Bibliographic details:
Nikolaeva, T.M. 1971. 'Mesto udareniia i foneticheskii sostav slova (rasstanovka udareniia v neizvestnykh slovakh inostrannogo proiskhozhdeniia)' in F.P. Filin et al. (Eds.) *Fonetika. Fonologiia. Grammatika. K semidesiatiletiiu A.A. Reformatskogo.* [Phonetics. Phonology. Grammar. For the 70th Birthday of A.A. Reformatskii.] Nauka: Moscow.[1]

Place of Stress and the Phonetic Composition of the Word (Stress Placement in Unknown Words of Foreign Origin)[2]

by T.M. Nikolaeva

I.

The fact that it is impossible to speak of so-called fixed stress for the Russian language indicates by its very essence that the choice of the place of stress in a Russian word is determined by a multitude of factors instead of one or two. These factors are both numerous and diverse. Both the accentological paradigm membership of a word, as well as the presence of a morpheme of a specific type in the word bear upon this: thus, there exist prefixes and suffixes that are always stressed, etc. The presence of accentable final syllables is important, while context type, and stylistic flair in the choice of variants play a role; and the speaker's social membership also proves to be significant.

This relates to words of the specifically Russian lexicon. However, the place of stress in borrowed words is also determined by a multitude of analogies and associations. The stress of a word from a source language depends in a complicated way on the stress of previously borrowed words or upon indigenous Russian accentological models.[3] New associations arise and take root in the consciousness—thus, a person having heard the words *antablement* and *signarant* for the first time, will read them with stress on the last syllable without fail. However, there are also variant readings, departures from the recommended norm in words of foreign origin, which are sometimes quite persistent. Thus, *šófer, dócent, pórtfel', magázin* 'chauffeur, docent, briefcase, store' stubbornly persist. [Normative stress for these words is in on the final syllable. –KC/TB] Perhaps stress retraction in these words is explained by an attraction of stress towards the penultimate syllable in borrowed words? This hypothesis in overturned by the pronunciation of words of the type *xaós* 'chaos' and *Forúm* 'forum'. And then the retraction of stress does not occur in all words that have the same suffix: thus, *šófer* is widespread, but *grímer* for *grimér* 'make-up artist' isn't.

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[1] Note on transliteration: Library of Congress transliteration is used in references; the Slavistic "linguistic" transliteration is used in examples

[2] Funding provided by NSF BCS 0104606 to John Alderete. Trans. by Katherine Crosswhite (crosswhi@ling.rochester.edu) and Tim Beasley (tbeasley@ling.rochester.edu).

[3] To see how complicated and diverse these accentual conflicts are, q.v. A.V. Superanskaja *Udarenie v vzaimstvovannykh slovakh v sovremennom russkom iazyke.* [Stress in Borrowed Words in Contemporary Russian] Moscow, 1968.

The present work was conceived of as an attempt to determine on the basis of very limited material whether or not the choice of the place of stress in borrowed words is governed by any purely phonetic principles of word organization. With this goal, we conducted a small experiment. Namely, we selected words from the *Slovar' inostrannykh slov*[4] [Dictionary of Foreign Words] and gave them to ten informants to be read aloud. The words selected had to be unknown to the informants (in the event that a word turned out to be known, it was excluded from the experiment). In addition, any word, even though it was unknown, was deemed unsuitable for the experiment if it contained uniformly accented final syllables (morphemes) of the type *–tura, -ant, -až*, etc. The selection of words was considered felicitous if it evoked no accentological associations, or if it called forth contradictory associations. Therefore, the word *rabat* could be associated with both *Arbát* and *róbot*; the word *mazar* with both *mázat'* and *bazár*.

What were the phonetic criteria on which the results we obtained are based?

1. The number of syllables in the word (two-syllable, three-syllable, and four-syllable words were selected).
2. The type of final sound—whether the word ends in a consonant or a vowel.
3. The type of vowels the word contains: front or non-front.
4. The type of consonants in the word: hard or soft.
5. Is there a hiatus across a syllable boundary in the word?
6. Are there diphthongs in the word?
7. Are there consonant clusters in the word?

The phonetic features shown in points 3-7 could be realized differently in the words—namely, they can occur in syllables located in different places. We tried to take into account all possible combinations in selecting the words.

