Croatian Fonts

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The aim of this note is to inform the interested reader about the possibility of obtaining several new fonts: Croatian Glagolitic (round – sometimes called Bulgarian glagolitic, angular, Baška tablet, cursive, ligatures, the Baromić broken ligatures, calligraphic), Croatian Cyrillic, stećak ornaments and Croatian wattle patterns. They represent a considerable extension of the first version of Glagolitic fonts I created in 1992 (see [2]).

Bearing in mind that the Croatian Glagolitic script has a long history of at least 11 centuries (from the 9th to the 20th), it is not surprising that there exists a large variety of handwritten and printed versions. The author has created several major fonts of type using this script.

• The so-called "round type" font, together with the corresponding numerical values, is shown in Figure 1.
In some documents there appear additional versions of some letters, e.g., the "spider-like h" ⵁ. The tops of letters appearing in this font are aligned. The "hanging style" of the round glagolitic can be illustrated e.g., by ⰙⰗⰧⵁⰄⵀⰖⰉ, ⰗⰖⰅⰄⵂⵄ, as it appears on the Kiiv folia (the first folio is from Croatia, written in the region of Dubrovnik, 11th century; the remaining six are from Czechia, 10th century).

• The font of the Baška stone tablet (carved in around A.D. 1100 on the island of Krk) is shown in Figure 2.

Letter		Value		Letter		Value
✝	A	1		ϑ	O	80
Ш	B	2		Ⰲ	P	90
℧	V	3		Ⰱ	R	100
℅	G	4		Ⱄ	S	200
Ⰴ	D	5		⏒	T	300
Ⳍ	E	6		ⳝ	U	400
ⳟ	Ž	7		ⱇ	F	500
Ⳛ	Dz	8		Ⱆ	H	600
Ⳣ	Z	9		Ⲟ	ω	700
Ⲯ	Ï	10		Ⱛ	Šć, Ć	800
Ⲷ	I	20		Ⱍ	C	900
Ⲙ	Dj	30		Ⳑ	Č	1000
⳰	K	40		Ⱎ	Š	2000
Ⰾ	L	50				semivowels
Ⰿ	M	60			Ja, Je	
Ⱂ	N	70			Ju	

Figure 1: Croatian Glagolitic "round type"

Letter		Value		Letter		Value
	A	1			O	80
	B	2			P	90
	V	3			R	100
	G	4			S	200
	D	5			T	300
	E	6			U	400
	Ž	7			H	600
	Z	9			Šć, Ć	800
	Ï	10			C	900
	I	20			Č	1000
	K	40			Š	2000
	L	50			semivowels	
	M	60			Ja, Je	
	N	70			Ju	
					nasal "en"	

Figure 2: The font of the Baška stone tablet

The Baška tablet is one of our most important cultural monuments ($2 \times 1 \, \mathrm{m}^2$). The reason is that it was written in the Croatian language (with elements of Church Slavonic) as early as the 11th century. Its text comprises more than 400 letters and contains the earliest mention of a Croatian king written in the Croatian vernacular: Z"v"nimir", kral" hr"vat"sk"ï (Hrvatska = Croatia), i.e., *Zvonimir, the Croatian king*, or in the Glagolitic:

There are also earlier monuments from the 9th century that mention Croatian kings and dukes, but written in the Latin script and in the Latin language.

The reader will notice that several Latin and/or Cyrillic letters appear in the table: O, I, M, N, T, E (= V). This is only one among numerous proofs of the parallel use of three scripts (Glagolitic, Latin, Cyrillic) and three languages (Croatian, Church Slavonic and Latin) in Croatia. The three-script and three-language character of the Croatian Middle Ages is a unique phenomenon in the history of European culture (see [1]).

