

Simple-Correspondent Transliteration through a Slavonic Latin Alphabet

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Abstract

The scientific approach to the cyrillic-latin transliteration is formulated for the Ukrainian language and extended for the Belorussian and Russian languages. The principles backgrounding the transliteration system and the table itself are deduced on the basis of the methods of the terminology as a science. It is shown that the orientation at any mediative language (e.g. English) is incompatible with the transliteration principle and leads to the loss of equivalence between the initial and net forms. The transliteration tables and the relevant computer program are important for the international communication and the electronic mail.

The international and computer communication (passports, documents, library catalogues, geographical maps, letters, agreements, certificates and other printed production, information banks, sign-boards, telegrams, e-mail, etc.) is mostly latinographical. That is why the countries with the non-latinic graphics must adopt the transliteration systems that establish certain correspondence rules between the characters of the alphabet given and latinic ones. The main requirement governing the transliteration procedure is, of course, the equivalence between the initial and final texts to avoid the loss or deshaping of the information transmitted.

Furthermore, it is the common tendency that the alphabet of any language acquires the parallel one that contains the "pure" English letters: the rules of many international conferences and meetings demand using only English characters instead of β , \ddot{u} , \ddot{o} , \ddot{a} , ζ , \grave{e} , \hat{e} , f , \hat{u} , \hat{a} , \hat{i} , \tilde{n} , etc. when writing down the proper names. The international form *Muenchen* (instead of *München*) is often used even in Germany, whereas the French digraph *oe* is used now in place of relevant single character œ : *oeuvre*.

Besides, a move to the Unicode 16-bit system should in principle allow use of native scripts with the right encoding and decoding software at both ends.

While considering the transliteration problem, it is relevant to apply both methods of the *terminology as a science* introduced by Maksym and Oleg Vakulenko (Вакуленко 1996, Вакуленко 1997, Вакуленко 1998 ВКП): *statistical* and *analytical* ones. The last includes historical and comparative analysis, and the study of computer requirements, international agreements and linguistic rules.

For the Bulgarian, Macedonian, Ukrainian, Belorussian, Russian languages, two quite different approaches have been actually (statistically) used: 1) a transcriptive transformation oriented at any (mostly English) language – such as the British Museum or Library of Congress (LoC) tables (see Reader Guide #3) and those originated from them – and 2) a "slavistic" transliteration based on the graphical traditions of the Slavic languages (see Реформатский 1960, Якобсон 1965, ГОСТ 16876-71, Тилков 1982, Алпатов, Вентцель и др. 1983, Zima 1986, Вакуленко 1993 УМЛШ, Вакуленко 1993 МНК, Вакуленко 1995 ВГК, Вакуленко 1995 МНК, Вакуленко 1997, Вакуленко 1998 БВ, Вакуленко 1998 ВКП), analogous to the Serbocroat language that has both cyrillics and latinics.

The Hellenic (Greek) latinics should be kept in mind too, since the cyrillics itself had originated from the Hellenic alphabet.

The analysis shows that the drawbacks of the first approach are the most distinguished ones.

First, orientation at any other ("older brother's") language is incompatible with the very transliteration itself that operates with letters and not with sounds corresponding to the given letters in the given language. That is why such schemes dealing with the binary transcription rather than with transliteration, cannot be seriously regarded as the basis of any transliteration standard.

The most odious "transliteration destructor" is the apostrophe (') when used as a "soft (palatalization) sign" (ь). It is the sound transcription approach where palatalization of consonants is denoted in that way. In contrast, the International Phonetic Alphabet treats this sign as an indicator of separate pronunciation – that corresponds to its grammatical role in Ukrainian. And what is more important, this implies an insoluble discrepancy between simple correspondence and pronunciation: e.c. the forms <mysh> (Rus. "мышь") and <promin'n'a>

(Ukr. "проміння") violate the first requirement, while the forms <mysh'> and <prominn'a> do not agree with the latter. Such relation is especially inconvenient for Ukrainian where the apostrophe is used to denote the separate pronunciation: compare "бур'як" (the consonant "р" being palatalized) – "бур'ян" (no palatalization). Further, the correspondences "й" – y/i, "ц" – ts, "щ" – shch are just to reflect the original pronunciation by means of another (and quite distant!) language – i.e. they are purely transcriptive.

"Squeezing" the given phonetic system into another (different) one is impossible in principle. Please remember that the English letter *ch*, for example, has itself various kinds of pronunciation in the words *Christy, Gallacher, Loch-Ness, attach, check, Chicago*.

