

Understanding Russian Texts: a Short Course Procedure Using the Integrated Dictionary Search Method

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Traditional methods of teaching a reading knowledge of Russian rely heavily on outmoded notions of word classes being regarded as a reflection of reality. Consequently, such methods concentrate almost exclusively on the construction of inflectional paradigms, ignoring problems of morphological ambiguity. Syntax is relegated to a minor role. An alternative approach is illustrated, which exploits the notion of "syntactic valency" (i.e. the ability or non-ability of a word class to combine with another word class). A special grammar-cum-dictionary is used in a rule-governed manner to produce semi-automatically a sentence-for-sentence analysis of scientific and technical Russian texts.

INTRODUCTION

This paper describes the teaching procedure underlying a two-week course in reading scientific and technical Russian, held annually at the University of Aston in Birmingham. The course is intended for students with no previous knowledge of Russian, but who need access to specialised Russian journals, etc.

These students have normally developed efficient reading strategies in their L1, especially in the area of content prediction, i.e. their specialist knowledge of the subject-matter enables them to predict content efficiently. Most are also very proficient at dictionary procedures and methodical correlation of information. These skills are therefore exploited in the course.

The students have only limited time for language-learning. Further, there is usually no-one at their workplace who can give language help after the course. The course must therefore be short, and the student must be enabled to achieve accuracy on his/her own. But traditional approaches to the teaching of Russian fail to meet these requirements.

SOME CHARACTERISTICS OF RUSSIAN

Russian is a highly inflected language, i.e. Russian words show considerable change in form at their end, according to use. (As an illustration of this Zaliznyak, (1977:25-142) consists entirely of information about inflectional patterns, but does still not account for all possibilities.) Consequently the majority of word-forms found in a text will differ, often considerably, from the canonical form (e.g. nominative singular of noun or adjective, or infinitive of verb) entered in Russian dictionaries. For example, the verb *соответствовать*, (= *correspond to*) has an alternative stem *соответств* for some forms, which would not normally be entered in a dictionary.

Further, the inflectional system is highly ambiguous, in that the same inflectional ending may signal a different syntactic function, according to the type of stem to which it is attached. Thus -a on a hard feminine stem signals nominative singular, while on a hard masculine stem it signals genitive singular. Additionally, there is ambiguity

within each paradigm, which can only be resolved by syntactic means. For example, the same -a ending on a hard masculine stem may signal accusative singular (animate noun), genitive singular, accusative plural (inanimate noun), or nominative plural.

The English-speaking student typically relies on word order - proximity within the sentence of conceptually-related items - to deduce meaning. However, because of its characteristics outlined above, this strategy often results in gross errors when applied to Russian. A classic example is the case where nominative and accusative forms of two nouns, serving as subject and object, are inverted, i.e. the object noun is placed before verb and subject noun. A student relying on word order will then obtain an incorrect translation.

TRADITIONAL TEACHING PROCEDURE

In traditional "Russian for the Scientist" textbooks, the problem of the overall size of the inflectional system is handled by the presentation, first of regular, then of increasingly irregular paradigms. ('Regular' and 'irregular' in this context appear to mean, respectively, 'applying to a large number of lexical items' and 'applying to a small number of lexical items'.) The knowledge so gleaned is often required to be used in artificial exercises of translation into Russian - artificial to the student who wishes to be able to read articles in Russian scientific and technical journals. Clearly, such traditional techniques represent an attempt to internalize in the student that effortless association of form and function which is found in the native speaker of Russian. Equally clearly, the method is ineffective, extremely time-consuming and demotivating. For example, very few students would genuinely wish to be able to say *We studied the motor instruments on the airplane* (Turkevich 1959:103)