Letter		Value		Letter		Value
	A	1			O	80
	B	2			P	90
	V	3			R	100
	G	4			S	200
	D	5			T	300
	E	6			U	400
	Ž	7			F	500
	Dz	8			H	600
	Z	9			ω	700
	Ï	10			Šć, Ć	800
	I	20			C	900
	Dj	30			Č	1000
	K	40			Š	2000
	L	50			semivowel	
	M	60			Ja, Je	
	N	70			Ju	

Figure 3: The angular form of Glagolitic

• Since the 12th century the Glagolitic script has survived only in Croatia. Until that time it existed also in some other regions, e.g., Bulgaria, Macedonia, Romania and Ukraine, when it was replaced by the Cyrillic script, and also in Czechia. In Croatia there developed the so-called *angular form* of Glagolitic, shown in Figure 3. Its golden period falls between the 12th and the 16th centuries. After that a decline of this script ensued, as a result of the penetration of the Ottoman Empire.

• Croatian Glagolitic has hundreds of interesting ligatures. Some of them are shown in Figure 4. It is striking that a *printed* Glagolitic book, the Brozić breviary from 1561 (1081 pages), has as many as 250 ligatures.

• Unique in the history of European printing is the creation of the so-called *Baromić broken ligatures*.

						ol			
ⰀⰏ	am	ⰭⰡ	jur	ⰡⰎ	oli	ⰙⰡⰎ	tl		
ⰬⰙ	bl	ⰭⰡⰙ	jutr	ⰡⰙⰭ	olju	ⰙⰡⰎ	to		
ⰬⰗ	bo	Ⰵ	ko	ⰡⰩ	ot	ⰙⰙ	tr		
ⰬⰛ	br	ⰎⰩ	li	ⰭⰎⰙ	pl	ⰙⰙⰙⰙ	tv		
ⰢⰅ	go	ⰙⰩ	lo	ⰭⰡ	po	ⰙⰙⰙⰩ	tvo		
ⰢⰃ	gr	ⰡⰎⰙⰙ	lt	ⰭⰛⰡ	pod	ⰙⰙⰙⰎ	tvr		
ⰦⰅ	ho	ⰡⰎⰙⰙ	lv	ⰭⰙⰡ	pot	ⰙⰙⰙⰛ	vd		
ⰦⰃ	hr	ⰡⰭⰡ	lju	ⰭⰩⰡ	poto	ⰙⰡⰎ	vl		
ⰡⰙ	il	ⰡⰭⰡⰛ	ljud	ⰭⰙⰡ	potr	ⰙⰡ	vo		
ⰡⰡ	ili	ⰭⰭⰭⰭ	ml	ⰭⰙⰡ	povr	ⰙⰙⰙⰛ	vod		
ⰡⰙ	it	ⰭⰭⰭⰭ	mlč	ⰭⰙ	pr	ⰙⰙ	vr		
ⰠⰊ	iže	ⰭⰢ	mo	ⰭⰙⰙ	prv	ⰙⰙⰙⰙ	vt		
ⰧⰊ	jaže	ⰭⰭⰭⰭ	ms	ⰭⰙⰙ	pt	ⰭⰛⰤ	zl		
ⰆⰃ	jeje	ⰭⰭⰭⰭ	mž	ⰡⰅ	so	ⰭⰆ	zo		
ⰧⰊ	ježe	Ⱕ	no	ⰙⰡⰩ	ti	ⰭⰃ	zr		

Figure 4: Some Croatian Glagolitic ligatures

The idea was to add one half of a letter (say Ⱒ of ⰢⰏ) to another (say Ⱜ), to obtain a broken ligature (ⰬⰢ – ba). Other combinations are also possible with ⰸ (Ⱉⰸ, D), Ⱕ (ⰙⰥ, Ž), Ⱕ (ⰙⰥ, L), ⰙⰙ (ⰙⰙ, V), ⰙⰙ (ⰙⰙ, T). Broken ligatures were used in the Baromić Missal, the incunabulum printed in the Croatian city of Senj in 1494 (last year we celebrated its 500th anniversary). Only three samples are preserved: one in the Saltykov Ščedrin Library in St. Petersburg (Russia), one (the only complete copy) in the Szeczenyi Library in Budapest (Hungary), and one in Croatia on the island of Cres. When looking at the text containing Baromić broken ligatures, one has the impression that this incunabulum was handwritten. A few examples: ⰬⰛⰅⰧⰝⰠⰅⰤ (Baromić), ⰙⰛⰤⰥⰸⰸ (rain), ⰝⰅⰥⰃⰠⰙⰙⰢ (prayer).

