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Research Article

English and Russian Genitive Alternations: A Study in Construction Typology

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Abstract

There is little doubt that one of the most important areas of future research within the framework of Construction Grammar will be the comparative study of constructions in different languages of the world. One significant gain that modern Construction Grammar can make thanks to the cross-linguistic perspective is finding a clue to some contradictory cases of construction alternation. The aim of the present paper is to communicate the results of a case study of two pairs of alternating constructions in English and Russian: *s-genitive* (SG) and *of-genitive* (OG) in English and *noun + noun in genitive case* (NNG) and *relative adjective derived from noun + noun* (ANG) in Russian. It is evident that the long years of elaborate scientific analysis have not yielded any universally accepted view on the problem of English genitive alternation. There are at least five different accounts of this problem: the hypotheses of the animacy hierarchy, given-new hierarchy, topic-focus hierarchy, end-weight principle, and two semantically distinct constructions. We hypothesised that in this case the comparison of the distribution of two English and two Russian genitives could be insightful. The analysis presupposed two consecutive steps. First, we established an inter-language comparability of two pairs of constructions in English and Russian. Second, we tested the similarity of intra-language distribution of each pair of constructions from the perspective of the animacy hierarchy. For these two purposes, two types of corpora were used: (1) a translation corpus consisting of original texts in one language and their translations into one or more languages; and (2) national corpora consisting of original texts in two respective languages. It was established that in both languages, the choice between members of an alternating pair is governed by the rules of animacy hierarchisation. Additionally, it was possible to disprove the idea that the animacy hierarchy is necessarily based on the linearisation hierarchy. Two Russian constructions are typologically aligned with their English counterparts, not on the grounds of the linear order of head and modifier but on the grounds of structural similarity. The English SG and Russian NNG construction are diametrically opposed in terms of word order. However, they reveal the same underlying structure of the inflectional genitive as contrasted with the analytical genitive of the Russian ANG and the English OG. These findings speak strongly in favour of the animacy hierarchy account of English genitive alternation.

Keywords: *construction grammar, genitive alternation, contrastive linguistics, s-genitive, of-genitive, construction typology, corpus linguistics*

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Научная статья

Генитивные обороты в английском и русском языках: опыт типологии конструкций

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Аннотация

Нет сомнений в том, что одним из важнейших направлений будущих исследований в рамках грамматики конструкций станет сравнительное изучение конструкций в разных языках мира. Существенным вкладом в лингвистику, который грамматика конструкций может сделать в рамках типологических исследований, является разрешение некоторых противоречивых случаев чередования конструкций. Цель настоящей работы заключается в представлении результатов исследования дистрибуции и функционирования двух пар конструкций в английском и русском языках: *s-genitive* (SG) и *of-genitive* (OG) в английском языке и *существительное + существительное в родительном падеже* (NNG) и о*тносительное прилагательное, производное от существительного + существительное* (ANG) в русском языке. К сожалению, долгие годы научных поисков не сформировали единого общепринятого взгляда на проблему чередования двух генитивных оборотов английского языка. Существует как минимум пять различных гипотез на этот счет, каждая из которых принимает в расчет один из следующих признаков: одушевленность, информационная структура, актуальное членение, синтаксическое устройство и семантические различия. Мы предположили, что в этом сложном случае сравнение двух английских и двух русских генитивных оборотов поможет найти решающие доводы в пользу одной из этих гипотез. Анализ предполагал два последовательных этапа. Во-первых, мы установили правомерность межъязыкового сравнения этих парных конструкций в английском и русском языках; во-вторых, проанализировали внутриязыковое распределение каждой пары конструкций с точки зрения иерархии одушевленности. Для этих двух целей были использованы два типа корпусов: (1) переводческий корпус, состоящий из оригинальных текстов на одном языке и их переводов на один или несколько языков; и (2) национальные корпусы, состоящие из оригинальных текстов на двух соответствующих языках. Мы установили, что в обоих языках выбор между членами чередующейся пары конструкций регулируется правилами иерархии одушевленности. Кроме того, нам удалось опровергнуть идею о том, что иерархия одушевленности обязательно основана на иерархии линеаризации. Две русские конструкции типологически подобны своим английским аналогам не на основании сходства линейного порядка определения и определяемого слова, а на основании структурного сходства. Английская конструкция SG и русская конструкция NNG диаметрально противоположны по порядку слов, однако они выявляют одну и ту же глубинную структуру флективного генитива, противоположного аналитическому генитиву русской ANG и английской OG. Эти данные убедительно свидетельствуют в пользу иерархии одушевленности как основного фактора чередования двух генитивных оборотов английского языка.

Ключевые слова: *грамматика конструкций, генитивное чередование, s-genitive, of-genitive, типология конструкций, корпусная лингвистика*

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1. Introduction

Construction Grammar is the study of symbolic pairings of form and meaning that are characterised by structural or semantic and pragmatic idiosyncrasies as well as a high level of entrenchment in language [Croft 2001; Goldberg 2006; Langacker 2009]. Recently, Construction Grammar has become one of the most prominent frameworks in linguistics research. The theory's emergence was foreshadowed in the 1980s, when Pawley and Syder proposed 'lexicalized sentence stems', an analogous term that has not become popular [Pawley and Syder 1983], and Filmore et al. described 'minor constructions' or 'familiar pieces unfamiliarly arranged' [Filmore et al. 1988]. Since 1995, when Goldberg's seminal book outlined the theoretical underpinnings of Construction Grammar, linguists have performed extensive research. They first compiled an inventory of the possible types of constructions and then charted an entire network of constructions that is arguably capable of embracing the entire language domain and explaining every phenomenon within it, from morpheme to discourse, i.e. from more substantive constructions to more schematic ones [see Hilpert 2014 and Diessel 2019 for review]. The so-called 'dictionaries of constructions' or 'constructicons' are currently being developed for several languages, e.g. German, Swedish, Russian and English (cf. Lyngfelt et al. 2018).

There is little doubt that one of the most important areas of future research within the framework of Construction Grammar will be the comparative study of constructions in different languages of the world. By that we do not mean some kind of item-specific corpus-based contrastive analysis that is enjoying considerable popularity right now [Gast 2015], but rather a whole new area of study that can be called Construction Typology. Linguistic typology examines the worldwide variations of linguistic structures, classifies them into types, and tries to make generalisations about which types are universally preferred and why. Similarly, Construction Typology will explore global variations in types of constructions and associate them with certain construction universals. In other words, the language-specific constructions will be analysed and compared to gain insights into Universal Construction Grammar.

