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Russian infinitival existential constructions from an HPSG perspective

Russian infinitival existential constructions have puzzled linguists for decades. An excellent critical evaluation of different approaches, as well as related references, can be found in (Apresjan and Iomdin 1989). It is not the goal of the present study, therefore, to review existing analyses. The focus will rather be on working out a plausible analysis of Russian infinitival existential constructions in the framework of Head-driven Phrase Structure Grammar (HPSG).

1 Preliminaries

The famous problem is posed by the following situation. The negated construction in (ex. 1) contains a specific negative WH-pronominal construct, which can be a single orthographic entity – e.g., *negde* ('there is not where') – or possibly incorporate a preposition – e.g., *ne za čto* ('there is not for what'). The direct parallel of this negative WH-pronominal construct in the non-negated construction in (ex. 2) consists of an explicit existential verb *est'* ('there is') and the corresponding (prepositionally marked) WH-pronominal form *gde* ('where') or *za čto* ('for what'). The negative component in (ex. 1) – let us call it NE~ – significantly differs from the canonical negative marker that is glossed NEG in (ex. 3). It combines with an immediately adjacent WH(=K) element to form a unit, i.e. a NE~ item. Historically, NE~ derives from the Old Russian and Old Church Slavonic negated form of the existential 'to be', i.e. *ne+e(st')* 'not is', which has been lost in Modern Russian. Of course, there are modern Slavic languages in which the negated be-existential has been preserved, e.g., Czech (ex. 4).

ex. 1	(a)	(*Detjam*)			*negde*		*igrat'*.
		(children.DAT)			NE~where		play.INF
		There is nowhere (for the children) to play.					
	(b)	(*Nam*)	*ne*	*za*	*čto*	*ego*	*blagodarit'*.
		(we.DAT)	NE~	for	what.ACC	he.ACC	thank.INF
		There is nothing (for us) to thank him for.					
ex. 2	(a)	(*Detjam*)		*est'*	*gde*	*igrat'*.	
		(children.DAT)		is	where	play.INF	
		There is somewhere (for the children) to play.					
	(b)	(*Nam*)	*est'*	*za*	*čto*	*ego*	*blagodarit'?*
		(we.DAT)	is	for	what.ACC	he.ACC	thank.INF
		Is there anything we should thank him for?					
ex. 3		(*Deti*)		*nigde*	*ne*	*igrajut*.	
		(children.NOM)		nowhere	NEG	play-3PL	
		The children don't play anywhere.					
ex. 4		*Tam*	*není*		*co*	*vidět*.	
		there	NEG-is		what	see.INF	
		There is nothing to see there.					

The NE~ items in Russian infinitival existential constructions point at the impossibility of performing the action expressed by an agentive infinitive, due to the absence or non-existence or unavailability of (the referent of) a grammatical relation that is originally associated with (i.e. selected or required by) this infinitive. For instance, in (ex. 1a) the children cannot play due to the lack of space, while in (ex. 1b) we cannot thank him because there is no reason for

that. In contrast, the non-negated correlates containing the present tense existential *est'* point at the possibility of performing the action expressed by an agentive infinitive, due to the presence of the referent of a certain grammatical relation associated with the infinitive. For instance, in (ex. 2a) the children can play because there is plenty of space, while in (ex. 2b) we ask if we can thank him for any particular reason. Note that the distinguished grammatical relation is externalised as a WH pronominal element. In (ex. 1a) and (ex. 2a) it refers to the location, and in (ex. 1b) and (ex. 2b) to the reason. As to the contingent dative NP, it is interpreted as the subject of the respective infinitive.

2 Apresjan and Iomdin 1989

The treatment of the NE~ items presented here is inspired by the work of (Apresjan and Iomdin 1989) on the syntax, semantics and lexicographic aspects of Russian infinitival existential constructions. On the basis of rich linguistic data and a critical survey of various existing approaches, Apresjan and Iomdin develop an interesting dependency-grammar-based analysis within the "Meaning⇔Text" model[1]. The main challenge concerns the systematic correspondence between a single orthographic NE~ item in the negated infinitival existential construction and two items in the non-negated variant of the same construction: e.g., *nekomu* ('there is nobody to') – *est' komu* ('there is somebody to'), *nečem* ('there is nothing with which to') – *est' čem* ('there is something with which to'), *negde* ('there is no place where to') – *est' gde* ('there is a place where to'), etc.

2.1 NE~ items are syntactic agglomerates

Crucial to Apresjan and Iomdin's approach is the introduction of a novel linguistic concept, the *syntactic agglomerate*. It designates a combination of words with no internal syntactic structure but always pronounced as a unit consisting of an accentually prominent kernel and clitic or semi-clitic elements attached to it – (Apresjan and Iomdin 1989), p. 50.

Understanding single-worded NE~ items like *nekogo* ('there is no person to') and *nečego* ('there is nothing to') as a combination of two words is already suggested by the fact that with prepositional forms the preposition is inserted between NE~ and the respective K-word. The main evidence in favour of a syntactic agglomerate status of the NE~ items, however, the authors see in the parallelism between NE~ constructions and their non-negated correlates. It is illustrated by question-answer pairs such as (ex. 5), and is even more obvious in examples involving prepositions – cf. (ex. 1b) and (ex. 2b), or (ex. 6) – where a strict correspondence can be observed between *est'* in the non-negated infinitival existential construction (ex. 6a) and *ne* in the NE~ constriction (ex. 6b), with the *est'* vs. *ne* opposition being the only difference in such pairs. So, the NE~ construction differs from its non-negated counterpart only with respect to the meaning of negation, as it is the case in the affirmative-negative pairs of the type *On spit. – On ne spit.* ('He sleeps. – 'He doesn't sleep.').

The parallelism assumption appears to be further supported by (ex. 7) where the existential verb used does preserve its shape both in affirmative and negative sentences. Inasmuch as the verb *najtis'* ('to be found') brings some additional semantic load to the meaning of existence, it has to be overt – i.e. *najdëtsja* ('is found'). Apresjan and Iomdin interpret the possibility for this type of variation as an indication that there is a "position for an existential verb in the syntactic structure" of the NE~ construction.

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[1] The framework is presented in a number of publications, some of the most representative being (Mel'cuk 1974, 1976, 1979, 1995; Mel'cuk and Percov 1975; Mel'cuk and Xolodovic 1970; Mel'cuk and Zholkovsky 1984).

ex. 5　(a)　*Detjam　　est'　gde　spat'?*
　　　　　children.DAT　is　where　sleep.INF
　　　　　Is there any place for the children to sleep?
　　　(b)　(*Net*,)　*detjam　　negde　　spat'.*
　　　　　(no,)　children.DAT　NE~where　sleep.INF
　　　　　No, there is nowhere for the children to sleep.
ex. 6　(a)　(*Detjam*)　　　*est'　s　kem　　igrat'.*
　　　　　(children.DAT)　is　with　who.INSTR　play.INF
　　　　　There is somebody (for the children) to play with.
　　　(b)　(*Detjam*)　　　*ne　s　kem　　igrat'.*
　　　　　(children.DAT)　NE~　with　who.INSTR　play-INF
　　　　　There is nobody (for the children) to play with.
ex. 7　(a)　(*Detjam*)　　　*vsegda　najdëtsja　gde　spat'.*
　　　　　(children.DAT)　always　finds-REFL　where　sleep.INF
　　　　　There can always be found some place (for the children) to sleep.
　　　(b)　(*Detjam*)　　　*daže　ne　najdëtsja　gde　spat'.*
　　　　　(children.DAT)　even　NEG　finds-REFL　where　sleep.INF
　　　　　There cannot even be found a place (for the children) to sleep.