Hundreds of Croatian Glagolitic texts, both handwritten and printed, the oldest from the 12th century, are held in national museums in more than 20 European countries, and also in the USA.*

A reader living in New York can see the beautiful Croatian Missal from around 1410 in the Pierpont Morgan Library (reprinted by the Martin Sagner Verlag, Munich, 1976). In the Library

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* I would like to take the opportunity to appeal to readers: if you know of any Croatian Glagolitic documents held privately, please inform me.

of Congress in Washington you can see a sample of the first Croatian incunabulum, printed in 1483 (unfortunately, it is not known where precisely). Six copies are in Croatia, two in the Vatican Library, one in the National Library in Vienna (Austria) and one in the Saltykov Ščedrin Library in St. Petersburg (Russia). It was the first book in the history of European printing that was not printed in Latin characters, as well as the first incunabulum not printed in the Latin language.

Probably the most valuable Croatian Glagolitic book is the Missal of Hrvoje (1404), held in the Library of Turkish sultans (Topkapi Saray) in Constantinople.

A Croat, George (Juraj) de Slavonie, or de Sorbonne (14th/15th century), a professor at the Sorbonne in Paris, left us several valuable Glagolitic manuscripts written by his hand; they are held today in the Municipal Library in Reims (France). One of them contains a prayer, "Our Father", with which we would like to illustrate the Croatian Glagolitic:

• In the 16th and 17th century some calligraphic Glagolitic letters began to appear in Croatian printed books:

• There are thousands of *cursive* Glagolitic documents, bearing witness above all to the Croatian language and its very early use in official documents, and to the highly organized civil life in the Middle Ages. Probably the most important is the *Vinodol Code* from 1288. Also very important is the *Istarski razvod* from the 14th century, written in the region of Istria in three official copies: in the Latin and German languages (in Latin script), and in the Croatian language (as was expressly stated), using the Glagolitic script. It defined the borders between different rulers in Istria. Equally important are the city statutes of many Croatian cities written in the Glagolitic, the earliest dating from the 14th century. A variant of the cursive Croatian

(cursive)	(angular)	Latin	No.		(cursive)	(angular)	Latin	No.
		A	1				O	80
		B	2				P	90
		V	3				R	100
		G	4				S	200
		D	5				T	300
		E	6				U	400
		Ž	7				F	500
		Dz	8				H	600
		Z	9				ω	700
		Ï	10				Šć, Ć	800
		I	20				C	900
		J	30				Č	1000
		K	40				Š	2000
		L	50				Ja, Je	
		M	60				Ju	
		N	70					

Figure 5: A variant of cursive Croatian Glagolitic, with the angular form for comparison

Glagolitic is shown in Figure 5 (we provide also the angular type for comparison):

An example:

• Croatian Cyrillic (also called Bosančica or Bosanica) was quite widespread among the Croats in Bosnia and in the Dalmatian part of Croatia. Its development can be traced from the 12th to 19th centuries. This script is shown in Figure 6. Probably the most beautiful Croatian Cyrillic book is the Missal of Hval, written in 1400–1404, now held in the University Library in Bologna (Italy), reprinted in Sarajevo in 1986.

• There exist more than 66,000 mysterious tombstone monuments, mostly in Bosnia-Herzegovina and Croatia, called *stećak* (13th/14th century), some of them having short engravings in the Croatian Cyrillic script (e.g., "please do not disturb me, I was like you and you will be like me"), with interesting and simple border decorations, like these:
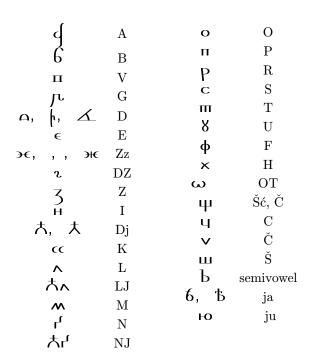

	Latin		Latin
	A		O
	B		P
	V		R
	G		S
	D		T
	E		U
	Zz		F
	DZ		H
	Z		OT
	I		Šć, Č
	Dj		C
	K		Č
	L		Š
	LJ		semivowel
	M		ja
	N		ju
	NJ		