One significant gain that modern Construction Grammar can make thanks to the cross-linguistic perspective is finding a clue to some contradictory cases of construction alternation. In such cases, competing motivations sometimes make it impossible to explain which factors trigger the alternation or, even worse, determine whether it is an alternation or the coexistence of two largely independent constructions. A theory of alternation that can account for the distribution of a pair of competing constructions in one language and of a pair of related constructions that did not result from a loan translation in other language should be regarded as more insightful because it provides typological evidence.

To the best of our knowledge, little research has been conducted in this area. The aim of the present paper is to communicate the results of a case study of two pairs of alternating constructions in English and in Russian.

2. English genitive alternation

The English genitive alternation has been studied extensively. It is one of the most famous alternating pairs in English and is on par with dative alternation, active and passive alternation, verb-particle constructions alternation, *will* versus *going to* alternation, and some others.

Researchers have focused on the distribution or partial paraphrase relationship [Goldberg 2002] of the *s*-genitive (or Saxon genitive) and the *of*-genitive (or *of*-construction):

(1) [$NP_{modifier}$'s N_{head}]
heart's heart

(2) [N_{head} of $NP_{modifier}$]
heart of heart

The investigation of the semantics and the distribution of two constructions has resulted in the five most prominent hypotheses [see Stefanowitsch 1998 for review]:

(a) The hypothesis of the animacy hierarchy predicts that the *s*-genitive is used where the referent of the modifier is higher up in the hierarchy than the head. In contrast, the *of*-genitive is used where the referent of the head is higher up in the hierarchy than the modifier [Jespersen 1949, Hawkins 1981, Deane 1992].

(b) The hypothesis of the given-new hierarchy predicts that the *s*-genitive is used where the referent of the modifier is given and the referent of the head is in focus. On the other hand, the *of*-genitive is used where the referent of the head is given and that of the modifier is new [Altenberg 1980, Standwell 1982].

(c) The hypothesis of the topic-focus hierarchy predicts that the *s*-genitive is used where the modifier is more topical and the head is in focus. In contrast, the *of*-genitive is used where the head is more topical and the modifier is in focus [Osselton 1988, Jørgensen 1984].

(d) The hypothesis of the end-weight principle predicts that *s*-genitive is used where the modifier is shorter than the head. On the other hand, the *of*-genitive is used where the head is shorter than the modifier [Altenberg 1980, Hawkins 1994].

The aforementioned approaches are all based on the notion of a linearisation hierarchy [Siewierska 1988] and presuppose that semantical relations encoded by both constructions can be treated as identical. Stefanowitsch [1998] provides the fifth semantic-based account of the problem:

e) The *s*-genitive and *of*-genitive are two semantically distinct constructions. The former encodes kinship and social relations as well as possession while the latter encodes taxonomic and meronymic relations [see also Gries and Stefanowitsch 2004, Stefanowitsch 2003].

It is evident that the long years of elaborate scientific analysis have not yielded any universally accepted view of the problem of English genitive alternation. Many competing motivations are at work at the same time, and this situation makes any

predictions about the actual choice between the two constructions troublesome. As Swan explains, '[u]nfortunately the exact differences between the three structures [the third one is *noun* + *noun*—S.M.] are complicated and difficult to analyse—this is one of the most difficult areas of English grammar. <…> In order to be certain which structure is used to express a particular idea, it is necessary to consult a good dictionary' [Swan 1995: 379].

3. Russian genitive alternation

No mention of this topic was found in literature, but in the Russian language a pair of constructions exists that is very similar to English genitive alternation in terms of function, structure, and semantics. These constructions are *noun* + *noun in genitive case* and *relative adjective derived from noun* + *noun*:

(3) *ruk-a* *mam-y*
hand-NOM mother-GEN
'mother's hand' / 'hand of mother'

(4) *mam-in-a* *ruk-a*
mother-ADJ-NOM hand-NOM
'mother's hand' / 'hand of mother'

To the best of our knowledge, the distribution of this pair has not been studied previously. The present paper attempts to support two following hypotheses:

(a) The higher up the referent of the modifier is in the animacy hierarchy, the more likely it is that the *noun* + *noun in genitive case* construction will be used.

(b) The lower down the referent of the modifier is in the animacy hierarchy, the more likely it is that the *relative adjective derived from noun* + *noun* construction will be used.

In other words, the paper attempts to support the animacy hierarchy account for both the English and Russian languages.

4. Data and methodology

The present analysis presupposes two consecutive steps. First, we want to establish an inter-language comparability of two pairs of constructions in English and in Russian. Second, we will test the similarity of intra-language distribution of each pair of constructions from the perspective of the animacy hierarchy.

For these two purposes, two types of corpora are needed:

(a) A translation corpus consisting of original texts in one language and their translations into one or more languages [see Granger et al. 2003]; and

(b) A national corpora consisting of original texts in two respective languages.

Contrastive linguists generally deal with comparable corpora, that is, corpora consisting of original texts, matched by criteria such as the time of composition, text category, and intended audience [Johansson and Hasselgård 1999, Granger et al. 2003], but since we are in search of typological evidence, there is no need to use comparable corpora for our purposes.

For a translation corpus, the current study used the OpenSubtitles2016 containing 2.8 million subtitle files in 60 languages for a total of over 17 billion tokens in 2.6 billion sentences [Lison and Tiedemann 2016]. For two national corpora, British National Corpus and Russian National Corpus were used for English and Russian respectively.

5. Comparability of constructions

Theoretically speaking, only three variants of association can exist between English and Russian genitive alternations (see Table 1):

Table 1

Three variants of association between English and Russian genitive alternations

	English	Russian
A	*S*-genitive	*Noun + noun in genitive case*
	Of-genitive	*Relative adjective derived from noun + noun*
B	*S*-genitive	*Relative adjective derived from noun + noun*
	Of-genitive	*Noun + noun in genitive case*
C	No association	

(a) This variant predicts that English *s*-genitives will be translated into Russian mostly by means of the *noun + noun in genitive case* construction while *of*-genitives will be translated mostly with the *relative adjective derived from noun + noun* construction.

(b) This variant foreshadows the reverse situation, predicting that English *s*-genitives will be translated into Russian mostly by means of the *relative adjective derived from noun + noun* construction while *of*-genitives will be translated mostly with the *noun + noun in genitive case* construction.

(c) This variant predicts that no association will be found between the English *s*-genitives and *of*-genitives and the Russian *noun + noun in genitive case* and *relative adjective derived from noun + noun* constructions (null hypothesis).

To test these hypotheses, two English words were chosen that Gries and Stefanowitsch list among the most distinctive collexemes of two constructions (the present study is concerned only with modifiers, not heads): *women* for *s*-genitive (distinctiveness score = 0.0003) and *life* for *of*-genitive (distinctiveness score = 1.58E-21) [Gries and Stefanowitsch 2004: 116]. The first 100 unique *s*-genitive and *of*-genitive examples that included these words were then extracted from the OpenSubtitles2016 corpus, and their Russian translations were analysed. Each Russian sentence was coded as a *noun + noun in genitive case* construction, *relative adjective derived from noun + noun* construction, or paraphrase (that is, translated sentence in which neither of the aforementioned constructions is used). The summary is presented in Table 2.