2.2　*Dependency structure of infinitival existential constructions*

From the perspective of (Apresjan and Iomdin 1989), no overt copula occurs in (ex. 8a), but there are non-present tense forms of the copular 'to be' in (ex. 8b-c) and semantically loaded copulas like *okazalos'* ('turned out'), *stanet* ('will become') and *sdelalos'* ('did itself') in (ex. 8d-f).

ex. 8　(a)　*Negde　　spat'.*
　　　　　NE~where　sleep.INF
　　　　　There is no place to sleep.
　　　(b)　*Negde　　bylo　　spat'.*
　　　　　NE~where　BE.PAST　sleep.INF
　　　　　There was no place to sleep.
　　　(c)　*Negde　　budet　spat'.*
　　　　　NE~where　BE.FUT　sleep.INF
　　　　　There will be no place to sleep.
　　　(d)　*Spat'　　okazalos'　　negde.*
　　　　　sleep.INF　turned-out.REFL　NE~where
　　　　　There turned out to be no place to sleep.
　　　(e)　*Spat'　　stanet　　negde.*
　　　　　sleep.INF　will-become　NE~where
　　　　　There will be no place to sleep.
　　　(f)　*Dyšat'　　sdelalos'　nečem.*
　　　　　breathe.INF　did.REFL　NE~what.INST
　　　　　There was nothing to breathe with.

Apresjan and Iomdin argue that five syntactic positions can be distinguished in Russian negative constructions of the type illustrated in (ex. 1), namely: (i) an ad-infinitival agentive NP in dative case [*detjam negde igrat'*]; (ii) the negative existential verb NE~ [*detjam negde igrat'*]; (iii) the copular verb *byt'* ('to be') in a null form; (iv) a K-word as a complement of the copular verb [*detjam negde igrat'*]; (v) an infinitive as a subject of the copular verb [*detjam*

negde igrat']. If we refer to all infinitival existential constructions with explicit existential verbs, including also the non-negated counterparts of NE~ constructions, as E~ constructions, the two patterns assumed in (Apresjan and Iomdin 1989) can be summarised as in (Figure 1). The dependency grammar analysis of the NE~ construction is summarised in the schematic structure in (Figure 2a), which integrates both overt and null instances of the copula. The abstraction introduced here for the sake of perspicuity concerns the nodes of the dependency tree. The original syntactic relations marking the edges are preserved. This skeletal diagram subsumes the dependency trees Apresjan and Iomdin assign to the sentences in (ex. 8).

Figure 1

NE~ construction	NP_{AG}	NE~	K-word	V_{COP}	V_{INF}
E~ construction	NP_{AG}	V_{EXIST}	K-word	$V_{COP\emptyset}$	V_{INF}

Figure 2
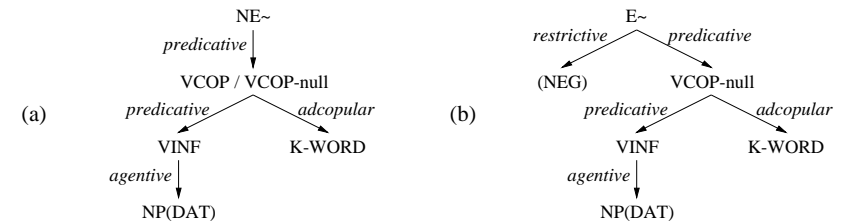
The diagram in (Figure 2b), in turn, schematically summarises the dependency structure Apresjan and Iomdin assign to E~ constructions, with the node E~ referring to overt non-negated infinitival existential predicates in this abstract representation. Note that the form of the copula is always assumed to be null, and that a canonical negation (NEG) is possible. This structural schema subsumes the dependency trees assigned to sentences like (ex. 9) where the overt form of *byt'* ('to be') is interpreted as an existential (rather than copular) verb negated by means of the standard negation particle.

ex. 9　(a)　*Ne　bylo　gde　　spat'.*
　　　　　NEG　BE.past　where　sleep.inf
　　　　　There was no place to sleep.
　　　(b)　*Ne　budet　　gde　spat'.*
　　　　　NEG　BE.FUT　where　sleep.INF
　　　　　There will be no place to sleep.

3　*An HPSG analysis*

In the HPSG formalisation I propose, the NE~ construction and the E~ construction are eventually assigned distinct structures too (cf. Section 4), and this fact predicts a systematic contrast with respect to word order possibilities. Apresjan and Iomdin's point (i) corresponds to a requirement that only verbs with an *a-subject* in their ARG-ST list are allowed to form an infinitival existential construction. With respect to point (ii), I assume that NE~ belongs to a specific lexical subtype of verbal predicates. In contrast to point (iii), however, my analysis does not rely on introducing any zero-copula, and as a consequence thereof, I propose alternatives to points (iv) and (v).

I argue that for Russian three new lexical types have to be distinguished: *K-ind-ref* (Section 3.1), *infinitival-existential* (Section 3.2) and *copular-marker* (Section 3.3). Also, two new phrasal types are introduced (Section 3.4): on the one hand, the NE~ items are granted the status of an autonomous syntactic category corresponding to the phrasal type *synt(actic)-agglomerate* which I interpret as a subtype of head-complement phrase; on the other hand, the standard HPSG taxonomy of phrasal types is additionally extended by a special *head-all-valence scheme* which immediately realises all grammatical functions of a predicate in a flat structure.[2]

3.1   Indefinite-referential WH items

Apresjan and Iomdin (p. 77) argue that the WH-pronominals in Russian infinitival existential constructions are neither interrogative nor relative. Nevertheless, the authors tend to regard them as a specific subclass of the latter, pointing out that – unlike typical relative WH items – the elements of this specific subclass indicate indefiniteness, which brings them closer to the semantics of indefinite pronouns like *kto-libo* ('someone'), *kuda-libo* ('somewhere'), *nekto* ('somebody'), etc. So, I choose to refer to the WH-pronominal in Russian infinitival existential constructions as an indefinite-referential WH item. The inventory of these items is listed in parallel with the corresponding NE~ items in (Table 1). Note apropos that no nominative-case forms are available in either of paradigms.[3]

In order to distinguish the restricted indices of interrogative words from all others, including those introduced by relative words, (Ginzburg and Sag 2001) divide the semantic type *rest(ricted)-ind(ex)* into *int(errogative)-param(eter)* and *ref(erential)-param(eter)*. Adopting this terminology in (Figure 3a), we can say that, as a lexical type, the indefinite-referential WH items *K-ind-rel* are similar to the relative WH items *K-rel* in introducing a restricted index of the type *ref-param* as the value of their WH feature. So, in a broader context, they are in opposition to the interrogative WH items *K-int* which introduce a restricted index of the type *int-param* in the WH set. The symbol "|" is used in (Table 1) to indicate the position of possible prepositional marking. Crucially, the combination of a preposition and a K-nominal cannot be a lexical item, but is rather a phrase. The convention of Russian orthography to distinguish two items here reflects this fact. In HPSG terms, I will view this combination as a special instance of a head-marker-phrase (Figure 3b) that combines two lexical items: the head-daughter is a lexical item from the inventory of the K-nominals listed