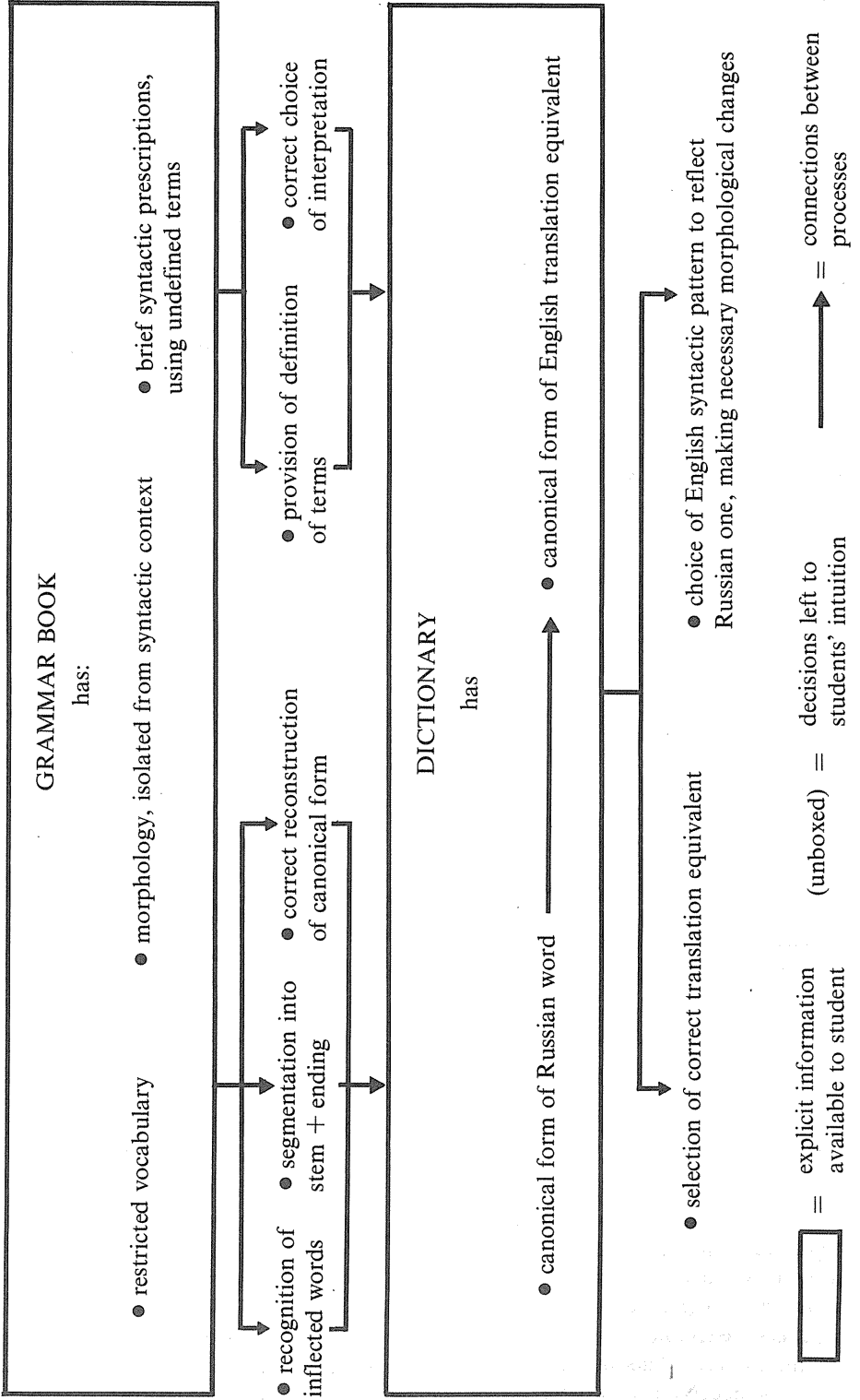
In traditional textbooks, the ability to associate the inflected form with the canonical form is barely touched upon - except for a few features such as 'fleeting' e and o, or the change of to in verbs. Presentation of changes to the canonical form is always in the 'wrong' direction, i.e. from canonical form to inflected form, when the contrary procedure is more useful in comprehension of written texts.

The ambiguity of the inflectional system is also unmentioned. Its existence is obscured by the separate presentation of different functions in different parts of the textbook, so that, for example, 'hard' feminine nominative singular and 'hard' masculine genitive singular forms, which have the same ending, are never explicitly confronted.

Finally, treatment of syntax is traditionally relegated to scanty lists of the "functions of the dative" and "functions of the genitive" (The reader will doubtless be enlightened to hear that, while the dative is required by "certain verbs", the genitive is required by "some verbs" (Ward 1970:107 and 143)). There is little attempt to relate these functions to specific vocabulary items. Syntactic resolution of morphological ambiguity is never discussed.