Table 2

English genitive constructions and their Russian translations

	Noun + noun in genitive case	Relative adjective derived from noun + noun	Paraphrase
Women's + noun	39	95	32
Noun + of + *women*	70	18	43
Life's + noun	72	33	97
Noun + of + *life*	125	5	83

Separate Pearson's Chi-squared tests were conducted for the constructions with *women* and *life*.[1] These tests yielded the following results: $\chi2 = 459.602$, df = 2, $p = 1.142e\text{-}13$ and $\chi2 = 35.713$, df = 2, $p = 1.758e\text{-}08$ respectively. The p-value is highly significant in both cases; the null hypothesis of no association between the English *s*-genitives and *of*-genitives on the one hand and the Russian *noun + noun in genitive case* and *relative adjective derived from noun + noun* constructions on the other hand can be rejected.

Although the effect size of the second test is weaker than that of the first one (Cramer's *V* of 0.293 compared to Cramer's *V* of 0.448 respectively), standardised Pearson's residuals obtained for each cell in the data frame indicate that the same individual deviations are statistically significant in both cases. *S*-genitives are commonly translated into Russian by means of the *relative adjective derived from noun + noun* construction, while *of*-genitives are associated with the *noun + noun in genitive case* construction.

To visualise the results, the *assoc* function from the *vcd* library in R Studio [R Core Team 2013] was used. In Figures 1 and 2, pink shading indicates that individual residuals are significantly underrepresented; blue shading indicates that individual residuals are significantly overrepresented; and grey shading indicates that individual residuals do not differ significantly from their expected values.

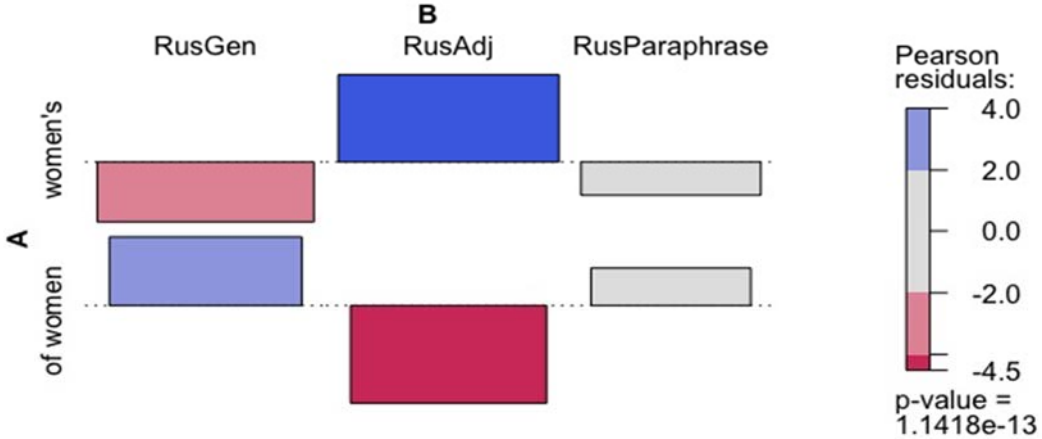

Figure 1. Association plot for the constructions with *women*

[1] All data frames and R script are downloadable from: https://www.dropbox.com/sh/27gxl3tiow5ljiq/AADMlL-6jJnbe9A9dVRYXJeya?dl=0.

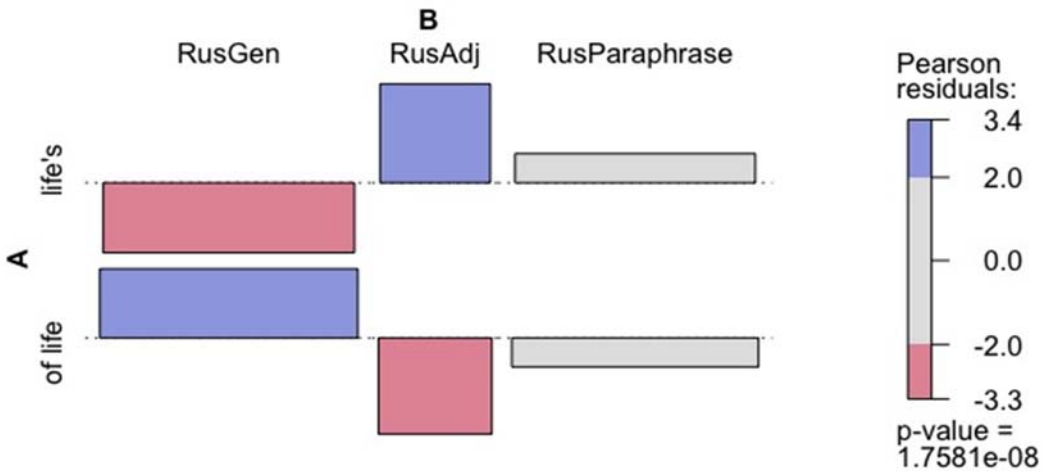

Figure 2. Association plot for the constructions with *life*

Considering these results, hypothesis (b) appears to be true. In a sense, this finding is counterintuitive. Instead, it would be expected that the English *s*-genitive would be more similar to the Russian true genitive (*noun + noun in genitive case*) because this construction is the authentic genitive from a historical perspective. However, the word order, namely the linear precedence of a modifier or head in respective constructions, appears to be a powerful factor. The alignment of English and Russian phrases that the present case study has revealed is likely explained by translators' desire to preserve the initial order of constituents (see Table 3).

Table 3

Alignment of English and Russian genitive constructions

	Modifier + head	Head + modifier
English	*S*-genitive	*Of*-genitive
Russian	*Relative adjective derived from noun + noun*	*Noun + noun in genitive case*

Overall, the most important finding is the comparability of English and Russian pairs of alternating constructions. This discovery made it possible to proceed with the comparative analysis of their intra-language distribution from the perspective of the animacy hierarchy.

6. Distribution of constructions

The animacy hierarchy [Comrie 1981] is 'a scalar representation of types of referents or referring expressions that are ranked according to their deictic, semantic, and/or discourse-pragmatic properties' [Haude and Witzlack-Makarevich 2016: 433]. It is also referred to in the literature as the referential hierarchy [Haude and Witzlack-Makarevich 2016], empathy hierarchy [Kuno and Kaburaki 1977],

nominal hierarchy [Dixon 1979], indexability hierarchy [Bickel and Nichols 2007], and 'hierarchy of inherent lexical content' [Silverstein 1976].