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[2] In the multiple-inheritance hierarchies employed in HPSG, an instance of a particular type must bear an appropriate specification for all features defined at that type, as well as for those that are appropriate for all of the type's super-types. Following a common HPSG practice, I leave out many irrelevant details in the representation of feature structures. In particular, all paths dominating the features we are interested in are suppressed. The actual feature-structure architecture is assumed to be:
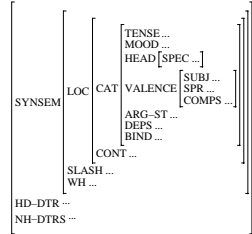

[3] As Apresjan and Iomdin (p. 78) argue on the basis of extensive language material, no direct non-negative analogues exist for *nečego* and *ne k čemu* in the meaning of 'no reason to' as well as for *nekogda* in the meaning of 'lack of time'. They convincingly show that all these items are adequately interpreted as independent adverbials, different from the homonymous NE~ items.

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in (Table 1), and the marker daughter is a lexical item corresponding to the respective preposition.[4]

Table 1

Indefinite-referential WH		NE~ items	
K-nominals			
– (NOM)	– (NOM)	– (NOM)	– (NOM)
/kogo (GEN)	/čego (GEN)	ne/kogo (GEN)	ne/čego (GEN)
/komu (DAT)	/čemu (DAT)	ne/komu (DAT)	ne/čemu (DAT)
/kogo (ACC)	/čto (ACC)	ne/kogo (ACC)	ne/čego (ACC)
/kem (INST)	/čem (INST)	ne/kem (INST)	ne/čem (INST)
o /kom (PREP)	o /čëm (PREP)	ne o /kom (PREP)	ne o /čem (PREP)
'who'	'what'	'no person to'	'nothing to'
K-adverbials			
gde 'where'		negde 'no place to'	
kuda 'to where'		nekuda 'no place to which to'	
otkuda 'from where'		neotkuda 'no place from which to'	
začem 'for what (why)'		nezačem 'no reason to'	
kogda 'when'		nekogda 'no time to'	

Figure 3
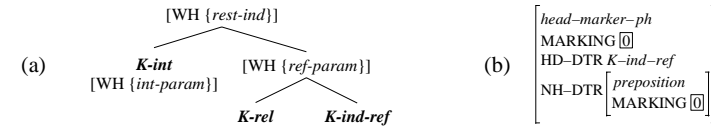
3.2   Infinitival existential predicates

The fragment of a lexical hierarchy in (Figure 4a) represents the type *infinitival-existential* I introduce for Russian.

Figure 4
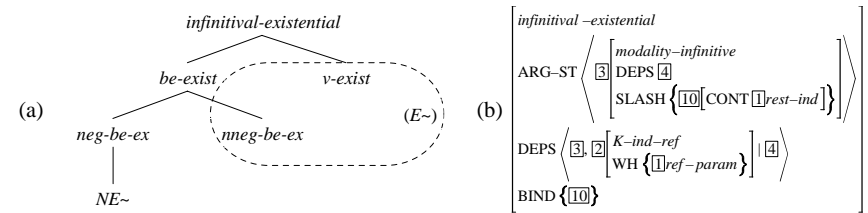
According to the type of lexical category the infinitival existential predicates are either *be-exist* (existential 'to be') or *v-exist* (existential full verb). The former type is further partitioned with respect to negation into *neg-be-ex* (negated be-existential) or *nneg-be-ex* (non-negated be-existential). The type *NE~* is a specific instance of the *neg-be-ex* type for Russian, and presupposes what can tentatively be called default present-indicative specification. Rather informally, for more convenient reference, the types *nneg-v-ex* and *v-exist* can jointly be regard as *E~*. Consequently, NE~ constructions like (ex. 1a) or (ex. 2a) involve the type *NE~*.

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[4] Such a solution is independently needed also for the contingent prepositional marking that is observed within Russian negative or indefinite items.

Its immediate counterpart *est'* in E~ constructions like (ex. 1b) or (ex. 2b) is of a non-negated be-existential (*nneg-be-ex*). A lexical constraint on the type *infinitival-existential* – cf. (Figure 4b) − specifies the diathesis organisation in terms of the two-tiered lexical representation proposed for HPSG in (Avgustinova 2001a, b). As with all existential predicates, the ARG-ST list of an infinitival existential contains only one argument ③ which corresponds to the most prominent grammatical relation in the DEPS list. It is an infinitival word of type *modality-infinitive* (formed from an agentive verb[5] having an *a-subject* argument) with an extracted non-predicative dependent[6], and hence, with a non-empty SLASH specification. The DEPS list contains an additional non-argument grammatical relation ② which is required to be of type *K-ind-ref* and whose WH value is a singleton set containing a referential parameter ① that is identified with the restricted index of the extracted dependent ⑩ of the modality infinitive ③. The DEPS list ends in a sub-list ④ containing all syntactic dependents of the infinitival argument ③. This in particular means that the infinitival existential predicates are regarded as *raising* predicates in the present analysis. This diathesis is inherited by the existential predicates which are involved in forming an E~ construction. In terms of (Figure 4a), as such qualify all instances of the types *nneg-be-ex* and *v-exist* (which, informally, are jointly referred to as *E~*).

Figure 5
(a)   (b)
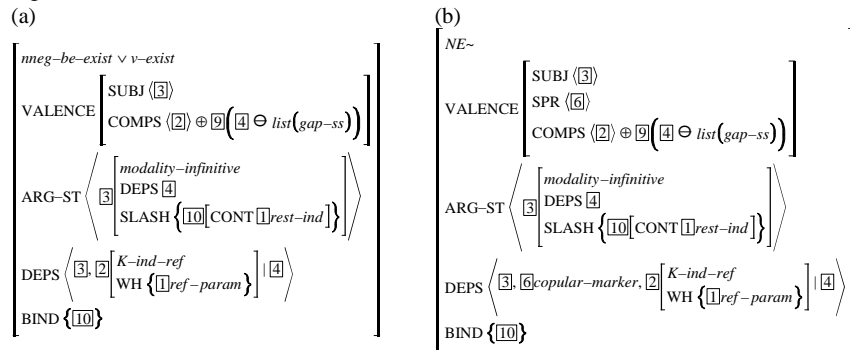
In accord with the Argument Structure Realisation constraint of (Bouma, et al. 2001) applying to all (verbal) lexical signs, the first member of the DEPS list, i.e. ③, will be realised via the SUBJ valence feature, and the rest – including the *K-ind-ref* dependent ② and any non-extracted syntactic dependents of ③ (which are encoded as ⑨) – will be realised via the COMPS valence feature. The result is summarised in (Figure 5a). Further diathesis extension is associated with the type *NE~*, namely, there is one more non-argument grammatical relation which occurs as the second member of the DEPS list. As illustrated in (Figure 5b), this additional dependent ⑥ is required to be a copular marker (a category which I discuss in Section 3.3). The novel idea put forward here is that the copular marker functions syntactically as a specifier (rather than a head), and its overt realisation is mediated by the SPR

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[5] This diathesis alternation in Russian is captured by constraints regulating the mapping between arguments and diathetic grammatical relations, with reference to the subject grammatical function. For a detailed discussion of Slavic diathetic paradigm see (Avgustinova 2001a, b).