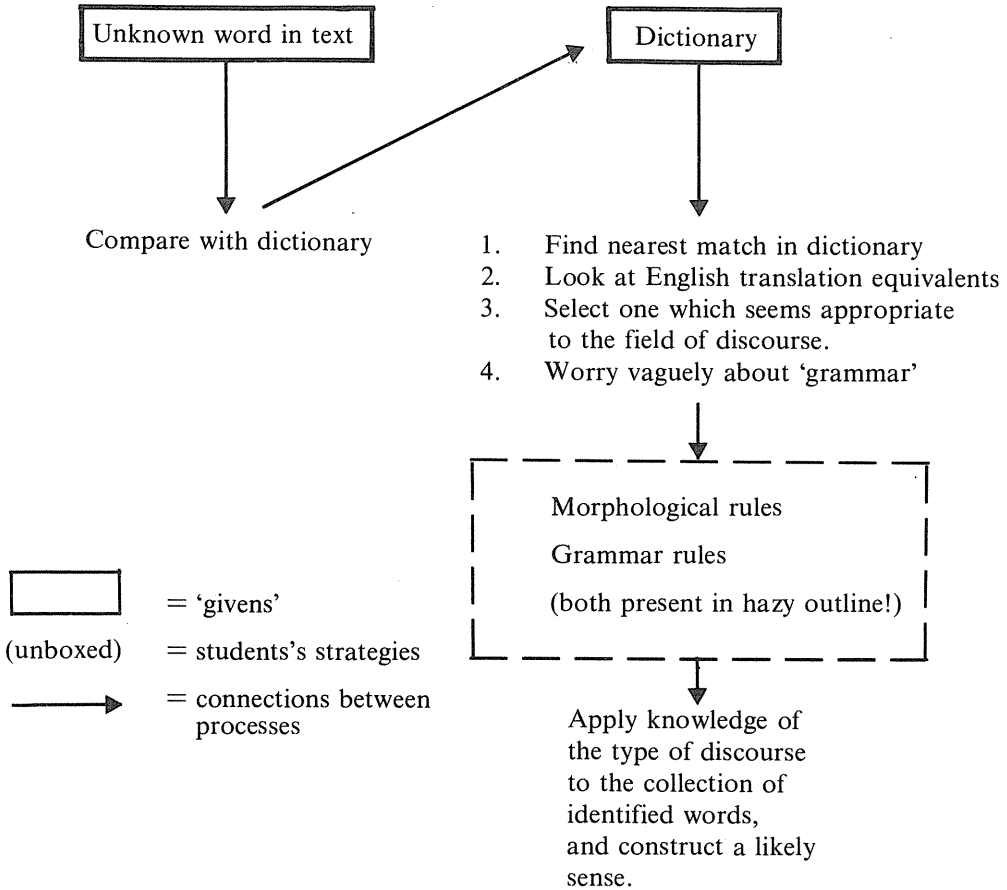
The position of the student attempting to decipher a Russian text, using the traditional grammar and dictionary, is illustrated in Figure 1.

Fig 1: Aids for deciphering Russian texts and their uses



It can be seen that all the vital decisions leading to a correct translation / comprehension have to be based on knowledge other than that given by the teaching materials. In practice, this means that students actually adopt some such strategy as that shown in Figure 2.

Fig 2: Actual use of information



In other words, the chief factor in deriving a correct translation by this traditional method is non-linguistically derived knowledge of the content (general subject matter, equations and formulae etc.) of the L₂ text. The reality of the process is disguised by the habit of basing textbook translation exercises primarily on well-known scientific axioms - the technique only allows translation of already-known data. (Space does not permit us here to discuss how this is an inevitable result of the underlying theory of language accepted by most Russian teachers. See Heron 1980: 303ff.)

Clearly then, an effective short course poses several requirements not fulfilled by traditional methods:

1. Students should have reliable access to the dictionary's canonical form, regardless of the variability of the text form.
2. Inflectional ambiguities resolvable by knowledge of stem type should be so resolved.
3. Inflectional ambiguities resolvable by syntactic means should be so resolved.
4. Correct syntactic links between items should be identified.
5. For any given vocabulary item, in any given inflected form, syntactic functions which can be filled should be indicated explicitly.
6. Correct structural equivalences between the L₂ text and its L₁ rendering should be provided.
7. No demands should be placed on students' intuitions about the L₂.

In imposing these criteria, we attempt both to ensure that students are not required to make decisions regarding a linguistic competence they do not possess, and to guarantee that a correct translation will ensue.