However, even in the "binary" schemes (as in the Library of Congress one) the need to go beyond pure transcription is felt. When reflecting the Slavic pronunciation, the letters *a, o, u, i, y, e, g, r* are "forced" to acquire the relevant phonetic sense. There are put in use the letters not present in the English grammar: *kh, zh*, etc. This is a step towards the authentic writing using the national latinized script.

Further, orientation at alien language does not allow one to achieve exact correspondence between initial and final forms of a word. This is incompatible with the computer use and breaks down the original pronunciation (the latter is not crucial but is desirable). For example, the "simplified" (and illiteral) form "Kyiv" corresponds to 4 Cyrillic forms: К'їв/Київ/Кийв/Київ – with a rather queer pronunciation. The form *Cherniatskyi* "multiplies" the original Ukrainian name by the factor 16 (!):

*Черніатский/Черніатский/Черніацкїй/Черніацкїй,
Черніацкїй/Черніацкїй/Черняцкїй/Черняцкїй,
Черніатський/Черніатський/Чернятський/Чернятський,
Черніацькїй/Черніацькїй/Черняцькїй/Черняцькїй.*

The reversibility is sadly violated also by correspondences "и/й" – y, "і/й/ї/ь" – i (Ukr.): *Рії – Пії/Пїї/П'ї/Пій/Пії*.

Neglecting the "ь" would make "equivalent" the names *Булькин* and *Булкин* (Rus.), *Гальченко* and *Галченко* (Ukr.).

The use of *ц* as *ts*, *щ* as *shch* (or *sch*) sweeps out the difference between *ц* and *тс*, *щ* and *шч* (or *сч*) that is important feature in names *Реформатський* (Ukr.), *Шишченко* (Ukr.), *Счастливый* (Rus.), *Бесчастных* (Rus.). Also, it gives rise to artificial "equivalence" of different names: *Левицький* – *Левитський*, *Тоцька* – *Тотська*, *Чернятський* – *Черняцький*, *Лященко* (from "*Ляц*") – *Ляшченко* (from "*Ляшко*"), *Сущенко* (from "*Сушко*") – *Сущенко* (from "*Суций*"), etc. Naturally, the rules of original spelling are violated as well. The person identification is then impossible within such systems, and the human rights are attacked, so the schemes of this kind are especially prohibited in official and legal use (passports, documents, agreements, maps, etc.).

Also, the use of such systems would thrust upon the "priority" of one language relatively to another that involves many other problems beyond the scope of genuine science.

No doubt, this "English-oriented" method is quite applicable for teaching purposes to help English-speaking people acquire Slavic pronunciation: *гнездо* - *gnyezdo*, *немых* - *pyetookh*, *бабочка* - *babachka*, *велосипед* - *vyelaseepyed* etc. (Amery, Kirilenko 2003). In contrast, it cannot be used widely for proper names. It can be related only to the limited number of exonyms (foreign namings, being a sort of nicknames) – *Russia*, *Ukraine*, *Moscow*, *Kiev*, *Rowno*, *Prague*, *Poland* etc. – that has the tendency to decrease in virtue of the Resolutions of the United Nations Organization: IV/20 (1982) – "On decreasing the number of exonyms" – and V/13 (1987) – "On priority of the national official forms of geographical names". According to the United Nations Resolutions IV/20 and V/13, the national forms (authonyms) have preference in comparison to the exonyms. For example, the authonym *Kyjiv* has a number of exonyms: *Kiev* (Engl.), *Kiew* (Germ.), *Kijow* (Pol.), *Kijev* (Serbo-cr.), *Κίεβο* (Gr.), etc., and the authonym *Ukrajina* has a number of those: *Ukraine* (Engl.), *Ucrania* (Span.), *Ucraina* (Ital.), *Ukraina* (Pol.), *Ουκρανία* (Gr.), etc. Normally, the authentic forms are basic in the international communication: *Czech Republic* (not to be transcribed as "Che(k)h Republic"), *Gijon* (not to be transcribed as "Heehon"), *Jensen* (not to be transcribed as "Yensen"), *Juventus* (not to be transcribed as "Yuventus"), *Volkswagen* (not to be transcribed as "Folksvaghen"), *Ljubljana* (not to be transcribed as "Liubliana"), *Sarajevo* (not to be transcribed as "Saraievo"). The exonyms (authonymic counterparts in the given language) are to be used, naturally, in the internal communication. The use of exonymic forms only –

"Kiev", "Ukraine" – is less or more relevant, for example, in the "Who's Who in America" edition when sketching the biography of some Ukrainian emigrant.