[6] For a dependent to be non-predicative means that it introduces a referential parameter. This is encoded by a specified parameter value.

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valence feature.[7] Again, the Argument Structure Realisation constraint of (Bouma, et al. 2001) is responsible for the actual valence. The first member of the DEPS list (i.e. the modality-infinitive) corresponds to the single member of the SUBJ list, the second member of the DEPS list (i.e. the copular marker) corresponds to the single member of the SPR list, and the rest (non-extracted) dependents correspond to members of the COMPS list. With respect to extraction (SLASH) dependencies, I follow the lexicalist approach of (Bouma, et al. 2001), who provide a uniform account of various extraction phenomena, based on incorporating (syntactically selected) adjuncts into the DEPS list. Formally, non-empty SLASH specifications (inducing extracted dependencies) arise from non-canonical *synsem* objects of type *gap-ss* (Figure 6a). The SLASH value of a lexical item is defined in terms of the SLASH values of its dependents. This is achieved by a lexical SLASH amalgamation constraint on heads (Figure 6b) ensuring that if a dependent is slashed then the head which selects it will also be slashed. The SLASH specification is inherited (i.e. propagated) by means of a SLASH inheritance principle which is formulated to constrain head-valence-phrases (Figure 6c). A SLASH dependency is bound off lexically through the feature BIND which typically has the empty set as its value for words. The head-driven approach to SLASH amalgamation developed by (Bouma, et al. 2001) has the advantage that it accounts for the fact that the binding of SLASH is not restricted to head-filler constructions (Figure 6d), but sometimes is triggered by lexical items, even if the SLASH value which gets bound originates arbitrary deep within a dependent of the binder (e.g., English *easy/tough*-constructions). The Russian construction investigated here appears to further extend the motivation for such an approach.

Figure 6
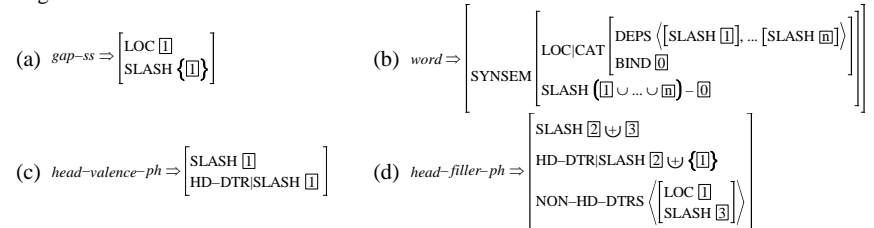
Crucial for the analysis I am proposing is the assumption that Russian existential infinitival predicates are SLASH binders too. Consider in (Figure 4a) and (Figure 5a-b) the non-empty BIND value. It is set identical to the SLASH value of the infinitival argument ③ as a result of identifying the restricted parameter ① of the extracted entity ⑩ with the WH value introduced by the referential parameter of the *K-ind-ref* dependent ②. Finally, the constraints regulating the value of the WH feature in (Ginzburg and Sag 2001) have to be reformulated on the basis of DEPS, rather than ARG-ST, for the sake of compatibility.[8] So, the WH amalgamation constraint, as defined for the type *word* in (Figure 7a), will ensure that the WH value of a lexical sign is the union of the WH values of its syntactic dependents. The interrogative polarity constraint (Figure 7b), in turn, will state that syntactic dependents with a non-empty WH value of type *int-param* are required to be initial in the respective DEPS list. No modifications, on the other hand, are required in the original Ginzburg and Sag's formulation of the WH Inheritance Principle (Figure 7c): the WH value of a head-nexus phrase is identified

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[7] If this can be assumed to be characteristic of copular constructions in general is an open question where a proper investigation is called for.

[8] Such a modification is consistent with the theory of diathesis developed in (Avgustinova 2001a, b).

with the head-daughter's WH value, which ensures WH inheritance. The interaction of this principle with the constraint in (Figure 7d) ensures that the WH value of the clause and its head daughter are both empty.

Figure 7

(a) $word \Rightarrow \begin{bmatrix} \text{DEPS} \langle [\text{WH } \boxed{1}], \dots [\text{WH } \boxed{n}] \rangle \\ \text{WH } \boxed{1} \cup \dots \cup \boxed{n} \end{bmatrix}$

(b) $\begin{bmatrix} \text{DEPS} [\text{WH } \{int-param\} < X] \end{bmatrix}$

(c) $hd-nexus-ph \Rightarrow \begin{bmatrix} \text{WH } \boxed{2} \\ \text{HEAD–DTR} [\text{WH } \boxed{2}] \end{bmatrix}$

(d) $clause \Rightarrow [\text{WH}\{\}]$
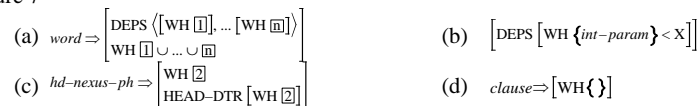
3.3 Copular markers

The key role of the impersonal forms of the copular 'to be' in NE~ constructions is to indicate the tense and the mood of predication, cf. (ex. 10).

ex. 10 (a) Rebënka   bylo   ne   s   kem   ostavit'.
              child.ACC   BE.PAST.IND NE~   with   whom leave.INF
              There was no one to leave the child with.

(b) *Rebënka   budet   ne   s   kem   ostavit'.*
        child.ACC   BE.FUT.IND   NE~   with   whom leave.INF
        There will be no one to leave the child with.

(c) *Rebënka   byvaet   ne   s   kem   ostavit'.*
        child.ACC   BE.PRES.ITER NE~   with   whom leave.INF
        It happens there to be no one to leave the child with.

(d) *Rebënka   byvalo   ne   s   kem   ostavit'.*
        child.ACC   BE.PAST.ITER NE~   with   whom leave.INF
        It happened there to be no one to leave the child with.

(e) *Bud'   mne   ne   s   kem   ostavit'   rebënka,   ja*
        BE.COND   I.DAT NE~   with   whom leave.INF   child.ACC,   I
        by   ne   smogla   rabotat'.
        COND   NEG   could   work-INF
   If there were no one to leave my child with, I would not be able to work.

Therefore, it is more adequate to treat them as a minor lexical category *copular marker* that is a specific type of inflectional copula. For a broader context, see the general typology of copular items proposed in (Avgustinova and Uszkoreit 2001), where the constructions with non-verbal predicates are discussed. The special status of the copular marker is supported by the fact that it can never be negated (ex. 11). This obviously contrasts with the situation observable in prototypical copular sentences (ex. 12), where negating the copula that functions as an *assembling operator* is a standard way of expressing sentential negation.

ex. 11 (a)* Ne   bylo   negde   spat'.
                NEG   BE.PAST   NE~where   sleep.INF
(b)* *Ne   budet   ne   s   kem   igrat'.*
                NEG   BE.FUT   NE~   with   whom play.INF
ex. 12 (a) On   byl   xorošim   studentom.
                he.NOM BE.PAST   good.INSTR   student.INSTR
                He was a good student.