AN ALTERNATIVE APPROACH

The problem is tackled by use of a specially prepared Russian-English integrated dictionary - henceforth known as REID (Heron 1975). This combines lexical and grammatical information, accessed through a rule-governed looking-up procedure. The materials are described fully elsewhere (Heron 1980). The following are sample entries from REID:

	тел	(=) body	7c,8d,9a, 1Na,3Na,4Na, 10a,11a, 5Na,6NA	NOM-2	
3Na а		GS Neuter (AS Neuter Anim.)			<ol style="list-style-type: none"> 1. Follows ADJ (No. 14 MN) 2. Follows NUM-2 3. Follows NOM-G, V-G, PREP-G as object 4. Obj. of neg verb (HE + V) 5. If NOM-3 may mean 'some' 6. = "NOUN'S, of a/the NOUN" 7. Direct obj. of V(23-37) (if noun is animate) 8. V-Phrase PREP-phrase or REL-phrase interrupts one of above

In the discussion that follows, only relevant sections of the dictionary will be referred to.

Access to canonical forms is guaranteed by two methods. In REID, a dictionary entry consists not of a canonical form, but of a stem or stems, these being invariable forms. Thus items such as **соответствовать** are entered under their two stems, **соответствова** and **соответству**. Secondly, items not included in REID may be converted to their canonical form by a "Conversion Table", which derives possible canonical forms from extant forms by an explicit reconstruction process. (The Table also integrates the inflected items into the technique of grammatical analysis provided by REID.)

Each stem is uniquely assigned to its set of inflectional endings, which are included as dictionary entries. Each variety is assigned a reference number corresponding to that of its stem types. Thus the a genitive singular masculine ending is numbered 3Ma, as is a hard masculine stem which may combine with it (e.g. стол), while the nominative singular feminine ending a, numbered 3Fa, correlates only with hard feminine stems (such as ламп). Consequently, a large part of the inflectional system's ambiguity is automatically resolved, even for a vocabulary item unknown to the student, as soon as the stem is found in REID. Stems are found by matching the longest possible, left-to-right sequence of letters in a text with that in a dictionary entry. Non-matched letters are treated as endings. Simple matching rules, requiring only YES/NO answers, ensure correctness. (Syntactic disambiguation, at the inflectional and the inter-word level, is discussed in greater detail below.)

Whenever the syntactic structure of the Russian sentence has been established, an English structural equivalent is provided. This permits a rendering which is accurate in terms of who is doing what to whom, but which requires adaptation by the student to ensure a readable style. Since, however, this requires knowledge of the student's L₁ and of scientific discourse (which the student possesses), decisions in this area can, for once, safely be left to the student.

In most instances, students using this technique are required only to check whether they have or have not found a specified item in their text. No sophisticated reasoning process is involved, and definitions of notions such as "indirect object", "particle" etc. are not needed to obtain a correct translation.

Correctness cannot be guaranteed if the student is permitted to attack the text at random - as, for example, in the technique of "pick out the verb", "pick out a suitable object" often advocated in textbooks. (How can a student tell which of 20 unknown vocabulary items is a verb?) A strict analytical procedure is therefore imposed. The associated rules are easily grasped within about 30 minutes' tuition, after which complete sentences can be translated.

Essential to the effectiveness of the teaching method is its underlying approach to syntactic analysis, which will now be described.

The basis of the approach is a somewhat extended notion of "syntactic valency". Originally used to refer to the potentiality of verbs for combining with differing numbers and types of modifiers (see, for example Tesniere, Boost 1953 and 1959, 1964, Helbig and Schenkel 1973), the term has been extended to cover similar properties of nouns (Sommerfeldt and Schreiber 1975a) and adjectives (Sommerfeldt and Schreiber 1975b). Workers at the universities of Sheffield (Yates (Ed.) 1979) and Aston (Heron, forthcoming), have come to regard valency as a property of all word classes of a grammar. For a similar approach to the analysis of Russian, see Mel'chuk and Iordanskaya 1964.

In particular, in a well-formed sentence (and we assume the L₂ text to consist of well-formed sentences), the presence of one particular word-class carries several implications:

1. that certain other forms of certain other word-classes will not be present in a structural relationship to the first word-class;

2. that certain other forms of certain other word-classes may (optionally) be present in a structural relationship with the first word-class; and
3. (for some items) that certain other forms of certain other word-classes must be present, in a structural relationship to the first word-class.

As an example, the presence of the word *the* in initial position in an English sentence implies that:

1. certain classes of adverb (e.g. *secondly*) or preposition (e.g. *in*) cannot follow immediately in a syntactic relationship with *the* and its noun;
2. certain classes of adjective may occur, and must be taken as modifiers of the following noun, in the above-mentioned noun phrase; and
3. a noun (singular or plural) must follow, and is related to *the* by forming a definite noun phrase.