The English grammar rules do not extend to the alien names: *Hercules Poirot (Fr.)*, *Coulomb (Fr.)*, *San-Jose (Sp.)*, *Guadalajara (Sp.)*, *junta (Sp.)*, *Gijon (Sp.)*, *Loch-Ness (Scot.)*, *Jerusalem (Hebr.)*, *Ajax (Lat.)*, *Juventus (Lat.)*, *Jensen (Dan.)*, *Volkswagen (Ger.)*, *Johannesburg (Ger.)*, *Jari (Fin.)*, *Jaworski (Pol.)*, *Katowice (Pol.)*, *Jagr (Cz.)*, *Jihlava (Cz.)*, *Sarajevo (Cr.)*, *Ljubljana (Slovin.)* etc. – so that they *do not change* their authentic form when used in the English texts. In the word combination *Czech Republic*, the attribute *Czech* corresponds to the initial (not English-oriented) form.

However, the auxiliary use of *h* in English digraphs is a successful solution for computer compatibility – because the basic ASCII codes (1-127) do not contain the letters with the diacritical signs.

As far as the official communication requires equivalence of different forms of the texts, the transformation should be purely *translitative*, and should be executed within the given language (as in the Serbocroat language having both Latinics and Cyrillics).

The "slavistic" approach based on the traditional use of *j*, is much more convenient for Slavic languages. It allows one to satisfy the most common requirements of transliterativity and reversibility.

The regretful drawbacks of the "slavistic" schemes have been used are as follows: transcriptional use of "upper comma" (apostrophe) for *ь* (ГОСТ 16876-71, Zima 1986); presence of diacritical signs that do not occur in the basic ASCII codes (0-127) (Якобсон 1965, Тилков 1982, Zima 1986); poor accounting for the languages other than Russian (Реформатский 1960, Якобсон 1965, ГОСТ 16876-71, Алпатов, Вентцель и др. 1983); illiteral use of independent sign *h* as Ukrainian and Belorussian *з* (Zima 1986), etc.

The attempts to set up the correspondence *h – з* (Ukr., Bel.) are induced mostly by transcriptive speculations based on the sporadic phonetic closeness of Czech or broken Polish sound [h] to Ukrainian and Belorussian [r]. There is, however, a more reliable counter

example in the Serbocroat language and in Bulgarian and Hellenic latinics where *h* corresponds to *x*. The Ukrainian letter *z* corresponds to the Polish *g* and, sometimes, to the Czech *g*: *Грабович – Grabowicz (Pol.), географія – geografie (Fr., Ger., Cz.)*.

But the more serious argument is that once the character *h* serves as the auxiliary one (modifier) to avoid diacritic signs, it cannot be treated as the independent letter because the correspondence between Cyrillics and Latinics would not be simple (reversible) then.

Grounding on the scientific experience accumulated (Реформатский 1960, Якобсон 1965, ГОСТ 16876-71, Тилков 1982, Алпатов, Вентцель и др. 1983, Zima 1986), and accounting for the modern requirements (see Вакуленко 1993 УМЛШ, Вакуленко 1993 МНК, Вакуленко 1995 ВГК, Вакуленко 1995 МНК, Вакуленко 1997, Вакуленко 1998 БВ, Вакуленко 1998 ВКП), the scientific principles for the Ukrainian Latinics (UL) standard that were formulated by the Terminological Commission on the Natural Sciences (TCNS) of the Kyjiv Taras Shevchenko University and adopted by the State Committee of Standardization on 18/10/1995:

- *transliterativity* (reflecting letters, not sounds);
- *systemness* (the latinics of any language is to be the unite system where individual elements do not exist separately, being united by certain signs);
- *exactness* (exact representation of any language element);
- *reciprocity* (reciprocal simple correspondence between any cyrillic letter and latinic symbol that may contain several letters);
- *reversibility* (resumption of initial text after repeated transliteration);
- *non-mediativity* (transliteration is executed within the scope of the given language, without mediation of any other language);
- *traditionality* (accounting for phonetico-graphical traditions of Slavic languages and use of individual latinic graphemes);
- *normativity* (correspondence to the spelling rules of the given language);
- *codicity* (involving latinic letters without diacritical signs corresponding to the ASCII codes 0-127, that is necessary for electronic mail and other computer utilisation).