(b) *On   ne   byl   xorošim   studentom.*
        he.NOM   NEG   BE.PAST   good.INSTR   student.INSTR

He wasn't a good student.

As sketched in (Figure 8), which represents an actual extension of the fragments given in (Avgustinova and Uszkoreit 2001), the distinguished type *copular-marker* is encoded as a *non-negated* instance of the type *inflectional-cop(ula)*. In addition to never being negated, the copular marker is characterised by the default impersonal morphology (which is 3rd person singular neuter).

Figure 8
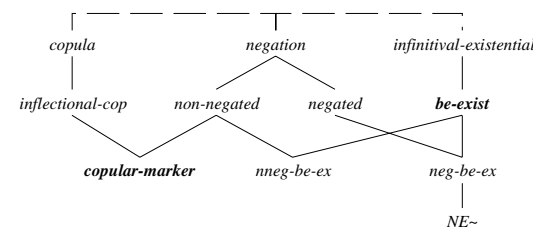
Syntactically, markers are *functional* categories in HPSG and select the head they specify via the feature SPEC. This is achieved by the SPEC principle of (Pollard and Sag 1994) which is a constraint on the type *headed-phrase*. It states that if a non-head daughter in a headed structure is a functional category, its SPEC value must be token-identical to the SYNSEM value of the head daughter. The lexical constraint in (Figure 9a) associated with the type *copular-marker* ensures, on the one hand, that this is a functional category specifying a syntactic agglomerate NE~ item (which I regard as the syntactic head of the NE~ construction, cf. Section 3.2) and, on the other hand, that there are explicit tense and mood values. In (Figure 9b) the inventory of copular markers is listed, with an indication of the tense and mood specifications each of them contributes. Note that the way copular markers are defined lexically, they will never occur in E~ constructions headed by an infinitival-existential predicate of the type *nneg-be-exist* or *v-exist*, since the latter are obviously incompatible with the type of the SPEC value in (Figure 9a).

Figure 9

(a) $\begin{bmatrix} copular-marker \\ \text{SPEC } synt-agglomerate \\ \text{TENSE} \boxed{7} \\ \text{MOOD} \boxed{8} \end{bmatrix}$

(b)

copular-marker	TENSE $\boxed{7}$	MOOD $\boxed{8}$
bylo	past	indicative
budet	future	indicative
byvaet	present	iterative
byvalo	past	iterative
bud'	none	conditional

As already illustrated in (ex. 8d-f), a limited number of verbs like *delat'sja* 'to become', *stanovit'sja* 'to become', or *okazyvat'sja* 'to turn out' do occur in NE~ constructions even in present tense indicative mood – e.g., *stanovitsja* 'becomes' in (ex. 13) – as if they were semantically loaded copular markers. In fact, they are canonical *raising* verbs which acquire the dependents of their complement. What is special is just the type of this complement, namely, a syntactic agglomerate with unspecified tense and mood values.
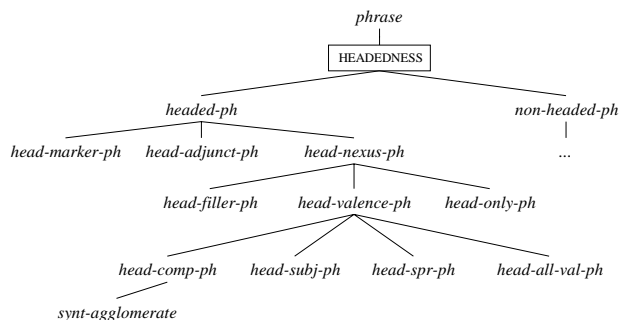
ex. 13 *Platit' za remont   stanovitsja/stalo/okazalos'/sdelalos' nečem.*
              pay.INF for reconstruction becomes/became   NE~what.INST

There turned to be nothing to pay for the reconstruction with.

3.4 Phrasal types

In HPSG, actual constructions correspond to phrasal types, and the assumption that such types are hierarchically organised, similarly to the lexicon, provides an insightful analytic perspective. From this perspective, one may address such questions as how specific constructions are related to one another and how they may be described in terms that express common properties, while allowing for constructional idiosyncrasy. To implement Apresjan and Iomdin's idea of the independent linguistic status of the NE~ items as syntactic agglomerates, i.e. as specific combinations of lexical items, I introduce in (Figure 10) a novel phrasal type called *synt-agglomerate* as a (language-specific) subtype of *head-comp-ph*.

Figure 10

```
                          phrase
                            |
                      [ HEADEDNESS ]
                     /              \
               headed-ph          non-headed-ph
              /    |    \                |
   head-marker-ph  head-adjunct-ph  head-nexus-ph    ...
                        /       |       \
              head-filler-ph  head-valence-ph  head-only-ph
                            /     |     \      \
                  head-comp-ph  head-subj-ph  head-spr-ph  head-all-val-ph
                       |
               synt-agglomerate
```
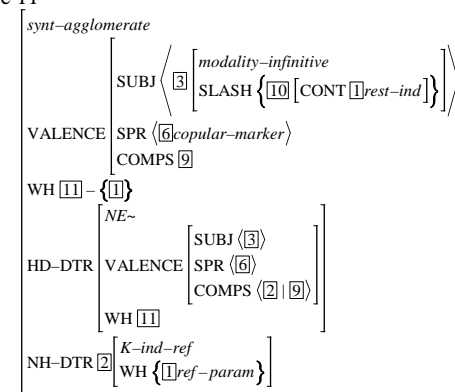
I also extend the standard HPSG phrasal taxonomy by distinguishing an additional schematic type *head-all-val(ence)-ph(rase)* which licenses flat syntactic structures. This allows us to regard Russian infinitival existential constructions as instances of this type, accounting thus for the actual parallelism observed between NE~ constructions and E~ constructions. Still, there is a crucial difference: the former are headed by a syntactic agglomerate (NE~ item), with the overt forms of copular 'to be' functioning as mere (morphosyntactic) markers, while the latter – directly by an infinitival existential predicate of type *nneg-exist* or *v-exist*. Such a solution is strongly supported by the possibility of inserting overt material between the infinitival existential predicate and the WH element in E~ constructions, as (ex. 14) from (Apresjan and Iomdin 1989) illustrates.

ex. 14   *Est'*   *razguljat'sja*   *gde*   *na*   *vole.*   (Lermontov)
is   give-loose.INF.REFL   where   at   freedom
There is where to loose oneself free.