This hierarchy can be presented in different ways, but the present paper adopted (with the exclusion of all pronouns) the following version provided in [Dixon 1979]:

(5) Proper nouns > human common nouns > animate common nouns > inanimate common nouns

The hypothesis is that both in English and Russian, the closer a modifier is to the left extremity of the scale (5), the more likely it is to be used with the *s*-genitive and *relative adjective derived from noun + noun* constructions respectively. In contrast, the closer a modifier is to the right extremity of the scale (5), the more likely it is to be used with the *of*-genitive and *noun + noun in genitive case* constructions respectively.

To test this hypothesis, four groups of English words were chosen: proper nouns, human common nouns, animate common nouns, and inanimate common nouns. Each group comprised ten different lexemes that are most frequently used as modifiers in *s*-genitive construction, according to the British National Corpus. These lexemes had to satisfy certain criteria in addition to frequency of use:

(a) They had to be used at least once within the English *of*-genitive construction.

(b) For the group of inanimate common nouns, only concrete nouns were qualified.

(c) Their Russian counterparts had to be used at least once within both the *relative adjective derived from noun + noun* and *noun + noun in genitive case* constructions. The only exception to this rule was proper nouns that were chosen for each language separately due to reasons of cultural specificity.

(d) The adjectives derived from their Russian counterparts had to retain their literal meaning as the main one. All English candidates leading to metaphorical Russian adjectives and adjectives that are part of terminologised lexical units were excluded.

After that, the raw frequencies of each word were calculated within four respective constructions in the British National Corpus and Russian National Corpus.[2] The entire dataset is presented in appendices 1 and 2; the summary is provided in Table 4.

Separate Pearson's Chi-squared tests were conducted for all consecutive pairings of groups of nouns in English and Russian moving from the left extremity of the scale (5) to the right. The standardised Pearson's residuals for each cell are presented in Tables 5 to 7.

[2] Since we are not making any intra-corpus comparisons, there is no need to use normalised frequencies.

Table 4

Raw frequencies of English and Russian genitive constructions

	English		Russian	
	S-genitive	*Of*-genitive	Noun + noun in genitive case	Relative adjective derived from noun + noun
Proper nouns	1,084	262	23,031	8,576
Human common nouns	3,615	1,128	44,774	19,756
Animate common nouns	1,369	1,056	25,674	12,870
Inanimate common nouns	773	2,002	52,887	55,151

Table 5

Proper nouns and human common nouns in genitive alternation

	English		Russian	
	S-genitive	*Of*-genitive	Noun + noun in genitive case	Relative adjective derived from noun + noun
Proper nouns	3.33064	-3.33064	11.12437	-11.12437
Human common nouns	-3.33064	3.33064	-11.12437	11.12437
Pearson's Chi-squared test	$\chi2 = 10.849$, df = 1, $p = < 0.001$		$\chi2 = 123.58$, df = 1, $p = < 2.2e\text{-}16$	

Table 6

Human common nouns and animate common nouns in genitive alternation

	English		Russian	
	S-genitive	*Of*-genitive	Noun + noun in genitive case	Relative adjective derived from noun + noun
Human common nouns	17.20047	-17.20047	9.268528	-9.268528
Animate common nouns	-17.20047	17.20047	-9.268528	9.268528
Pearson's Chi-squared test	$\chi2 = 294.92$, df = 1, $p = < 2.2e\text{-}16$		$\chi2 = 85.777$, df = 1, $p = < 2.2e\text{-}16$	

Table 7

Animate common nouns and inanimate common nouns in genitive alternation

	English		Russian	
	S-genitive	*Of*-genitive	Noun + noun in genitive case	Relative adjective derived from noun + noun
Animate common nouns	20.90222	-20.90222	59.67713	-59.67713
Inanimate common nouns	-20.90222	20.90222	-59.67713	59.67713
Pearson's Chi-squared test	$\chi2 = 435.72$, df = 1, $p = < 2.2e\text{-}16$		$\chi2 = 3560.7$, df = 1, $p = < 2.2e\text{-}16$	

The same picture is evident across Tables 5 to 7: the first lines indicate overrepresentation of *s*-genitives in English and *noun + noun in genitive case* constructions in Russian (positive values of standardised Pearson's residuals). These lines also indicate the underrepresentation of *of*-genitives in English and *relative adjective derived from noun + noun* constructions in Russian (negative values of standardised Pearson's residuals). In the second lines, the picture is reversed: *s*-genitives and *noun + noun in genitive case* constructions are underrepresented in English and Russian respectively. *Of*-genitives and *relative adjective derived from noun + noun* constructions are overrepresented in English and Russian respectively.

All results are highly significant, and the English part of the hypothesis can be considered true. The closer a modifier is to the left extremity of the scale (5), the more likely it is to be used with *s*-genitive. On the other hand, the closer a modifier is to the right extremity of the scale (5), the more likely it is to be used with *of*-genitive. This is not surprising; the present analysis has merely replicated the findings of other numerous studies.

It is interesting that in Russian, the same animacy hierarchy governs the distribution of a similar alternating pair of constructions. Surprisingly, the expectations about the alignment of English and Russian pairs were not met. The linear order of modifier and head that we considered a strong predictor was abandoned in favour of the notion of true, or inflectional, 'genetiveness' on the one hand and periphrastic, or analytical, 'genetiveness' on the other. For this reason, it was necessary to rearrange Table 8 as follows:

Table 8

Rearranged alignment of English and Russian genitive constructions

	Inflectional 'genetiveness'	Analytical 'genetiveness'
English	*S*-genitive	*Of*-genitive
Russian	*Noun + noun in genitive case*	*Relative adjective derived from noun + noun*

7. Animacy continuum

When the significance of the association between the English and Russian pairs of constructions is measured along the whole animacy continuum and not pairwise, it is clear that the two languages, though similar in their general adherence to the hierarchical principle, have different cut-off points on this scale.

The results are visualised in Figures 3 and 4: the pink shading indicates that individual residuals are significantly underrepresented; the blue shading indicates that individual residuals are significantly overrepresented; and the grey shading indicates that individual residuals do not differ significantly from their expected values.

In English (Figure 3), the differential attribute is 'humanness'. The borderline is drawn between groups of proper nouns and human common nouns on the one hand (preferably used with *s*-genitives) and animate common nouns and inanimate

common nouns on the other (preferably used with *of*-genitives). In Russian (Figure 4) the differential attribute is 'animateness'. The borderline is drawn between groups of proper nouns, human common nouns, and animate common nouns on the one hand (preferably used with the *noun + noun in genitive case* construction), and inanimate common nouns, on the other (preferably used with the *relative adjective derived from noun + noun* construction).