The UL by the TCNS was approved by the Commission of the Supreme Council of Ukrajina (letter № 06-7/19-493 from 23.12.1995), by the Conference on toponymics (Kyjiv, Ukrajina, 1995) and by the Research Support Scheme Committee of the Open Society Institute.

By the decision from 21/05/1996, the State Committee on Standardization of Ukrajina regarded the English-oriented tables unsatisfactory for the latinics standard.

We emphasize that the latinics does not replace the cyrillics, the last being just a complement to it in the international and computer communication.

In the UL (Table 1), the apostrophe (') – according to its spelling function – is written after consonants before *je, ji, ju, ja, jo* in the absence of palatalization: *Ghryghor'jev, pir'jina, V'juny, bur'jan, pid'jom* – and between *j* and the next vowel in the composed words for combinations *ǔa, ǔy, ǔe, ǔi, ъa, ъy, ъe* to distinguish them from *я, ю, е, і*: *Volynj'aghroprom, belj'etazh, Nedaj'ivan, raj'energho, naj'aktyvnishyj, naj'imenytyshyj*.

We use the letter *h* as the modifier only.

In ancient Latin, this character was denoting the aspiration in the words of the Hellenic origin, and this sound disappeared later in most related languages: *'ωρα – hora (Sp.) / ora (It.) / heure (fr.)*. This function is connected to the auxiliary role of *h* in combinations *bh, ch, dh, gh, kh, nh, ph, sh, th* that signifies slight change in the phonetic value of the previous letter.

As for independent use of *h*, it is the transliteration of *x* in the Serbocroat language, Bulgarian and Hellenic latinics (*Hrvatska – Хрватска, Hristo – Христo, Hania – Χανια*). The same correspondence exists in the Roman, Hungarian and other languages (*Mihali, Szombathely*). English *h* is perceived in the Hellenic language (where the aspiration itself originates from) as *χ*: *Hamilton – Χαμιλτον*, – whereas the letter *χ* is called in English as "hai". Slavic *x* ("voiceless consonant") when articulated in whisper and in voice, has different pronunciation (see Вакуленко 1996, Вакуленко 1997, Вакуленко 1998 ВКП).

A. Meillet (1951) points out that the Slavic [x] is less strained than the German *ch*, and is reduced easily into the aspiration or disappears. The Eastern-Slavic *x* is connected etymologically with the German and English *h*: *хлеб – hleib (Ger.), хижина – hûs (Ger.)* (Vasmer 1953-1958), *house (Engl.)*. In the Czech language, the letter *h* is pronounced as the Russian *х* (Чешско-русский словарь, 1958: 138). Furthermore, the Czech *h* is related to the English *g*: *Praha – Prague*.

In the East-Slavic tradition of the sound imitation, the aspiration is represented by *x*: *xu-xu*, *xa-xa*, *xe-xe*, *nxi*, *xan*, *xon*, *kaхи*, *anчи*, *тъху* (Ukr).

On the other hand, the Ukrainian and Belorussian fricative [r] originate from the explosive [g] (Meйe 1951). The Hellenic γ that is phonetically equivalent to them, in the latinographic tradition is represented by *g*: *Gregory*, *Eugene*, *grammar*, *geography*. The form similar to *heohrafija* (???) – with *g* substituted by *h* – is not met in any language.

We chose *gh* for ζ , where *h* is regarded as the modifier. This accounts as well for the requirements of *systemness* (the relations between κ/x and ζ are represented by *k/kh* and *g/gh*), and *reciprocity* – as far as the artificial "identification" of κ and ζ , *u* and ζ , *x* and κ , *ч* and ζ , *u* and ζ does not take place: *Zghar* (not *Zhar*), *lisghosp* (not *lishosp*), *50 kgh* (not *50 kh*), *specghrafik* (not *spechrafik*), *specghodyna* (not *spechodyna*), *nacghordistj* (not *nachordistj*), *Vyshghorod* (not *Vyshhorod*).

Both "soft sign" ψ and "jot" \dot{y} are transliterated, according to the Serbocroat language and Bulgarian latinics (see Тилков 1982), by *j* that correlates with the early Jakobson's idea based on the rule of additional distribution (Якобсон 1965, see also Reader Guide #3, Zima 1986). We do not treat *j* just as mere modifier, as it was in GOST 16876-71, and involve more convincing arguments based on the analytical method.