In essence, the syntactic agglomerate (Figure 11) is regarded as a head-complement phrase with a number of distinctive properties. The head daughter in a syntactic agglomerate is an infinitival existential predicate of type *NE~*. The SUBJ valence of both the head daughter and the syntactic agglomerate contains exactly one element $\boxed{3}$. This element is an infinitive with an extracted dependent $\boxed{10}$, and hence, with a non-empty SLASH specification, according to (Figure 4b). The SPR valence of both the head daughter and the syntactic agglomerate contains exactly one element $\boxed{6}$ which is of type copular-marker, according to (Figure 5b). In other words, the syntactic agglomerate is a phrasal category that can take a copular marker as its specifier. The non-head complement daughter $\boxed{2}$ is a (bare or prepositonally marked) indefinite-referential WH item and introduces a restricted index $\boxed{1}$ of the type referential parameter in the value of its WH feature, according to (Figure 4b). This referential parameter is identified with the restricted index in the content (CONT) value of the extracted entity $\boxed{10}$, which binds the SLASH dependency off according to (Figure 4b). The COMPS value $\boxed{9}$ of the syntactic agglomerate corresponds to what has remained from the head daughter's COMPS value after subtracting the complement $\boxed{2}$ realised in this structure, in accordance with the Valence Principle. The referential parameter $\boxed{1}$ in the WH value of the non-head complement daughter is not contained in the WH value of the syntactic agglomerate. In particular, it is subtracted from the WH value $\boxed{11}$ of the head daughter, in which it has been included as a result of the WH Amalgamation Constraint presented in (Figure 7a). The type *synt-agglomerate* provides an environment for discharging the respective WH specification introduced by the *K-ind-ref* item. To form a NE~ construction, the syntactic agglomerate combines with an infinitival subject, a copular specifier, and the locally realised dependents (of the infinitival subject) in a head-all-valence phrase.
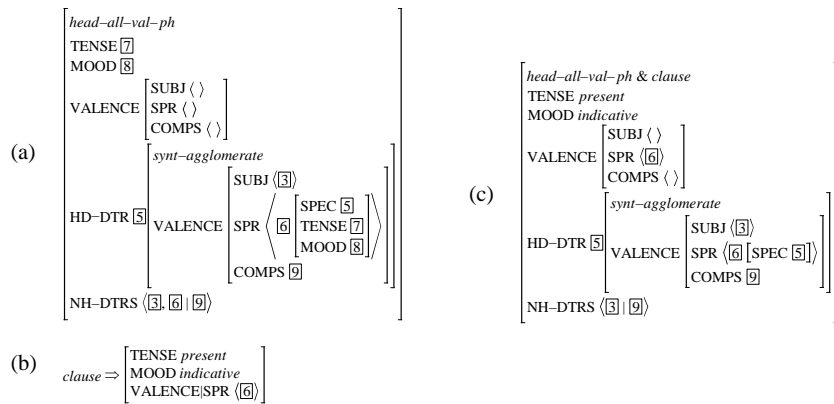
Figure 11

$$
\begin{bmatrix}
\text{synt-agglomerate} \\
\begin{bmatrix}
\text{VALENCE}
\begin{bmatrix}
\text{SUBJ} \left\langle \boxed{3} \begin{bmatrix} \text{modality-infinitive} \\ \text{SLASH} \left\{ \boxed{10} [\text{CONT}\ \boxed{1}\ \text{rest-ind}] \right\} \end{bmatrix} \right\rangle \\
\text{SPR} \left\langle \boxed{6}\ \text{copular-marker} \right\rangle \\
\text{COMPS}\ \boxed{9}
\end{bmatrix}
\end{bmatrix} \\
\text{WH}\ \boxed{11} - \left\{ \boxed{1} \right\} \\
\text{HD-DTR}
\begin{bmatrix}
\text{NE~} \\
\text{VALENCE}
\begin{bmatrix}
\text{SUBJ} \left\langle \boxed{3} \right\rangle \\
\text{SPR} \left\langle \boxed{6} \right\rangle \\
\text{COMPS} \left\langle \boxed{2} | \boxed{9} \right\rangle
\end{bmatrix} \\
\text{WH}\ \boxed{11}
\end{bmatrix} \\
\text{NH-DTR}\ \boxed{2}
\begin{bmatrix}
\text{K-ind-ref} \\
\text{WH} \left\{ \boxed{1}\ \text{ref-param} \right\}
\end{bmatrix}
\end{bmatrix}
$$

3.5 Inflected marking

The Marking Principle of (Pollard and Sag 1994) formulated as a constraint on the type *headed-phrase* ensures that in a headed structure, the MARKING value coincides with that of the marker daughter if there is one, and with that of the head daughter otherwise. In the case of copular markers which are treated here as specifiers, it is not the value of the MARKING feature but the values of the features TENSE and MOOD that are regulated in a similar fashion. So, the type *head-all-val-ph* is associated with a language-specific inflectional marking constraint (Figure 12a) stating that if the head daughter is a syntactic agglomerate, the TENSE and MOOD values coincide with those of the specifier daughter. A legitimate clause in Russian is allowed, however, to have a non-saturated specifier valence, and this implies a default tense-mood interpretation. Therefore, a further language-specific constraint on the type *clause* (Figure 12b) states that in such a case a non-empty SPR specification in a clause presupposes the values *present* for the TENSE attribute and *indicative* for the MOOD attribute. The effect of the constraint interaction is summarised in (Figure 12c).
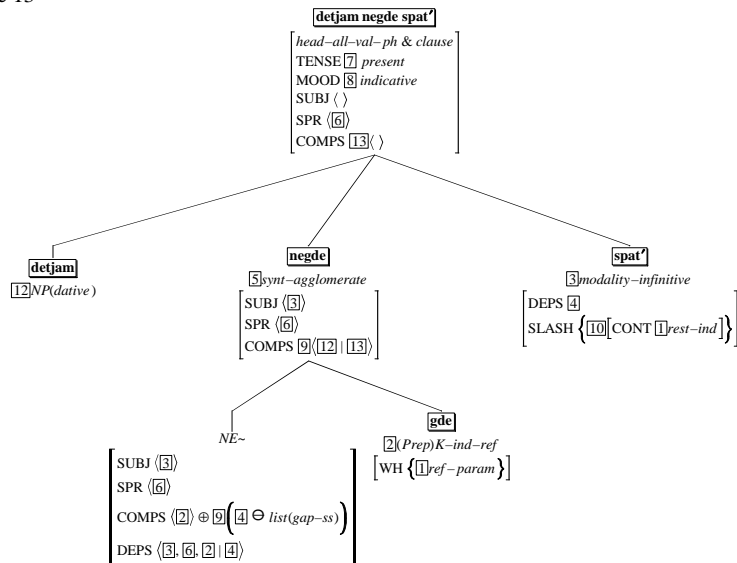
Figure 12

(a)

$$\begin{bmatrix} \textit{head–all–val–ph} \\ \text{TENSE } \boxed{7} \\ \text{MOOD } \boxed{8} \\ \text{VALENCE } \begin{bmatrix} \text{SUBJ } \langle \, \rangle \\ \text{SPR } \langle \, \rangle \\ \text{COMPS } \langle \, \rangle \end{bmatrix} \\ \text{HD–DTR } \boxed{5} \begin{bmatrix} \textit{synt–agglomerate} \\ \text{VALENCE } \begin{bmatrix} \text{SUBJ } \langle \boxed{3} \rangle \\ \text{SPR } \langle \boxed{6} \begin{bmatrix} \text{SPEC } \boxed{5} \\ \text{TENSE } \boxed{7} \\ \text{MOOD } \boxed{8} \end{bmatrix} \rangle \\ \text{COMPS } \boxed{9} \end{bmatrix} \end{bmatrix} \\ \text{NH–DTRS } \langle \boxed{3}, \boxed{6} \mid \boxed{9} \rangle \end{bmatrix}$$