For the original experiment a total of 218 words was selected.[5] This number was chosen for reasons of convenience in conducting the experiment—a larger number of words would have given more reliable results, but then the reading would have had to be carried out in several sessions due to informant fatigue, which would be undesirable for psycholinguistic considerations. In this way, reading 218 examples from cards took 10 minutes, on average.

All the selected words one would unguardedly call borrowed—the majority of them were even Fremdwörter [foreign words], and not Lehnwörter [loanwords]. Thus, as indicated in the subtitle to this paper, we are dealing with stress placement in unknown words of foreign origin.

The following were required of informants in the original experiment:

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[4] Lekhina, I.V. and F.N. Petrova, eds. *Slovar' inostrannykh slov* [Dictionary of Borrowed Words]. 4th ed. Moscow, 1954.

[5] A list of the words is provided in the appendix, in the order in which they were read.

-- They must be able to (1) fluently and unhaltingly read Russian, i.e., the reading process itself must not pose any difficulty;
-- They were not to (1) know any foreign languages (this was necessary since foreign languages form part of the secondary school curriculum); (2) have post-secondary education; (3) work in a professional or creative-artistic capacity.

II.

Each individual pronunciation was considered a separate unit for the purposes of counting. Each word thus had 10 possible pronunciations, one for each informant: the 218 words yielded 2180 pronunciations.

The words we chose fell into the following syllable-based classes: 110 bisyllabic, 72 trisyllabic, and 36 four-syllable words.

1. Criterion: The quality of the final sound of the word, vowel or consonant. We provide the results separately for two, three and four syllable words.

Table 1 bisyllabic

	# words	# of pronunciations with stress	
		on final syllable	on penultimate syllable
ending in C	16	25	135
ending in V	94	594	346

Table 2 trisyllabic

	# words	# of pronunciations with stress		
		on final syll.	penultimate syll.	initial syll.
ending in C	25	52	183	15
ending in V	47	356	85	29

The following observations can be made on the basis of the initial count:

1) The stress basically occurs on the final and penultimate syllables, that is, the final part of the word is accentologically relevant.
2) There is a difference between words ending in a consonant (C) versus those ending in a vowel (V).
   a. there was a clear tendency for words ending in a vowel to receive the stress on the penultimate syllable (so that all subjects read *prosperíti, šnéka, piasáva, pikkólo*); [end page 61]
   b. in words ending in a consonant, bi- and tri-syllabic words differed in that tri-syllabic words were more likely to have the stress on the final syllable, while two- syllable words and the relatively few four-syllable words were both equally likely to have the stress on the final or penultimate syllable.

c. The figures we cite indicate a significant number of exceptions to the principle that stress occurs on the penultimate in words ending with a vowel and on the final syllable in words ending in a consonant. Therefore the “consonant/vowel” criterion and the "number of syllables" criterion are each insufficient for consisently predicting the choice of stress placement.

Table 3 four –syllable

	# words	# of pronunciations with stress on the			
		final syll.	pen. syll.	antepen. syll.	initial syll.
ending in C	22	1	169	50	0
ending in V	14	64	70	5	0

2. Criterion: Hiatus.
We checked to see if either of the vowels in hiatus attracted the stress. The following instances of hiatus were observed: heterosyllabic *ea, ua, ia, oa, eo, io, aè, au, iu, ou, ai* [*a(j)i* – KC/TB].

Without including the data in table form because of the low number of tokens (hiatus was observed in only 33 words), it is possible to make only the following observations with respect to the criterion under consideration:

1) hiatus occurring more than 2-3 syllables from the end of the word has no influence on stress placement;
2) sequences of *au, ou* were a clearly distinct subgroup, with a tendency to have the stress on the first part of the sequence (*ráut, gáuss, kráuč, džául', tóu, káuper* ‘rout, gauss, crouch, joule, tow, cowper’);
3) nothing definite can be said about the other vowel sequences.

3. Criterion: the presence of sequences *aj, ej,* which are diphthongal in the source language. In this case the position of the dipthong in the word was important.