Thus we may have *the student, the new students*, but not *the in student*.

Each new item brings with it its own set of possibilities, e.g. a class of adverbs like *very* may modify the adjective, the noun phrase itself may invoke a finite verb form, etc. It is thus possible to set up, over a certain stretch of language (the sentence has proved a convenient unit), a chain of prediction, whereby the presence of each form conditions that of the others. In the case of a non-ambiguous sentence, only one chain of predictions will hold over the whole length of the sentence, other possibilities being excluded as predicted items fail to appear, or alternative possibilities are realised. This chain forms an analysis of the syntactic structure of the sentence. Such a method of analysis has been used for Russian in REID.

A prerequisite of this process is the assignment of vocabulary items to their syntactic word-class. (Assignment to one of the traditional "parts of speech" is not enough, since this would fail to capture such essential facts as that *очень very* can modify adjectives, while other "adverbs", e.g. *дружески friendly* cannot, except for participial adjectives.) Each lexical entry in REID contains such a word-class assignment.

Thus, when students identify in REID a word found in a text, they also obtain the following information:

1. an English translation word;
2. identification of the morphological form;
3. word-class assignation;
4. a syntactic prediction, indicating how the given form of the word-class may combine with other specified items in a sentence; and
5. an English translation equivalent for the Russian structure identified.

The student's decision-making is confined to three areas:

1. Is this dictionary item the same as this text item?
(means of access to the lexical and grammatical information in the dictionary)
2. Have I found in this sentence a word marked as being the required form of the required word-class?
(access to syntactic prediction and translation)
3. Is the resulting translation scientifically accurate and in good English?
(This is the only point of resort to the student's own knowledge and linguistic intuition.)

An example follows of sentence analysis (A) by traditional methods, (B) by REID.

Sentence for analysis:

Всякому действию одного тела на другое всегда соответствует равное и противоположно направленное действие второго тела на первое.

(A) TRADITIONAL ANALYSIS (See Waring 1967:25)

Note: 1. The process of establishing the canonical form of each word, in order to gain access to the dictionary, has been omitted for want of space. The information given below is that assumed by the author of the quoted textbook to be sufficiently informative for the student to be able to derive the translation.

2. The technical terms (**pronoun, adjective, qualify**, etc.) have not been defined in the textbook.

RUSSIAN WORD	TRANSLATION WORD	ANALYSIS
всякому	<i>each</i>	a pronoun adjective in the dative qualifying the indirect object;
действию	<i>action</i>	a noun in the dative denoting the indirect object of the verb;
одного	<i>one</i>	genitive of a cardinal numeral qualifying the following noun;
тела	<i>body</i>	a noun in the genitive case qualifying действие (which action? - the action of a body);
на	<i>on</i>	a preposition taking the accusative case denoting the transmission of the action to the other body;
другое	<i>other</i>	a pronominal adjective in the accusative case agreeing with тело understood;
соответствует	<i>correspond</i>	the verbal predicate and one which takes an indirect object;
равное	<i>equal</i>	an adjective qualifying the subject;
и	<i>and</i>	a conjunction here linking two modifiers of the subject;
противоположно	<i>oppositely</i>	an adverb modifying the following participle;
направленное	<i>directed</i>	an adjectival past participle passive qualifying the subject;
действие	<i>action</i>	the subject;

второго	<i>second</i>	the genitive of an ordinal numeral agreeing with тела ;
тела	<i>body</i>	a noun in the genitive qualifying the subject;
на	<i>on</i>	(as above)
первое	<i>first</i>	accusative of an ordinal number agreeing with тело understood.

Readers are invited to decipher the sentence, examining their strategy as they do so.

(B) USING REID

n = nominative	V	} Russian word classes, not exactly equivalent to the English word class system	} 15MNa (e.g.)						
a = accusative	PRON-ADJ			} morphological variant (the "a" type)					
g = genitive	PREP				} can modify masculine or neuter nouns				
d = dative	NOM					} arbitrary number			
sg = singular	NUM						} (in this instance - dative singular adjective form)		
pl = plural	ADV-TEMP							} -1, -2, -d, etc.	
m = masculine	ADJ								} = sub-classes
f = feminine	CONJ-COORD								
nt = neuter	NUM-ORD								

RUSSIAN STEM	MORPHOLOGICAL IDENTITY NUMBER	ENDING	FUNCTION	WORD CLASS	PREDICTION(S)	ENGLISH
ВСЯК	15MNa			PRON-ADJ 1	± agreeing noun (i.e. There may or may not be an accompanying noun in grammatical agreement.)	<i>each</i>
	15MNa		d.sg.m. or nt.		1. indirect object of V-D, OR 2. direct object of V-1, OR 3. object of PREP-D	"to ..." "(verbs) ..." "(prep) ..."