(b) $\textit{clause} \Rightarrow \begin{bmatrix} \text{TENSE } \textit{present} \\ \text{MOOD } \textit{indicative} \\ \text{VALENCE|SPR } \langle \boxed{6} \rangle \end{bmatrix}$

(c)

$$\begin{bmatrix} \textit{head–all–val–ph \& clause} \\ \text{TENSE } \textit{present} \\ \text{MOOD } \textit{indicative} \\ \text{VALENCE } \begin{bmatrix} \text{SUBJ } \langle \, \rangle \\ \text{SPR } \langle \boxed{6} \rangle \\ \text{COMPS } \langle \, \rangle \end{bmatrix} \\ \text{HD–DTR } \boxed{5} \begin{bmatrix} \textit{synt–agglomerate} \\ \text{VALENCE } \begin{bmatrix} \text{SUBJ } \langle \boxed{3} \rangle \\ \text{SPR } \langle \boxed{6} \begin{bmatrix} \text{SPEC } \boxed{5} \end{bmatrix} \rangle \\ \text{COMPS } \boxed{9} \end{bmatrix} \end{bmatrix} \\ \text{NH–DTRS } \langle \boxed{3} \mid \boxed{9} \rangle \end{bmatrix}$$

4   Sample structures

Structures similar to that in (Figure 13) will be assigned to NE~ constructions in present tense and indicative mood (ex. 1; ex. 5b; ex. 6b; ex. 8a).
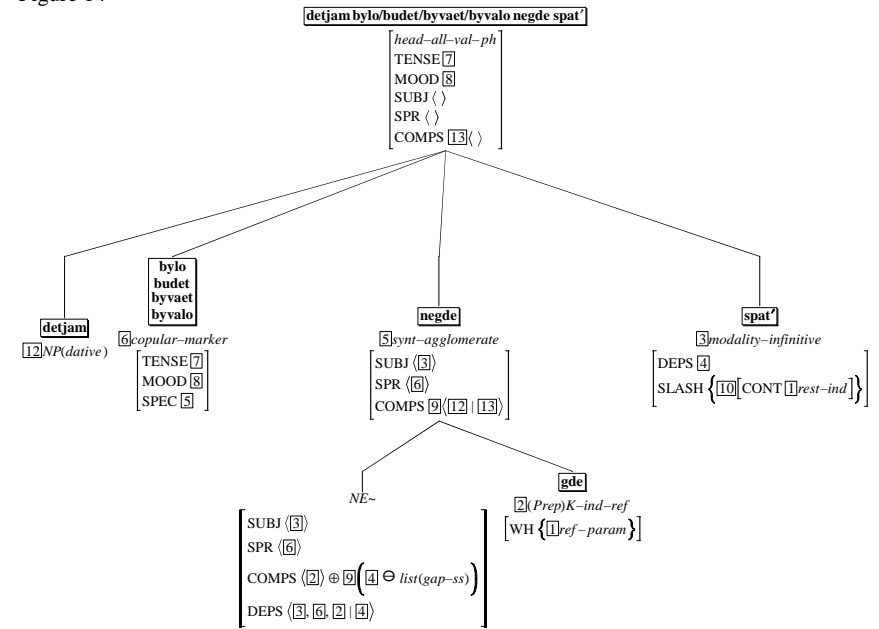
Figure 13

Structures like that in (Figure 14), on the other hand, model NE~ constructions with an overt copular marker – (ex. 8b-c; ex. 10). Since the non-negated third-person singular forms of certain full verbs function as copular markers, the sentences in (ex. 8d-f) and (ex. 13) get structural representations of the type illustrated in (Figure 14) too. In fact, it is a matter of

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lexical specification of the respective verb forms to allow them potentially specify a syntactic agglomerate.
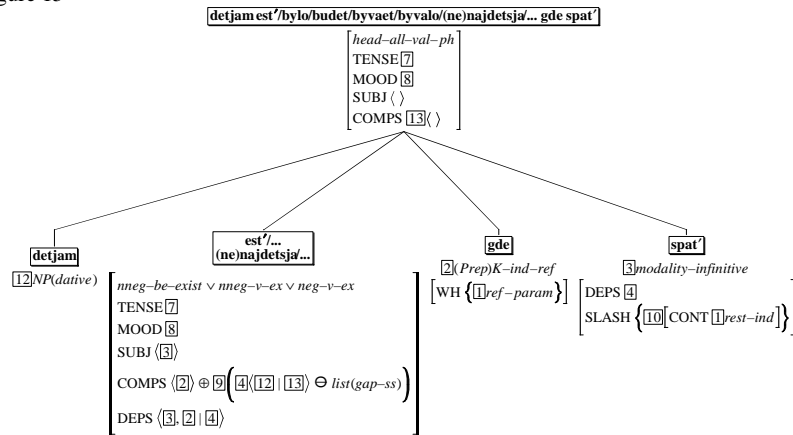
Figure 14

The structure in (Figure 15) shows how E~ constructions are analysed. The can be headed by the non-negated existential 'to be' (ex. 2; ex. 5a; ex. 6a; ex. 9) or by more semantically loaded existential verbs like *naxodit'sja / najtis'* 'to be found' (ex. 7; ex. 15), *ne stat'* 'to be no longer' (ex. 16a) and *ne okazat'sja* 'not to turn out' (ex. 16b). The latter two verbs appear to be obligatorily negated in their use as infinitival existential predicates. In terms of the taxonomy in (Figure 4), the relevant linguistic objects heading E~ constructions are instances of the types *nneg-be-exist*, *nneg-v-ex* and *neg-v-ex*. All of them occur with the default impersonal morphology, i.e. 3rd person singular neuter.

ex. 15 (a)   *Rebënka   našlos'   s   kem   ostavit'.*
              child.ACC   found.REFL   with   whom   leave.INF
              There was someone found to leave the child with.

        (b)   *Rebënka   ne   našlos'   s   kem   ostavit'.*
              child.ACC   NEG   found.REFL   with   whom   leave.INF
              There was no one found to leave the child with.

ex. 16 (a)   Kak   postupit',   esli   ne   stanet   k   komu   idti?
              how   act.INF   if   NEG   become   to   whom   go.INF
              How should one act if there will be nobody to go to?

        (b)   *Vdrug   ne   okazalos'   čem   platit'.*
              suddenly   NEG   turned.REFL   what.INSTR   pay.INF
              Suddenly, it turned out that there is nothing to pay with.

Figure 15

$$\begin{bmatrix} head-all-val-ph \\ \text{TENSE } \boxed{7} \\ \text{MOOD } \boxed{8} \\ \text{SUBJ } \langle\,\rangle \\ \text{COMPS } \boxed{13}\langle\,\rangle \end{bmatrix}$$

In principle, any permutation of the sibling constituents in the flat head-all-valence structure are allowed, and this prediction of the analysis corresponds to the actual situation in Russian. The word order flexibility can be modelled as an interaction of ranked linear precedence constraints.