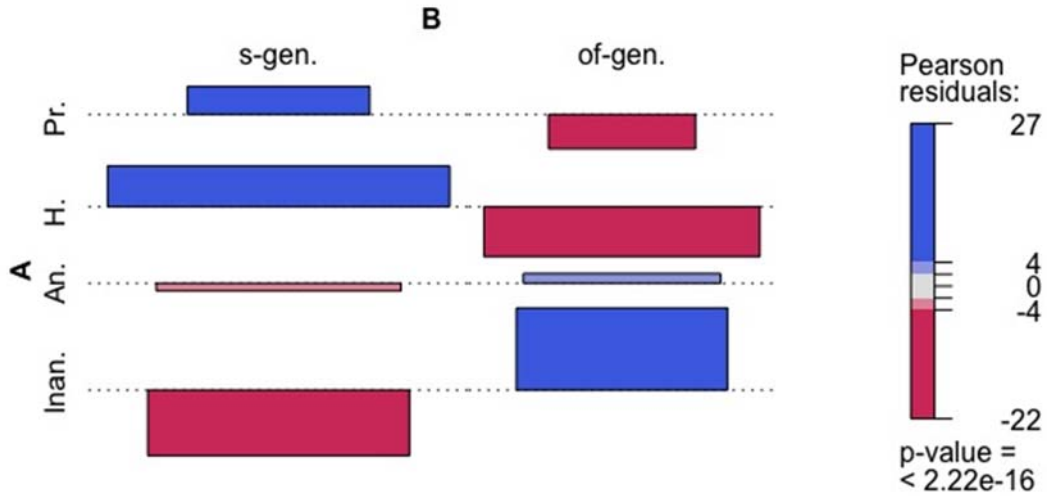

Figure 3. English genitive alternation along the animacy continuum (Cramer's V = 0.41)

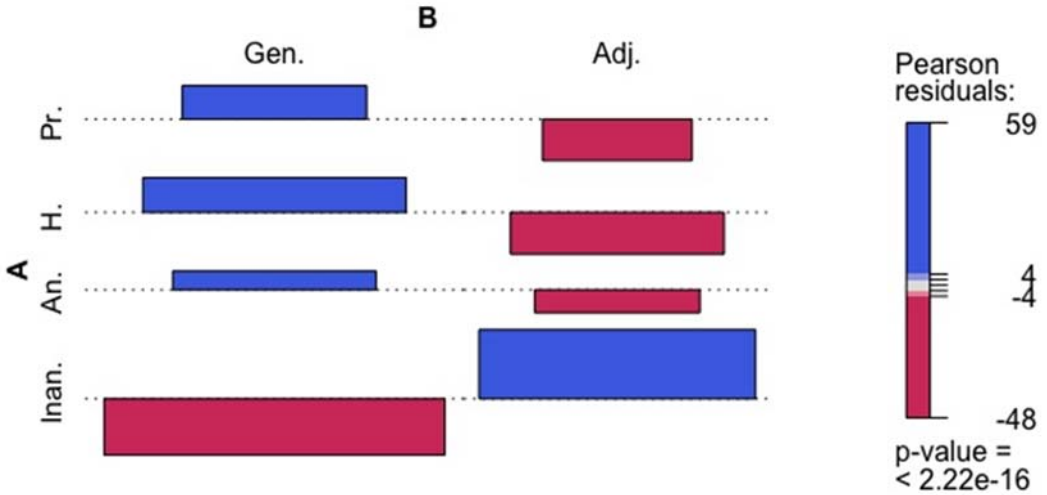

Figure 4. Russian genitive alternation along the animacy continuum (Cramer's V = 0.21)

8. Collostructional strength

Since our analysis of English and Russian genitive alternations is essentially an examination of alternating pairs of constructions and relative preferences for words that can occur in them, a collostructional analysis of the data was also con-

ducted. The collostructional analysis, also referred to as distinctive-collexeme analysis, is a method proposed in [Gries and Stefanowitsch 2004] for identifying words that appear in particular slots of constructions rather than any words within a given span.

The *coll.analysis* package for R Studio was used to calculate the collostructional strengths of 40 English and 40 Russian words in the data [Gries 2007]; the log-likelihood ratio was chosen as an index of association strength (other measures accessible in the *coll.analysis* package yield comparable results). The output for the English data is presented in Figure 5 and the output for the Russian data is displayed in Figure 6. In both cases, the lines for each construction are sorted from the highest index of collostructional strengths to the lowest. The higher index, the stronger preference a given lexeme reveals for a particular construction. The red lines in both figures divide the output into four equal parts consisting of 10 lines each.