Data from the count showed the following:

1) *ej, aj,* situated at the beginning of a polysyllabic word do not, in general, attract stress.
2) *ej, aj,* situated in the final syllable, do attract stress. For example, *grizajl'* yielded 9:1, [end page 62] *dedvejt* 9:1, etc.[6] Such data are crucial precisely for disyllabic words inasmuch as according to Table 1 (disyllabic word data) the number of stresses on the final syllable to the number of stresses on the penultimate syllable has a 5:3 ratio. That is, the number of stresses on the penultimate syllable is quite significant.

[6] Here and in what follows the numbers indicate the following: The first number = the number of stresses (tokens with stress) on the last syllable; the second number, the number of tokens with stress on the penultimate syllable; the third number, the number of tokens with stress on the third syllable from the end, etc.

3) *ej, aj,* in the penultimate syllable also exerted influence on stress placement. Thus, *kajman* had a 3:7 ratio, *stajer* a 0:10 ratio.
4) In words with *aj, ej,* situated between or in front of vowels, the stress usually did not fall on the dipthongs. Thus, *duajen* 7:3, *sabajon* 8:2, *pajol* 9:1.

The dipthongs *aj* and *ej* exerted the most influence when placed in the final syllable of a word, especially of a three syllable word, e.g., *plejstosejst* 10:0.

4. Criterion: Consonant Clusters
E.g., the clusters in the words *rotang, odel'sting, talrep,* etc. The possibility of stress attraction was tested for all three conditions:

1) Consonant clusters found at the end of the word: *revers, saling,* etc.
2) Consonant cluster between the final and penultimate syllable: *mertel', darbar,* etc.;
3) Both types of cluster present: *linkrust, mistagm,* etc.

There were 50 disyllabic words and 22 trisyllabic words, including examples of all three consonant cluster conditions. The following results were obtained:

1) Disyllabic words: 319 final stresses, 118 penultimate stresses.
2) Trisyllabic words: 200 final stresses; 18 with stress on penultimate syllable, and 2 with stress on the initial syllable.

Thus these data do not differ in their proportions from the general distribution of stress placement (see Tables 1-3). The consonant cluster criterion turns out to be irrelevant inasmuch as the change in the position of the cluster—any of the three described above—showed no influence on the choice of stress placement.

5. Criterion: Hardness/Softness of Word-Final Consonant
[i.e., presence/absence of palatalization]

We considered the possibility that stress placement was assigned according to the type of final consonant in a word. In this regard, we obtained the following results:

1) There were 16 disyllabic words ending in a soft consonant. Out of these, there were 98 pronunciations with final [end page 63] stress and 62 with stress on the penultimate syllable. Among the disyllabic words were 78 ending in a hard consonant. For the latter, there were 496 pronunciations with final stress, and 284 pronunciations with penultimate stress.
2) There were 42 trisyllabic words ending in a soft consonant, and 5 ending in a hard consonant. For words ending in a soft consonant, there were 311 pronunciations with final stress, 80 with penultimate stress, and 29 with stress on the initial syllable. For words ending in a soft [sic--"hard" must be intended] consonant, there were 45 pronunciations with stress on the final syllable, and 5 with stress on

the penultimate. Thus, this criterion also essentially contributes nothing that is new to the general data on the distribution of stresses in di- and trisyllabic words.

6. Criterion: Quality of the vowels in the syllable

This criterion was chosen on the basis of an intuitive contrast of front vowels (e,i) to nonfront vowels (a,o,u).[7] These vowels are indicated by N (nonfront) and F (front). We considered four possible combinations of N and F in the word:

1) N-N That is, there were nonfront vowels in both the final and penultimate syllables: *navab, turgor, makadam, gastropor, anakoluf*, etc.
2) F-F That is, there were front vowels in both the final and penultimate syllables: *melis, midel', kipregel', interim, terdesien*, etc.
3) F-N That is, there was a front vowel in the final syllable but a non-front vowel in the penultimate syllable: *salep, domen, spodumen, cinubel', kiloparsek*, etc. [N.B. " F-N" is ordered last syllable first, parallel to stress number notation.]
4) N-F That is, in the final syllable there is a nonfront vowel but a front vowel in the penultimate: *redan, tifdruk, stividor, utlegar', prolegomen*, etc. We present the data we obtained for two-, three-, and four-syllabled words ending in a consonant in tabular form (cf. tables 4-6).