Figure 6: Croatian Cyrillic
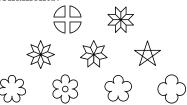

dancers:

human-like figures:

birds:

star-like ornaments:

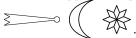a circle (or a wheel), a symbol of eternal life:

swastika:

various crosses:
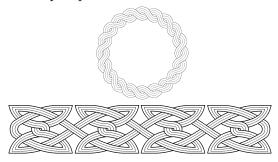

The following ornament appears frequently:

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These monuments belong to Krstyans, members of the Bosnian Church, a Christian religious sect about which we still know very little.

• Let me finish this article with some of the most typical Croatian wattle patterns appearing in our pre-romanesque churches, built between the 9th and 12th centuries. From about 300 pre-romanesque Croatian churches only 15 are well preserved. The most widespread wattle pattern is this:

Of course, it is composed of . Somewhat more complex patterns are these:

Additional information about Croatian Glagolitic can be found at the URL: `http://www.tel.fer.hr/hrvatska/Croatia-HCS.html`

All the fonts appearing in this article will be available freely via the CTAN web. All ligatures and fonts are defined in the file `llig.tex` of the package. The angular Glagolitic font is activated by `\mgl` (a slightly larger version can be obtained using `\ngl`). If one wants to use Glagolitic ligatures, the definition list in `llig.tex` should be consulted. For example, to obtain (ml) one has to write `\mgl\ml`. Other fonts are activated in a similar way (they contain no Glagolitic ligatures): `\obl` (round Glagolitic; `\nobl` is a bit larger), `\bass` (Baska tablet), `\kur` (cursive), `\kal` (calligraphic), `\lom` (Baromich broken ligatures) `\hc` (Croatian Cyrillic); the several wattle patterns are activated by `\ple`, `\plet`, `\pleter`. In general, Glagolitic letters corresponding to č, ž, š, ć (šć, št) are encoded in TEX ligtables as `cc, zz, ss, ch`, respectively. More precisely, is obtained from `\mgl cc`. Capital letters are obtained by using CC (or Cc) etc. Using `cx` you can obtain yet another version of the angular č: . The so-called 'djerv' is obtained by typing

`j` (or `J`) in the round Glagolitic. In the angular form the following two versions of the 'djerv' can be obtained: (`j`) and (`dd`). 'Yat' – , – appearing in round and angular Glagolitic can be obtained using `ya` (or `YA, Ya`). Moreover, if 'yat' is to be read as 'ye' (which is the case when it appears after a consonant), then you can use `ye` as well. The letter 'yu' is obtained by typing `yu`, 'izze' (,) by typing `y`. The same for the Croatian Cyrillic. Two versions of very frequently used Croatian semi-vowels can be obtained, either by typing apostrophe ' ('yerok'; for example in ' 'God') or `6` ('yer';). Definitions of semi-vowels 'yer' and 'yor' and other letters (like ,) appearing in some of the oldest Croatian and Bulgarian–Macedonian documents written in the round Glagolitic can be seen in the Metafont files `oblm.mf` and `oblv.mf`, that are input in `obl.mf` — a round Glagolitic Metafont file.

As you can see, an appropriate hyphenation table is necessary to prevent line breaking between pairs of letters like `cc`, `zz`, `ss`, `ch`, `dd`, `ya`, `ye`, and it has been included with the Croatian font package too (`glhypehn.tex`). The table also incorporates some basic hypenation rules of the Croatian language. Definition names of many other symbols appearing in various fonts can be seen by looking into source files accompanying this text.

If you should use Croatian fonts, I would deeply appreciate hearing from you.

References

[1] Eduard Hercigonja: *Tropismena i trojezična kultura hrvatskoga srednjovjekovlja* [Three-Script and Three-Language Culture of the Croatian Middle Ages]. Matica hrvatska, Zagreb, 1994 (in Croatian).

[2] Darko Žubrinić: *The Exotic Croatian Glagolitic Alphabet*, *TUGboat* 13 (4), pages 470–471, 1992.

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