	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
30	fish	86	662	453.279121	294.720879	OF.GENITIVE	-0.1362596737	-0.52585778	839.7431043
36	grass	1	361	219.367703	142.632297	OF.GENITIVE	-0.0810138945	-0.62320993	678.0646337
38	computer	133	570	426.009655	276.990345	OF.GENITIVE	-0.1087058799	-0.44447792	547.2987481
31	stone	74	393	282.996457	184.003543	OF.GENITIVE	-0.0775371845	-0.46684207	414.9432904
40	cigarette	1	57	35.147312	22.852688	OF.GENITIVE	-0.0126685707	-0.59178720	97.5101351
35	apple	5	58	38.177252	24.822748	OF.GENITIVE	-0.0123086810	-0.52957844	78.5301760
39	tree	28	88	70.294623	45.705377	OF.GENITIVE	-0.0156912038	-0.36839425	64.4250906
33	car	251	279	321.173709	208.826291	OF.GENITIVE	-0.0260342778	-0.13892555	39.8206666
12	president	570	531	667.192931	433.807069	OF.GENITIVE	-0.0360583445	-0.09781690	39.1058925
34	pin	6	21	16.361680	10.638320	OF.GENITIVE	-0.0038441583	-0.38468596	16.5642604
37	book	191	173	220.579679	143.420321	OF.GENITIVE	-0.0109739901	-0.08397038	10.2123513
11	driver	435	25	278.754540	181.245460	S.GENITIVE	0.0579666913	0.35409247	297.5167810
15	reader	335	23	216.943751	141.056249	S.GENITIVE	0.0437985856	0.34056619	213.0048427
13	doctor	623	124	452.673133	294.326867	S.GENITIVE	0.0631908594	0.24417153	195.0423541
17	manager	428	65	298.752148	194.247852	S.GENITIVE	0.0479506433	0.27413786	171.8807539
14	farmer	238	11	150.891044	98.108956	S.GENITIVE	0.0323172138	0.35772547	171.6512286
9	Wordsworth	210	24	141.801222	92.198778	S.GENITIVE	0.0253015830	0.29761681	102.0821780
23	horse	385	107	298.146160	193.853840	S.GENITIVE	0.0322225665	0.18457645	72.6022002
32	doll	83	2	51.508991	33.491009	S.GENITIVE	0.0116830888	0.37329315	68.2938607
19	soldier	109	11	72.718576	47.281424	S.GENITIVE	0.0134603215	0.30559361	56.6479697
1	Shakespeare	374	121	299.964124	195.035876	S.GENITIVE	0.0274671324	0.15642641	51.5969760
21	cow	153	29	110.289840	71.710160	S.GENITIVE	0.0158453671	0.23851655	48.3393408
16	master	325	103	259.362920	168.637080	S.GENITIVE	0.0243511995	0.15940104	46.7342576
3	Tolkien	99	12	67.264682	43.735318	S.GENITIVE	0.0117737268	0.28874285	45.8629922
5	Kipling	51	2	32.117371	20.882629	S.GENITIVE	0.0070054101	0.35795657	37.9174739
28	cat	203	58	158.162902	102.837098	S.GENITIVE	0.0166344559	0.17585540	35.6586822
18	teacher	549	234	474.488706	308.511294	S.GENITIVE	0.0276435116	0.10225356	32.9910048
10	Spenser	53	4	34.541323	22.458677	S.GENITIVE	0.0068481248	0.32547983	31.7062918
25	snail	52	5	34.541323	22.458677	S.GENITIVE	0.0064771272	0.30784694	27.6362952
26	goat	77	14	55.144920	35.855080	S.GENITIVE	0.0081081824	0.24211741	25.2580428
8	Wilde	46	8	32.723359	21.276641	S.GENITIVE	0.0049256020	0.24704544	15.7457999
4	Chaucer	62	14	46.055098	29.944902	S.GENITIVE	0.0059155205	0.21122335	15.6711671
22	spider	67	17	50.903003	33.096997	S.GENITIVE	0.0059719473	0.19306751	14.2642908
29	pig	104	35	84.232350	54.767650	S.GENITIVE	0.0073337507	0.14398619	12.6529517
27	boar	40	8	29.087430	18.912570	S.GENITIVE	0.0040485372	0.22831599	11.7640582
6	Tennyson	38	8	27.875454	18.124546	S.GENITIVE	0.0037561823	0.22099935	10.5007782
7	Byron	44	13	34.541323	22.458677	S.GENITIVE	0.0035091463	0.16678381	7.1173584
2	Milton	107	56	98.776065	64.223935	S.GENITIVE	0.0030510601	0.05119275	1.7930679
24	bird	202	121	195.734166	127.265834	S.GENITIVE	0.0023246094	0.01997025	0.5271517
20	traitor	3	1	2.423953	1.576047	S.GENITIVE	0.0002137122	0.14406292	0.3695598

Figure 5. Distinctive-collexeme analysis of the English data

Though it is necessary to allow for the idiosyncratic behaviour of different words in the two languages, the results of the distinctive-collexeme analysis largely support our previous findings. Inanimate common nouns constitute the majority of words that display the strongest preference for analytical genitives (the *of*-genitive

in English and the *relative adjective derived from noun + noun* construction in Russian). Human common nouns constitute the majority of words that demonstrate the strongest preference for inflectional genitives (the *s*-genitive in English and the *noun + noun in genitive case* construction in Russian).

There are, however, discrepancies suggesting that at least some levels of the animacy hierarchy form a continuum. Words with referents that are conceived of as more prototypically animate demonstrate a stronger preference for inflectional genitives than words from the same group with referents that are less prototypically animate. This tendency is most observable with animate common nouns that occupy the intermediate position between undoubtedly animate human beings and undoubtedly inanimate physical objects.

	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
31	kamen_kamennyj	3903	19431	14071.02140	9262.97860	ADJECTIVE	-0.1749986831	-0.482107738	2.077895e+04
39	derevo_derevannyj	9626	19641	17648.77790	11618.22210	ADJECTIVE	-0.1380775581	-0.311709549	1.022901e+04
38	kompjuter_kompjuternyj	1306	4033	3219.55872	2119.44128	ADJECTIVE	-0.0329336695	-0.366472611	2.897173e+03
29	svinja_svinoj	1243	1624	1728.87710	1138.12290	ADJECTIVE	-0.0083622811	-0.171498044	3.385752e+02
20	predatel_predatelskij	445	750	720.61672	474.38328	ADJECTIVE	-0.0047435545	-0.231782765	2.593912e+02
32	kukla_kukolnyj	731	922	996.80288	656.19712	ADJECTIVE	-0.0045746514	-0.161902904	1.749155e+02
14	fermer_fermerskij	295	499	478.80308	315.19692	ADJECTIVE	-0.0031633781	-0.232249773	1.733279e+02
28	koshka_koshachij	1460	1440	1748.77698	1151.22302	ADJECTIVE	-0.0049700516	-0.100782415	1.190473e+02
34	bulavka_bulavochnyj	172	177	210.45626	138.54374	ADJECTIVE	-0.0006618589	-0.110348536	1.732915e+01
21	korova_korovij	1908	1312	1941.74548	1278.25452	ADJECTIVE	-0.0005807830	-0.010620862	1.492882e+00
33	mashina_mashinnyj	14289	1840	9726.21515	6402.78485	GENITIVE	0.0785286841	0.303029971	6.785843e+03
23	loshad_loshadinyj	8631	2488	6705.05215	4413.94785	GENITIVE	0.0331468949	0.181528162	1.572695e+03
12	president_presidentskij	11683	4016	9466.91373	6232.08627	GENITIVE	0.0381403779	0.150922617	1.475275e+03
18	uchitel_uchitelskij	5797	1419	4351.43955	2864.56045	GENITIVE	0.0248790955	0.206465296	1.368965e+03
37	kniga_knizhnyj	17458	7165	14848.32262	9774.67738	GENITIVE	0.0449143532	0.117951082	1.332588e+03
13	doktor_doktorskij	5237	1402	4003.49323	2635.50677	GENITIVE	0.0212295049	0.191022025	1.070190e+03
15	chitatel_chitatelskij	4298	1118	3265.99177	2150.00823	GENITIVE	0.0177615757	0.194896954	9.168812e+02
6	Lomonosov_lomonosovskij	1591	169	1061.32672	698.67328	GENITIVE	0.0091160436	0.303148916	8.133530e+02
8	Chehov_chehovskij	4605	1550	3711.62839	2443.37161	GENITIVE	0.0153755436	0.148922120	5.895329e+02
7	Pasternak_pasterankovskij	1275	162	866.54915	570.45085	GENITIVE	0.0070297218	0.285931427	5.797916e+02
36	trava_travanoj	2620	788	2055.11447	1352.88553	GENITIVE	0.0097220709	0.168113264	4.262393e+02
17	menedzher_menedzherskij	703	72	467.34557	307.65443	GENITIVE	0.0040557757	0.305044233	3.658786e+02
40	sigareta_sigaretnyj	1475	357	1104.74463	727.25537	GENITIVE	0.0063723511	0.203641509	3.470145e+02
3	Bulgakov_bulgakovskij	1119	220	807.45254	531.54746	GENITIVE	0.0053619473	0.233962430	3.438004e+02
2	Nekrasov_nekrasovskij	1169	245	852.67953	561.32047	GENITIVE	0.0054440941	0.225017002	3.331911e+02
10	Gogol_gogolevskij	3801	1520	3208.70425	2112.29575	GENITIVE	0.0101938197	0.113807813	2.935669e+02
9	Turgenev_turgenevskij	1569	523	1261.53153	830.46847	GENITIVE	0.0052917450	0.148251235	2.023967e+02
30	ryba_rybij	4035	1834	3539.16279	2329.83721	GENITIVE	0.0085337014	0.086577569	1.846917e+02
5	Derzhavin_derzhavinskij	577	121	420.91253	277.08747	GENITIVE	0.0026863734	0.224265953	1.639046e+02
26	kozel_kozlinyj	1361	483	1111.98095	732.01905	GENITIVE	0.0042857901	0.136076679	1.494747e+02
25	ulitka_ulitkin	157	1	95.27819	62.72181	GENITIVE	0.0010622750	0.390898800	1.486139e+02
24	ptica_ptichij	6202	3363	5767.94890	3797.05110	GENITIVE	0.0074703197	0.047240750	8.687149e+01
4	Pelevin_pelevinskij	79	1	48.24212	31.75788	GENITIVE	0.0005293643	0.384600219	7.102802e+01
1	Pushkin_pushkinskij	7246	4065	6820.83325	4490.16675	GENITIVE	0.0073174139	0.039426089	7.082236e+01
22	pauk_pauchij	373	159	320.81012	211.18988	GENITIVE	0.0008982239	0.098316769	2.222542e+01
11	voditel_voditelskij	1295	754	1235.60139	813.39861	GENITIVE	0.0010222912	0.029235877	7.319209e+00
27	kaban_kabanij	304	166	283.42248	186.57752	GENITIVE	0.0003541534	0.043866909	3.824253e+00
35	jabloko_jablochnyj	1307	797	1268.76785	835.23215	GENITIVE	0.0006580017	0.018330067	2.943415e+00
19	soldat_soldatskij	10495	6799	10428.74107	6865.25893	GENITIVE	0.0011403620	0.004125254	1.142990e+00
16	master_masterskij	4526	2927	4494.35684	2958.64316	GENITIVE	0.0005446007	0.004380194	5.796869e-01