Table 4

Two-syllable words	vowel combination type in the word			
	N-N	F-F	F-N	N-F
overall number of words	36	19	22	17
# of pronunciations with stress on final syllable	240	116	117	121
# of pronunciations with stress on penultimate syllable	120	74	103	49

[end of page 64]

Table 5

Three-syllable words	vowel combination type in the word			
	N-N	F-F	F-N	N-F
overall number of words	13	9	15	10
# of pronunciations with stress on final syllable	114	66	94	82
# of pronunciations with stress on penultimate syllable	16	22	41	6

[7] We remind the reader that the experiment deals with the reading of borrowed words. The vowel [y] was not represented in the words under discussion.

Table 6

Four-syllable words	vowel combination type in the word			
	N-N	F-F	F-N	N-F
overall number of words	5	2	6	1
# of pronunciations with stress on final syllable	28	6	21	9
# of pronunciations with stress on penultimate syllable	22	14	33	1

This criterion, in contrast to the previous two, appears to furnish new information concerning the distribution of stress; namely there is the impression that nonfront vowels are "stronger" than front vowels, and attract stress. It is necessary to verify these impressions. As was explained at the beginning, the strongest tendency for words ending in a consonant is to have the stress on the final syllable. If N-type vowels are in fact stronger, then for each individual combination of N and F in the final and penultimate syllables, there should be different, predictable results. Namely:

1) In the combination N-F, where strong vowels are positioned in the final syllable, that is, two strong factors are working to the same end, the number of pronunciations with final stress should be *significantly* greater than the number of pronunciations with penultimate stress.
2) In combination F-N, where strong vowels are in the penultimate syllable and the two factors are opposed, the distribution of stresses on the final and penultimate syllables should be approximately equal, with the preponderance on the final syllable in trisyllabic words in which (cf. table 2) the final syllable factor is most strong.

Let us check these results with the data from the tables presented above. The first number indicates the number of pronunciations with final stress, the second the number of pronunciations with penultimate stress:

N-F = 121:49 (disyllabic words); 82:6 (trisyllabic words); 9:1 (four-syllable words)
F-N = 117:103 (disyllabic words); 94:41 (trisyllabic words); 21:33 (four-syllable words)

Thus it seems the results we proposed are confirmed. It may be that it is precisely this circumstance that explains the pronunciations *magázin*, *pórtfel'*, *dócent*, *dokúment*, and *šófer*—nonfront vowels in the penultimate syllable turn out to be stronger than the front vowels in the final syllable. This is precisely the reason, perhaps, that P. Merimé's novella is called *Lókis*, in contradiction to French and Lithuanian pronunciations, but King *Midás* is not called *Mídas*.

But this explanation, although it says something about the strength exerted by each factor, is not universal. It does not explain instances of the type F-F and N-N, which have the same variation in stress placement. [end p. 66] It may be that here an additional level of cognition—one not captured by us—is playing a role.

An experiment with specially selected or nonce words distinguished only by their vowels but not their consonants would ultimately confirm the above mentioned pattern—words of the type *milas, malis*; *redan, raden*, etc.

III.

Thus, the following features turned out to be crucial:

1) the presence of a vowel or consonant in absolute final position
2) the number of syllables, for words ending in a consonant
3) the type of vowel in the final syllable, for words ending in a consonant
4) the presence of dipthongs *aj, ej,* for words ending in a consonant
5) the presence of *au* and *ou,* for words ending in a consonant.

The following features were inconsequential for the placement of stress:

1) word-initial phonetics, for polysyllabic words (unless one separately considers the issue of secondary stress)
2) the presence of consonant clusters in various positions
3) the hardness or softness of the final consonant, for words ending in a consonant.

It is also essential to understand how the positive features that we ascertained are to be organized, since discovering the internal ranking of the features will allow us to find possible exceptions and ascertain their number.

In our case, the criteria are arranged, in order of importance, as follows:

1) whether a vowel or consonant is the final sound
2) the number of syllables, for words ending in a consonant
3, 4) the quality of the vowel and the presence of the dipthongs *aj* and *ej*
5) the presence of *au* and *ou* hiatus.

