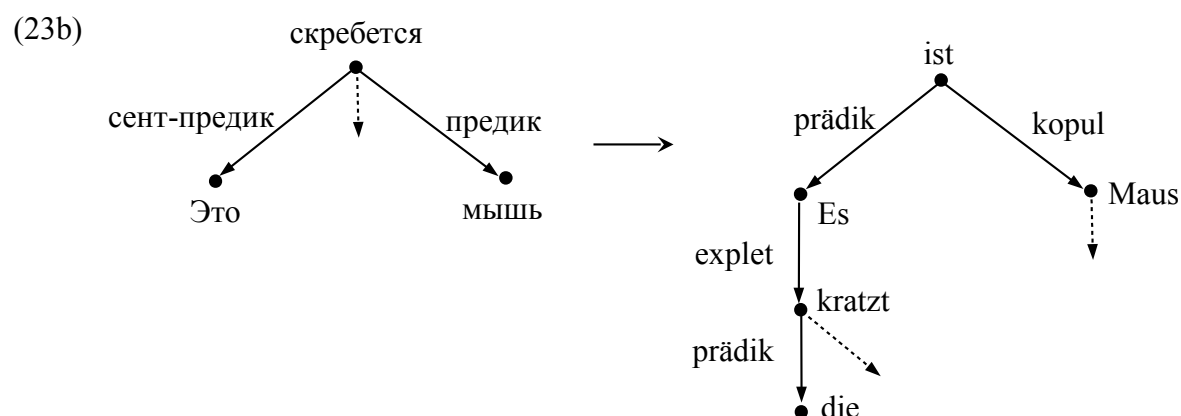
2.6 Sentential-predicative Relation

Changes in the transfer are always necessary when the Russian sentence contains a *сентенциально-предикативное* (*сент-предик*) ‘sentential-predicative’ relation because this relation seems to have no counterpart in German. In the simplest case the Russian lexeme that is the dependent of this relation (*это* ‘it, that, this’ or *то* ‘it, that’) is translated as German *hier* ‘here’ which is connected via the (*eigentliche*) *adverbiale Relation* (*adverb*) ‘adverbial relation proper’ as a dependent of the verb, cf. (22):

- (22) Это [Y via сент-предик] разговаривают [X] друзья. – Hier [Y via adverb] sprechen
[X] die Freunde. ‘Here the friends are speaking’

However, in some cases the syntactic construction has to be changed radically. Russian *это* ‘it, that, this’ or *то* ‘it, that’ then is translated into a German construction that starts with *es ist* ‘it is’ if the Russian grammatical subject is a singular noun or *es sind* ‘lit. it are’ if the Russian subject is a plural noun. The noun that is the grammatical subject in the Russian sentence is translated into a German noun that depends on the copula via the *kopulative Relation*. The expletive *es* ‘it’ is connected to the copula via the *prädikative Relation* and is the syntactic governor of the full verb in the relative clause via the *expletive Relation* (*explet*):

- (23a) Это мышь скребется за печкой. – Es ist eine Maus, die hinter dem Ofen kratzt. ‘It's a
mouse that scratches behind the stove’



¹⁶ The German *über* ‘over’ is used here as an adverb like e.g. *fast* ‘almost’ or *ungefähr* ‘about’.

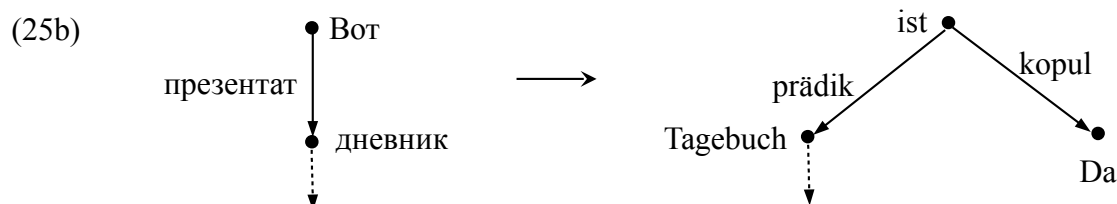
2.7 Presentative Relation

The Russian *презентативное СинтО* (*презентат*) ‘presentative relation’ also has to be changed always when transferred into German because again there seems to be no counterpart in German: Russian *вот* or *вон* ‘there, here’ respectively are translated into the adverb *da*, *hier* ‘here’ or *dort* ‘there’ and the syntactic construction is changed considerably. Instead of the Russian *презентативное СинтО* that has *вот* or *вон* ‘there, here’ as syntactic head and the verb as dependent, in German there is an *1. kompletive Relation* with inversed direction from the verb to *da*, *hier* ‘here’ or *dort* ‘there’:

- (24) Вон [X] стоит [Y via презентат] дом. – Dort [Y via 1.kompl] steht [X] ein Haus.
 ‘There stands a house’

When there is no verb in the Russian phrase, the copula verb has to be inserted in German. This copula in German is the head of the construction and the noun that is dependent on *вот* or *вон* ‘there, here’ in Russian, is dependent on the copula via the *prädikative Relation* in German. The adverb is connected to the copula via the *kopulative Relation*:

- (25a) Вот мой дневник. – Da ist mein Tagebuch. ‘Here is my diary’



3 Transfer without essential changes

The ten remaining Russian actantial syntactic relations described by (Апресян & al., 2010:24—31) do not entail essential changes when transferred into German, as preliminary studies suggest. For these relations I would like to propose the following German counterparts:

- Квазиагентивное СинтО (квазиагент) → quasi-agentive SyntRel (quasi-agent)
- Несобственно-агентивное СинтО (несобст-агент) → uneigentliche agentive SyntRel (uneigent-agent)
- Первое комплетивное СинтО (1-компл) etc. → erste kompletive SyntRel (1. kompl) etc.
- Первое несобственно-комплетивное СинтО (1-несобст-компл) etc. → erste uneigentliche kompletive SyntRel (1. uneigent-kompl) etc.
- Неактантно-комплетивное СинтО (неакт-компл) → nichtaktantisch-kompletive SyntRel (nichtakt-kompl)
- Комплетивно-аппозитивное СинтО (компл-аппоз) → kompletiv-appositive SyntRel (kompl-appos)
- Подчинительно-союзное СинтО (подч-союзн) → subordinierend-konjunktionale SyntRel (subord-konj)
- Сравнительное СинтО (сравни) → komparative SyntRel (kompar)
- Сравнительно-союзное СинтО (сравн-союзн) → komparativ-konjunktionale SyntRel (komp-konj)

- Элективное СинТО (электив) → elektive SyntRel (elektiv)

4 Conclusion

In the field of actantial syntactic relations ten Russian relations are supposed to require no essential changes which has to be verified in further studies. Seven relations require few modifications up to essential changes in constructions at least in some cases when transferred into German. This is especially the case when considering the two Russian relations which seem to have no counterpart in German, the *сентенциально-предикативное* ‘sentential-predicative’ and the *презентативное* ‘presentative’ relation but also holds for certain cases of the other relations considered. Of course, there are a lot of further problems in translating Russian actantial constructions into German which are not touched in this paper due to shortage of space. These more specific problems as well as attributive, coordinate and auxiliary syntactic relations are the subject of further research and will be considered in future papers.

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Bibliography

- Apresjan, Ju.D. & al. 2003. ETAP-3 Linguistic Processor: a Full-Fledged NLP Implementation of the Meaning $\Leftrightarrow$ Text Theory. In *Conference Proceedings of MTT 2003*, 279–288. Paris [<http://proling.iitp.ru/publications>].
- Gerdes, K. & S. Kahane. 2007. Phrasing it differently. In Wanner, L. (ed.). *Selected Lexical and Grammatical Issues in the Meaning–Text Theory*, 297–335. Amsterdam, Philadelphia.
- Heringer, H.J. 1996. *Deutsche Syntax. Dependentiell*. Tübingen.
- Mel’čuk, I.A. & L. Wanner 2006. Syntactic Mismatches in Machine Translation. In *Machine Translation*, 20, 81–138.
- Reuther, T. 2003. Support verb combinations with existential verbs (German and Russian). In *Conference Proceedings of MTT 2003*. Paris. [<http://meaningtext.net/mtt2003/proceedings>]
- Specht, V. 2005. An MTT-Based Parser for German. In Ю.Д. Апресян (ed.). *Восток – Запад*. Москва, 316–329.
- Апресян, Ю.Д. & al. 1989. *Лингвистическое обеспечение системы ЭТАП-2*. Москва.
- Апресян, Ю.Д., И.М. Богуславский, Л.Л. Иомдин & В.З. Санников 2010. *Теоретические проблемы русского синтаксиса. Взаимодействие грамматики и словаря*. Москва.