Figure 6. Distinctive-collexeme analysis of the Russian data

Table 9 illustrates that as a result of conceptual 'deanimisation' an animate common noun can even cross the threshold between two constructions and start displaying a preference for the analytical genitive. Importantly, the data suggest that this continuum is charted in varying ways in the two languages. It seems that in English, less prototypically animate animals are those that humans normally use for food (*pig*, *boar*, *bird*, *fish*). In Russian, less prototypically animate animals are those that were historically omnipresent in peasant households (*korova* 'cow', *koshka* 'cat', *svinja* 'pig').

Table 9

Prototypical animacy in English and Russian

	English	Russian
More prototypical	Horse	*Loshad* 'horse'
	Cow	*Ryba* 'fish'
	Cat	*Kozel* 'goat'
	Snail	*Ulitka* 'snail'
	Goat	*Ptica* 'bird'
	Spider	*Pauk* 'spider'
	Pig	*Kaban* 'boar'
	Boar	*Korova* 'cow'
Less prototypical	Bird	*Koshka* 'cat'
	Fish	*Svinja* 'pig'

To test this hypothesis, two more pairings of English and Russian animate common nouns were selected: *dog* (*sobaka/sobachij*) and *rabbit* (*krolik/krolichij*). They met all the requirements specified above and could be expected to display distinctively different preferences for genitive constructions.

Dog (*sobaka*) denotes an animal that is uneatable and highly important for a country life. As a result, this word is likely to be conceptualised as more prototypical in English and less prototypical in Russian. In contrast, *rabbit* (*krolik*) denotes an animal that is universally used for food and exotic to the traditional Russian peasantry. It is likely to be conceptualised as less prototypical in English and more prototypical in Russian.

As before, the collostructional strengths of two new sets of English and Russian animate common nouns were calculated using the *coll.analysis* package for R Studio; the log-likelihood ratio was again chosen as an index of association strength. The output for the English data is presented in Figure 7, and the output for Russian data is included in Figure 8.

	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
10	fish	86	662	436.62915	311.37085	OF.GENITIVE	-0.48914602	-0.62798768	962.695100
12	rabbit	39	52	53.11932	37.88068	OF.GENITIVE	-0.01969719	-0.16009594	9.134390
3	horse	385	107	287.19458	204.80542	S.GENITIVE	0.13644369	0.23858216	102.627201
1	cow	153	29	106.23864	75.76136	S.GENITIVE	0.06523454	0.27382408	59.155645
8	cat	203	58	152.35322	108.64678	S.GENITIVE	0.07065491	0.21288377	47.625150
11	dog	314	120	253.33831	180.66169	S.GENITIVE	0.08462624	0.16388386	42.607127
5	snail	52	5	33.27254	23.72746	S.GENITIVE	0.02612578	0.33502526	31.363400
6	goat	77	14	53.11932	37.88068	S.GENITIVE	0.03331480	0.27077784	30.123384
2	spider	67	17	49.03322	34.96678	S.GENITIVE	0.02506460	0.22015917	17.776656
9	pig	104	35	81.13831	57.86169	S.GENITIVE	0.03189326	0.17260557	17.207302
7	boar	40	8	28.01898	19.98102	S.GENITIVE	0.01671415	0.25373306	14.037693
4	bird	202	121	188.54441	134.45559	S.GENITIVE	0.01877126	0.04678022	2.615386

Figure 7. Distinctive-collexeme analysis of the English data (animate common nouns)

Our prediction is borne out. The English *dog* and Russian *krolik* display a strong preference for the *s*-genitive and *noun + noun in genitive case* construction respectively, which means that these words are located high on the animacy hierarchies. At the same time, the English *rabbit* and Russian *sobaka* show strong preference for *of*-genitive and *relative adjective derived from noun + noun* construction

respectively, which means that the positions of these words on the animacy hierarchies are relatively low.