Thus, it is important to determine the relative ranking of the third and fourth criteria. We cite examples of words with differing combinations of front and nonfront vowels on the one hand, and the presence of dipthongs in the same words on the other. The results we obtained are: *vindzejl'* 9:1, *kajman* 3:7, *stajer* 3:7, *dedvejt* 9:1, *grizajl'* 9:1, *najtov* 6:4, *klevejt* 9:1, *svejting* 6:4, *stejer* 0:10, *krejton* 6:4, *sajzel'* 5:5. There is the impression that these criteria are of approximately equal importance. On the basis of these facts it is only possible to say that each of the dipthongs is stronger than the simple vowel, i.e., *a* or *e* in the second syllable. Cf. *stajer* 3:7 and *stejer* 0:10; *dedvejt* 9:1 and *svejting* 6:4.

IV.

Everything that was said above relates to a specific portion of the language, the phonetics of borrowed (foreign) vocabulary. It has been written repeatedly that the phonetics of

foreign words and also the corresponding phonological system forms a specific subsystem.[8] One cannot exclude a further stratification of this system. In a recent investigation concerning the reading of abbreviations,[9] there was revealed a persistent tendency to read abbreviations with the pronunciation of stress on the final syllable. Thus MKKh ([em-ka-xa]) will without question be read with the stress on *xa*, but a word *emkaxa* will be read with the stress on *ka*.

It is a complex matter to coordinate these data with purely Russian accentological data. But some sort of explanation of the criterion dealing with nonfront and front vowels, maybe, can be found precisely in Russian data. Thus, a, o, u are vowels longer in absolute duration than i,e.[10] It has also been shown that it is precisely length that is the leading factor of Russian stress.[11] It is possible that the pronunciation š*ófer, pórtfel'* is prompted by an instinctual desire to "lean upon" the longer vowel.

Appendix

The first number indicates the number of pronunciations with the stress on the first syllable from the end, the second with stress on the second syllable from the end, etc.

klevejt	**9:1**	vedžvud	**10:0**
duajen	**7:3:0**	svejting	**6:4**
metazoa	**1:9:0:0**	marketri	**4:6:0**
bazilika	**0:3:7:0**	prazeodim	**8:2:0:0**
golocen	**10:0:0**	vindrouèr	**4:0:6:0**
totem	**9:1**	giatus	**4:6:0**

[8] See: E.D. Polivanov. "Fonetika intelligenstkogo iazyka" *Stat'i po obshchemu iazykoznaniu* ["The Phonetics of the Intelligentsia's Language," *Articles on general linguistics*] Moscow 1968; M. Ia. Glovinskaia. "Fonologicheskaia podsistema redkikh slov v sovremennom russkom literaturnom iazyke (Na materiale zaimstvovanii)," [The phonological subsystem of infrequent words in the contemporary Russian literary language (on the basis of borrowings).] Ph. D. Dissertation abstract [Ph.D. dissertation *avtoreferat*]. Moscow 1967; L. Kalnyn'. "Organizatsiia fonemnogo sostava inoiazychnykh zaimstvovanii v dialektnom iazyke," *Sov. Slavianovedenie*. [The organization of the phonemic inventory in foreign borrowings in dialectal language, *Soviet Slavistics*]. 1968, no. 2.; V. Mathesius. "K výslovnosti cizích slov v češtině," *Čeština a obecný jazykopyt*. ["Concerning the pronunciation of foreign words in Czech," *Czech Language and General Linguistics*.] Prague, 1947; H. Kučera. *Inquiry into coexistent phonemic systems in Slavic languages*. s'Gravenhage, 1958; Ch. C. Fries, K. L. Pike. "Coexistent phonemic systems," *Language*, 1949, XXV.

[9] G. A. Mamaev. "Udarenie v slozhnosokrashchennykh slovakh," *Russkaia Rech'* [Stress in clip blends, *Russian Speech*.] 1968, no. 5.

[10] cf. K. Bolla "K voprosu o sootnoshenii dlitelnosti glasnykh i foneticheskikh struktur slova" ["Concerning the correlation of vowel length and the phonetic structure of the word"], *Studia Slavica*. Budapest 1968, vol. 14, fasc. 1-4; T. M. Nikolaeva. *Intonatsiia slozhnogo predlozhenija v slavianskykh iazykakh*. Moscow 1969.