Table 2

THERE WILL BE FOUND / THERE IS WHERE TO SLEEP	K-ind-ref < SUBJ (0.4)	E~ < K-ind-ref (0.3)	*split ground (0.2)	*FOCUS < ground (0.1)	Σ
NAJDËTSJA/EST' GDE SPAT' finds-REFL/is where sleep-INF	0.4	0.3	0.2	0.1	1
gde spat' NAJDËTSJA/EST' where sleep-INF finds-REFL/is	0.4	0	0.2	0.1	0.7
spat' NAJDËTSJA/EST' GDE sleep-INF finds-REFL/is where	0	0.3	0.2	0.1	0.6
NAJDËTSJA/EST' *spat' gde* finds-REFL/is sleep-INF where	0	0.3	0.2	0	0.5
gde NAJDËTSJA/EST' *spat'* where finds-REFL/is sleep-INF	0.4	0	0	0	0.4
spat' gde NAJDËTSJA/EST' sleep-INF where finds-REFL/is	0	0	0.2	0.1	0.3

For instance, in E~ constructions the WH item tends to precede the subject (K-ind-ref < SUBJ), and the head tends to precedes the WH item (E~ < K-ind-ref). Let us assume, for the sake of this example, the terminology of (Vallduví and Engdahl 1995) distinguishing in the information structure of utterances between *focus* and *ground* (with the latter being further subdivided into link, which is an anchoring part, and tail, which is an informationally redundant part). So, the ground – typeset in *italics* – tends not to be split (*split ground) and it typically precedes the focus (*FOCUS < *ground*). Suppose these constraints are ordered as in (Table 2), with the relative weight of the constraints decreasing from left to right. As none of the word order permutations can effectively be ruled out, one has to model a gradient

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grammaticality – or, seen from another perspective, the strength of markedness – by assigning weights to the linear precedence constraints. For each example, the weights sum up to give a point on a grammaticality continuum. The zero value means that the respective constraint is violated by the ordering in question. The highest value (i.e. 1) indicates the optimal resolution of the linear constraints assumed for the sake of this illustration. The lowest value (i.e. 0.3), in turn, is associated with the most marked alignment.

5 Concluding remarks

No structural distinction is made in my approach between the two sentences in (ex. 17). For (Apresjan and Iomdin 1989), p. 66, the verb 'to be' in (ex. 17a) is copular and in (ex. 17b) existential. I assume that it is a copular marker in both cases, and that whatever differences appear between the two examples, these are of rather communicative nature (i.e. concern the theme–rheme partitioning). Later in the text (p. 69), however, (Apresjan and Iomdin 1989) interpret the sentences given in (ex. 18), which are absolutely parallel to those in (ex. 17), as both containing just the copular 'to be'. In my approach, all sentences in (ex. 17) and (ex. 18) will get structural analyses similar to (Figure 14). On the other hand, (Apresjan and Iomdin 1989), p. 71, state that the differences between the pair of sentences in (ex. 19), if there are any, are purely communicative. In the HPSG analysis proposed here, however, these sentences get different structural analyses: the NE~ construction in (ex. 19a) is analysed in accord with (Figure 14), while (ex. 19b) is regarded as a negated E~ construction corresponding to (Figure 15).

ex. 17 (a) Mne negde bylo spat'.
I.DAT NE~where BE.PAST.3SG.NEUT sleep.INF
There was nowhere for me to sleep.

(b) *Mne bylo negde spat'.*
I.DAT BE.PAST.3SG.NEUT NE~where sleep.INF
There was nowhere for me to sleep.

ex. 18 (a) Rebënka ne s kem bylo ostavit'.
child.ACC NE~ with who.INSTR BE.PAST.3SG.NEUT leave.INF
There was nobody to leave the child with.

(b) *Rebënka bylo ne s kem ostavit'.*
child.ACC BE.PAST.3SG.NEUT NE~ with who.INSTR leave.INF
There was nobody to leave the child with.

ex. 19 (a) Mne negde bylo spat'.
I.DAT NE~where BE.PAST.3SG.NEUT sleep.INF
There was nowhere for me to sleep.

(b) *Mne ne bylo gde spat'.*
I.DAT NEG BE.PAST.3SG.NEUT where sleep.INF
There wasn't for me where to sleep.

In conclusion, let us summarise the main highlights of the analysis presented here. We look from an HPSG perspective at an interesting construction type which has posed a challenge to linguistic theories of Russian for at least three decades, due to a property which (Apresjan and Iomdin 1989), p. 71, figuratively call "mimicry". Four basic ideas of (Apresjan and Iomdin 1989) have been crucial for my HPSG formalisation. Firstly, the NE~ items are instances of a novel phrasal category called syntactic agglomerate. Secondly, the obligatory infinitive functions as the subject of the infinitival existential constructions. Thirdly, the WH component in NE~ items is in fact a "shifted" argument or adjunct of the infinitive. Fourthly,

the agentive dative NP is the only possible realisation of the infinitive's subject. The genitive phrase marked by the preposition *u* (which at first glance might appear as another possible realisation for subject of the infinitive) is to be interpreted as indicating the possessor in a broader sense. Note that it can co-occur with the agentive dative NP (ex. 20).

ex. 20   U   Ivana   vam   nečego   čitat'.
        at   Ivan.GEN   you.DAT   NE~what   read.INF
        There is nothing for you to read at Ivan's.

The lexical hierarchy is enriched to allow a subtle differentiation of the infinitival-existential predicates. In the constructional hierarchy, the notion of syntactic agglomerate is given a clear formal status as a subtype of a head-complement phrase. Both NE~ constructions and E~ constructions are instances of a special head-valence phrase immediately realising all valence requirements, yielding thus a flat structure. This allows for modelling the parallelism observed between them.

     A crucial property of my analysis is that no zero-copula is assumed in the syntactic structure. Rather, I propose that Russian NE~ constructions are headed by a syntactic agglomerate, with a strongly restricted subset of copular forms functioning as markers that merely contribute the tense and mood specification. Russian E~ constructions, in contrast, are headed directly by an infinitival existential predicate. The analysis, thus, correctly predicts the clear contrast between the possibility of inserting overt material between *est'* and the WH component on one hand, and between *NE~* and the WH component on the other. The syntactic agglomerate in the NE~ construction is always continuous – cf. the ungrammatical (ex. 21b) and (ex. 22b), while this is not necessarily the case with its E~ construction counterpart in (ex. 21a) and (ex. 22a).

ex. 21 (a)   Mne   est',   kažetsja,   gde   spat'.
          I.DAT   is   seems   where   sleep.INF
          There seems to be a place for me to sleep.
      (b)*   *Mne   ne,   kažetsja,   gde   spat'.*
          I.DAT   NE~   seems   where   sleep.INF
      (c)   *Mne,   kažetsja,   negde   spat'.*
          I.DAT   seems   NE~where   sleep.INF
          There seems to be no place for me to sleep.
ex. 22 (a)   Est',   kažetsja,   na   čto   nadejat'sja.
          is   seems   on   what   hope.INF
          There seems to be what to hope for.
      (b)*   *Ne,   kažetsja,   na   čto   nadejat'sja.*
          NE~   seems   on   what   hope.INF
      (c)   *Ne   na   čto,   kažetsja,   nadejat'sja.*
          NE~   on   what   seems   hope.INF
          There seems to be nothing to hope for.

From a more general perspective, the results of the analysis of Russian infinitival existential constructions presented here suggest that the formalism of a construction-oriented HPSG can easily (and almost directly) accommodate insightful linguistic knowledge encoded in a dependency-grammar framework.

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