	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
11	sobaka_sobachij	5315	4801	6458.0861	3657.9139	ADJECTIVE	-0.0999910436	-0.142005756	685.7859783
9	svinja_svinoj	1243	1624	1830.3018	1036.6982	ADJECTIVE	-0.0513740113	-0.217437081	528.0962263
8	koshka_koshachij	1460	1440	1851.3691	1048.6309	ADJECTIVE	-0.0342348695	-0.143349373	234.2269580
1	korova_korovij	1908	1312	2055.6581	1164.3419	ADJECTIVE	-0.0129163382	-0.049045572	30.8928548
3	loshad_loshadinyj	8631	2488	7098.4044	4020.5956	GENITIVE	0.1340632419	0.177743961	1247.4333171
5	ulitka_ulitkin	157	1	100.8677	57.1323	GENITIVE	0.0049101531	0.356404862	131.1105698
6	kozel_kozlinyj	1361	483	1177.2154	666.7846	GENITIVE	0.0160764933	0.103520985	86.4519667
10	ryba_rybij	4035	1834	3746.7880	2122.2120	GENITIVE	0.0252112411	0.055709857	70.8884087
12	krolik_krolichij	626	236	550.3035	311.6965	GENITIVE	0.0066215238	0.089370584	30.5585544
2	pauk_pauchij	373	159	339.6305	192.3695	GENITIVE	0.0029189878	0.063405835	9.4303034
4	ptica_ptichij	6202	3363	6106.3260	3458.6740	GENITIVE	0.0083690506	0.012396936	5.1539703
7	kaban_kabanij	304	166	300.0495	169.9505	GENITIVE	0.0003455709	0.008485914	0.1457156

Figure 8. Distinctive-collexeme analysis of the Russian data (animate common nouns)

9. Conclusion

This paper began with a presentation of five different accounts of genitive alternation in English: the hypotheses of the animacy hierarchy, given-new hierarchy, topic-focus hierarchy, end-weight principle, and two semantically distinct constructions.

Stefanowitsch, who is the proponent of the last and most recent new account[3] [Stefanowitsch 2003], argues that all other explanations fail because they rely heavily on the linearisation hierarchy. In the case of the *s*-genitive, the hypotheses make correct predictions (modifier = the first word). However, in the case of the *of*-genitive, the hypotheses are refuted because of the conflict that exists between the linear order and the syntactic structure of the phrase (modifier ≠ the first word).

However, Stefanowitsch's own alternative hypothesis, when tested, did not cross the threshold of statistical significance [Stefanowitsch 1998: 25]. Many findings, including those of the present study, indicate that the distribution of the two English genitives does not depend on any semantic relationships encoded by these constructions. Even indiscriminate, coarse-grained approaches such as the one in the present study reveal the absolutely distinct patterns of the partial paraphrase relationship between *s*-genitive and *of*-genitive.

The comparison of the distribution of the two English and two Russian genitives was insightful. It was established that in both languages the choice between members of an alternating pair is governed by the rules of animacy hierarchisation. Additionally, it was possible to disprove the idea that the animacy hierarchy is necessarily based on the linearisation hierarchy. The two Russian constructions are typologically aligned with their English counterparts, not on the grounds of the linear order of head and modifier but on the grounds of structural similarity. The English *s*-genitive and Russian *noun + noun in genitive case* construction are diametrically opposed in terms of word order. However, they reveal the same underlying structure of the inflectional genitive as contrasted with the analytical genitive of the Russian

[3] Other more recent studies in this field, to the best of our knowledge, can be subsumed under one of the abovementioned accounts.

relative adjective derived from noun + noun construction and the English *of*-genitive.

This study is just a preliminary one, very selective (also with regard to the source of the research material) and can only be regarded as the first step to undertake a more comprehensive research on genitive alternation in English and Russian (explored through translational and non-translational data).

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Appendix 1

	noun	*s*-genitive	*of*-genitive
Proper nouns	Shakespeare	374	121
	Milton	107	56
	Tolkien	99	12
	Chaucer	62	14
	Kipling	51	2
	Tennyson	38	8
	Byron	44	13
	Wilde	46	8
	Wordsworth	210	24
	Spenser	53	4
	TOTAL	**1084**	**262**
Human common nouns	driver	435	25
	president	570	531
	doctor	623	124
	farmer	238	11
	reader	335	23
	master	325	103
	manager	428	65
	teacher	549	234
	soldier	109	11
	traitor	3	1
	TOTAL	**3615**	**1128**
Animate common nouns	cow	153	29
	spider	67	17
	horse	385	107
	bird	202	121
	snail	52	5
	goat	77	14
	boar	40	8
	cat	203	58
	pig	104	35
	fish	86	662
	TOTAL	**1369**	**1056**
Inanimate common nouns	stone	74	393
	doll	83	2
	car	251	279
	pin	6	21
	apple	5	58
	grass	1	361
	book	191	173

	noun	*s*-genitive	*of*-genitive
	computer	133	570
	tree	28	88
	cigarette	1	57
	TOTAL	**773**	**2002**

Appendix 2

	noun / adjective	noun + noun in genitive case	relative adjective derived from noun + noun
Proper nouns	Pushkin / pushkinskij	7246	4065
	Nekrasov / nekrasovskij	1169	245
	Bulgakov / bulgakovskij	1119	220
	Pelevin / pelevinskij	79	1
	Derzhavin / derzhavinskij	577	121
	Lomonosov / lomonosovskij	1591	169
	Pasternak / pasterankovskij	1275	162
	Chehov / chehovskij	4605	1550
	Turgenev / turgenevskij	1569	523
	Gogol' / gogolevskij	3801	1520
	TOTAL	**23031**	**8576**
Human common nouns	voditel' / voditel'skij	1295	754
	president / presidentskij	11683	4016
	doktor / doktorskij	5237	1402
	fermer / fermerskij	295	499
	chitatel' / chitatel'skij	4298	1118
	master / masterskij	4526	2927
	menedzher / menedzherskij	703	72
	uchitel' / uchitel'slij	5797	1419
	soldat / soldatskij	10495	6799
	predatel' / predatel'skij	445	750
	TOTAL	**44774**	**19756**
Animate common nouns	korova / korovij	1908	1312
	pauk / pauchij	373	159
	loshad' / loshadinyj	8631	2488
	ptica / ptichij	6202	3363
	ulitka / ulitkin	157	1
	kozel / kozlinyj	1361	483
	kaban / kabanij	304	166
	koshka / koshachij	1460	1440
	svinja / svinoj	1243	1624
	ryba / rybij	4035	1834
	TOTAL	**25674**	**12870**
Inanimate common nouns	kamen' / kamennyj	3903	19431
	kukla / kukol'nyj	731	922
	mashina / mashinnyj	14289	1840
	bulavka / bulavochnyj	172	177
	jabloko / jablochnyj	1307	797
	trava / trav'anoj	2620	788
	kniga / knizhnyj	17458	7165

	noun / adjective	noun + noun in genitive case	relative adjective derived from noun + noun
	kompjuter / kompjuternyj	1306	4033
	derevo / derev'annyj	9626	19641
	sigareta / sigaretnyj	1475	357
	TOTAL	**52887**	**55151**

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