[11] L. V. Zlatoustova. *Foneticheskaia priroda russkogo udareniia*. [*The phonetic nature of russian stress*] Ph. D. Dissertation abstract [Ph.D. Dissertation *avtoreferat*]. Kazan' 1953.

sizal'	**7:3**
incuxt	**9:1**
spodumen	**6:3:1**
addendum	**7:2:1**
nistagm	**10:0**
mul'da	**2:8**
noumen	**2:3:5**
mangol'd	**8:2**
brokkol'	**5:5**
šneka	**0:10**
montanvaks	**10:0:0**
pikkolo	**2:8**
mazar	**7:3**
preambula	**0:9:1:0**
garriga	**0:9:1**
rabat	**8:2**
okapi	**2:8:0**
cinubel'	**8:2:0**
korpuskula	**0:10:0:0**
melis	**0:10**
stejer	**0:10**
apraksija	**0:4:6:0**
gemotoraks	**0:10:0:0**
salep	**8:2**
nikol'	**5:5**
skudo	**0:10**
dipleks	**7:3**
tou	**0:10**
saling	**6:4**
lantan	**9:1**
al'pari	**6:4:0**
gekaxord	**10:0:0**
krejton	**6:4**
èpifora	**0:8:2:0**
kiloparsek	**2:8:0:0**
prolaps	**9:1**
nandu	**0:10**
ogon	**9:1**
falin'	**6:4**
mikropile	**0:9:1:0**
azaleja	**0:8:2:0**
skrupul	**7:3**
bejdevind	**9:0:1**
nobil'	**4:6**
prolegomen	**2:8:0:1**
allod	**9:1**
dizažio	**0:4:6:0**
rotang	**8:2**
obligo	**1:8:1**
kauper	**1:0:9**
žeoda	**1:9:0**
terdesien	**2:8:0:0**
lori	**0:10**
tandem	**7:3**
marakas	**10:0:0**
primutrok	**10:0:0**
momme	**3:7**
midel'	**5:5**
genro	**4:6**
agreman	**10:0:0**
bazilik	**3:7:0**
notogeja	**0:10:0:0**
sezal'	**9:1**
alanbik	**6:4:0**
melos	**6:4**
èsparto	**0:10:0**
dumpar	**6:4**
sapropel'	**8:2:0**
oksimoron	**9:1:0:0**
topinambur	**5:5:0:0**
kromlex	**4:6**
kipregel'	**9:1:0**
sajzel'	**6:4**
markato	**0:10:0**
tal'veg	**8:2**
gomrul'	**7:3**
zigospora	**0:10:0:0**
stividor	**7:2:1**
mittel'	**6:4**
guanako	**0:10:0:0**
katren	**6:4**
skatol	**6:4**
kaik	**5:5**
anapest	**8:2:0**
saros	**8:2**
kvipu	**0:10**
serum	**7:3**
drossel'	**4:6**
polder	**3:7**
astragaja	**0:10:0:0**

paunus	**3:7**
gènro	**3:7**
skorbut	**5:5**
ordalija	**0:7:3:0**
toboggan	**10:0:0**
vapa	**0:10**
ojdium	**5:1:4**
rigodon	**10:0:0**
iksija	**1:3:6**
bersim	**7:3**
torako	**8:2**
raut	**2:8**
imago	**1:9:0**
laglin'	**7:3**
turgor	**10:0**
motto	**0:10**
èpifiz	**9:0:1**
piasava	**0:10:0:0**
pajol	**9:1**
darbar	**7:3**
dispaša	**3:7:0**
zal'band	**10:0**
blastula	**1:7:2**
grizajl'	**9:1**
geveja	**0:10:0**
stopor	**3:7**
žakerija	**0:1:9:0**
pentatlon	**10:0:0**
najtov	**6:4**
interim	**9:1:0**
litota	**3:7:0**
donžon	**7:3**
neogeja	**0:10:0:0**
gauss	**2:8**
demiurg	**10:0:0**
burime	**7:3:0**
mertel'	**5:5**
fol'koner	**8:2:0**
xediv	**3:7**
trimurti	**1:9:0**
dekuver	**7:3:0**
kolon	**7:3**
gikord	**2:8:0**
èrgastul	**10:0:0**
kil'son	**8:2**
èpidernis	**6:4:0:0**
klauzula	**0:10:0:0**
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