Indeed, as A. Meillet (1951) had shown, the common root for both is ancient short *i*. The corresponding Slavic grapheme is connected (or originates from) to the Hellenic ι ($\iota\omicron\tau\alpha$) that produced both the name for *j/ÿ* ("йот") and the graphical form of ψ : compare $\tau\omicron$ *κεφαλι* (Hell.) and *кефаль* (Rus., Ukr.).

In modern East- and South-Slavic languages, the consonants are palatalized by the subsequent "iotated" letters *я*, *ю*, *є* (Ukr.) and *я*, *ю*, *е*, *ë* (Bel., Rus.) – as if there were ψ . In Serbocroat, Slovenian and Macedonian languages, the sign *j* in this position corresponds to ψ explicitly: *Ljubljana*, *Gorenje*.

As early in the XIXth century, the prominent Slavic scientist Ju. Križanić, having noticed the additional distribution phenomenon, was proposing to remove the "excessive" letter \dot{y} from

the cyrillics: *краб*, *небме*, *заб*, etc. This idea reflects the nature and history of the Slavic languages and is therefore explored in the Eastern-Slavic (Ukrainian) latinics – where we adopt *б – j* (after consonants).

In addition, this accounts for the *systemness* requirement, providing graphical correspondence of the related letters *і* and *ь*, *ї* and *ь*: *Volynj – Volyni*, *Sevastopolj – Sevastopolja* – and for *normativity*, since the role of the apostrophe is not changed.

The computer program "Ukrajinsjka latynucja" (see Вакуленко 1997, Вакуленко 1997 МНК, Вакуленко 1998 БВ, Вакуленко 1998 ВКП) based on this table (SCAU Certificate #21) has great practical importance in view of intensive exchange of information: it is installed at the National Library of Ukrajina after V. Vernadsjkyj, at the Parliament Library, at the Ministry of Internal Affairs, and at other institutions. It is applied in the English-German-Russian-Ukrainian dictionary of natural terminology being created by TCNS. In addition, this program has extension for the Belorussian and Russian languages.

The advantages of this transliteration table were pointed out by the leading English specialists in the field from the London University and British Library.

The approach formulated is the solid and sound background for extending the principles of the UL into the Eastern-Slavic Latinics (ESL).

The Table 2 presents the ESL (relevant parts of the GOST 16876-71 or St. SEHV 1362-78). It has minimal deviations from the standard mentioned. For example, there are only two changes in the Russian Latinics: *б – j*, *ї – j* (instead of inconvenient *jj*).

The Russian *їо* is distinguished from *ě* by apostrophe: *raj'on*, but *zajom*.

The Eastern-Slavonic Latinics is to be used for any text (it may be written in several languages) including proper names, taken words and abbreviations in:

- all kinds of documents (agreements, letters, passports, certificates, etc.);
- information banks (citation indices, Interpol lists, etc.);
- printed production (maps, books, etc.);

- international telegrams, electronic mail and other telecommunicational networks;
- sign-board information and announcements;
- names of objects being under jurisdiction of the given state (ships, planes, spacecrafts, etc.);
- sport teams, names of clubs, etc.

The auxiliary Table 3 may be used in the documents where the abbreviations should conserve the number of letters, and it is not suitable for the e-mail.

The scientific principles formulated above account for modern requirements (reversivity, computer compatibility etc.) and provide the schemes elaborated to be much more convenient and suitable for update wide use.

The scientific results of this work may be useful for other countries involved in the GOST 16876-71 (St. SEHV 1362-78) in elaborating the relevant improved transliteration schemes compatible with E-mail and other telecommunication networks (use of ASCII codes 0 – 127 only).

The experience gained in the creation of the ESL, may be useful also in creating the "English-lettered" alphabet for any latinographical language.

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на твір. – Державне агентство України з авторських і суміжних прав, 13 листопада; див. також *clt.x-tend.kiev.ua*.

ГОСТ 16876-71 (Ст. СЭВ 1362-78). Правила транслитерации кирилловского алфавита буквами латинского алфавита.

Чешско-русский словарь (1958) / Под ред. К. Горалка, Б. Илка, Л. Копецкого. – Прага: Государственное педагогическое изд-во. – 1302 с.