Members of the class PREP- are defined as preceding their nouns, therefore the third prediction can be eliminated. A further decision (as between predictions 1 and 2) depends on what class of verb is eventually found.

ДЕЙСТВИ	4Nb			NOM-G	± g. noun and/or ± НА (PREP-A)	<i>action</i> "on ..."
	4Nb	ю	d.sg.nt		(as 1-3 above)	(as 1-3)

Since two forms in agreement have been found - namely *each* and *action* - we incline towards the possibility that they form a phrase, hence (*to*) *each action*. The further functions of this phrase are predicted, but not yet confirmed.

один	14MNa			NUM-1	± agreeing noun	<i>one</i>
	14MNa	ого	g.sg. m.or nt.		1.obj. of NOM-G, OR 2.obj. of V-G	"of ..." "('verbs)'"
тел	3Na 3Na	а	g.sg.nt	NOM-2	(as 1-2 above)	<i>body</i> (as 1-2)

Again, the possibility that this is the object of a verb (class V-G) cannot be ruled out, but it is clear that a string of predictions giving the noun phrase (*to*) *each action of one body*) is a possibility, and since this sounds rational, it is preferred unless evidence emerges to the contrary.

на				PREP-A	+a. noun	<i>on</i>
друг	12Na			PRON-ADJ 3	±agreeing noun	<i>other,</i> <i>another</i>
	12Na	ое	n.sg.nt or a.sg.nt		1.subj... OR 2.obj.of PREP-A	"('verbs)'" "('prep)'"

Again, one would try an interpretation based on the occurrence of predicted forms, giving (*to*) *each action of one body on another*. (We have anticipated what is in fact the case, that *другое* has no noun following.)

всегда				ADV- TEMP 1		<i>always</i>
соответству	25a			V-D		<i>correspond</i> ("to"=d.)
	25a	ет	3sg.pres.		1.+n.sg.subj. AND/OR 2.±obj.(depends) on word class)	"DOes/is DOing"

The ADV-TEMP 1 class is defined as modifying a verb, hence *always corresponds*. One would consider it likely that the noun phrase already translated includes the dative form predicted with this verb, so that these two phrases can now be combined.

равн	12NA			ADJ-2		<i>equal</i>
	12Na	ое	n.sg.nt. or a.sg.nt		±agreeing noun	1."verbs)" 2."(V-1)..."
и				CONJ- COORD 1		<i>and</i>
противоположн	52a			ADV		<i>opposite</i>
	52a	о			+adj.	"-ly"

направленн	12Na			derived via verb <i>direct</i> + “-ed”
	12Na	ое	n.sg.nt. or a.sg.nt	±agreeing noun 1. “...(verbs)” 2. “V-1)...”
действи	1Nb			NOM-G (see 2nd word in sentence) <i>action</i>
	1 Nb	е	n.sg.nt. or a.sg.nt	(as 1-2 above)

The coordinating conjunction *и* is defined as coordinating items of the same syntactic status. Therefore, although *ПРОТИВОПОЛОЖНО*, *oppositely*, is morphologically ambiguous between adverb and short adjective, only the former interpretation is permitted, because a) a short form is not described as of equal status to the preceding long adjectival form, and consequently b) the syntactic predictions made for the two types are not compatible.

The apparent agreement between noun and adjectives prompts their interpretation as a phrase, *equal and oppositely directed action*. This phrase is ambiguous between nominative and accusative. However, the verb form led to a prediction of a nominative singular subject, and the various predictions made for accusative forms (e.g. object of verb class V-1, and not of verbs of class V-D) will shortly be discovered not to have been fulfilled. A chain of predictions from beginning to end of the sentence will then only be possible if this noun phrase is taken as the subject, hence *to each action of the body on another always corresponds an equal and oppositely directed action...*

ВТОР	12Mb			NUM-ORD	<i>second</i>
	12Mb	ОГО	g.sg.m or nt.	1. dependent on NOM-G etc.	
Тела	and <i>На</i> are analysed as previously shown.				
перв	12Na			NUM-ORD	<i>first</i>
	12Na	ое	object of <i>На</i> (as before)		

The sentence is then completed with *of the second body on the first*.

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