Table 1: Ukrainian Latinics
(GOST 16876-71 / SEHV 1362-78 with amendments from 11/07/96)

Cyrillics	Latinics	Transcription
а А	a A	[a]
б Б	b B	[b]
в В	v V	[v] / [w] *
г Г	gh Gh	[ɣ]
ґ Ґ	g G	[g]
д Д	d D	[d]
е Е	e E	[e]
є Є	je Je	[je] / [e] **
ж Ж	zh Zh	[ʒ]
з З	z Z	[z]
и И	y Y	[y]
і І	i I	[i]
ї Ї	ji Ji	[ji]
й Й	j J	[j]
к К	k K	[k]
л Л	l L	[l]
м М	m M	[m]
н Н	n N	[n]
о О	o O	[o]
п П	p P	[p]
р Р	r R	[r]
с С	s S	[s]
т Т	t T	[t]
у У	u U	[u]
ф Ф	f F	[f]
х Х	kh Kh	[x]
ц Ц	c C	[ts]
ч Ч	ch Ch	[tʃ]
ш Ш	sh Sh	[ʃ]
щ Щ	shh Shh	[ʃtʃ]
ю Ю	ju Ju	[ju] / [u] **
я Я	ja Ja	[ja] / [a] **
ь Ь	j J	[ʲ] **

* – in the end of word and before the consonants;

** – after the consonants

Table 2: Eastern-Slavic Latinics

	Cyrillics	Latinics		
		Belorussian	Russian	Ukrainian
	а А	a A	a A	a A
	б Б	b B	b B	b B
	в В	v V	v V	v V
	г Г	gh Gh	g G	gh Gh
	г Г	- -	- -	g G
	д Д	d D	d D	d D
	е Е	e E	e E	e E
	є Є	-- --	-- --	je Je
	ё Ё	jo Jo	jo Jo	-- --
	ж Ж	zh Zh	zh Zh	zh Zh
	з З	z Z	z Z	z Z
	и И	- -	I I	y Y
	і І	i I	- -	i I
	ї Ї	-- --	-- --	ji Ji
	й Й	j J	j J	j J
	к К	k K	k K	k K
	л Л	l L	l L	l L
	м М	m M	m M	m M
	н Н	n N	n N	n N
	о О	o O	o O	o O
	п П	p P	p P	p P
	р Р	r R	r R	r R
	с С	s S	s S	s S
	т Т	t T	t T	t T
	у У	u U	u U	u U
	ў ?	w W	- -	- -
	ф Ф	f F	f F	f F
	х Х	kh Kh	kh Kh	kh Kh
	ц Ц	c C	c C	c C
	ч Ч	ch Ch	ch Ch	ch Ch
	ш Ш	sh Sh	sh Sh	sh Sh
	щ Щ	--- ---	shh Shh	shh Shh
	ъ Ъ	- -	' '	- -
	ы Ы	y Y	y Y	- -
	э Э	eh Eh	eh Eh	- -
	ю Ю	ju Ju	ju Ju	ju Ju
	я Я	ja Ja	ja Ja	ja Ja
	ь Ь	j J*	j J*	j J*
	'	'	-	'

* – after the consonants

Table 3: Eastern-Slavic Latinics with the diacritical signs

№	Cyrillics	Latinics		
		Belorussian	Russian	Ukrainian
	а А	a A	a A	a A
	б Б	b B	b B	b B
	в В	v V	v V	v V
	г Г	g G	g G	g G
	г Ġ	– –	– –	g G
	д Д	d D	d D	d D
	е Е	e E	e E	e E
	є Є	-- --	-- --	ë Ę
	ë Ę	ë Ę	ë Ę	-- --
	ж Ж	ž Ž	ž Ž	ž Ž
	з З	z Z	z Z	z Z
	и И	– –	i I	y Y
	і І	i I	– –	i I
	ї ?	– –	– –	ï Ĩ
	й Й	j J	j J	j J
	к К	k K	k K	k K
	л Л	l L	l L	l L
	м М	m M	m M	m M
	н Н	n N	n N	n N
	о О	o O	o O	o O
	п П	p P	p P	p P
	р Р	r R	r R	r R
	с С	s S	s S	s S
	т Т	t T	t T	t T
	у У	u U	u U	u U
	ў Ў	w W	– –	– –
	ф Ф	f F	f F	f F
	х Х	x X	x X	x X
	ц Ц	c C	c C	c C
	ч Ч	c C	c C	c C
	ш Ш	š Š	š Š	š Š
	щ Щ	--- ---	s S	s S
	ь Ъ	– –	' '	– –
	ы Ы	y Y	y Y	– –
	э Э	ê Ě	ê Ě	– –
	ю Ю	ü Ü	ü Ü	ü Ü
	я Я	ä Ä	ä Ä	ä Ä
	ь Ь	j J*	j J*	j J*
	'	'	–	'

* – after the consonants