Church Slavonic Fonts

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June 22, 2023   version v2.3

(PDF file generated on June 24, 2023)

Contents

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1 Introduction

Church Slavonic (also called Church Slavic, Old Church Slavonic or Old Slavonic; ISO 639-2 code `cu`) is a literary language used by the Slavic peoples; presently it is used as a liturgical language by the Russian Orthodox Church, other local Orthodox Churches, as well as various Byzantine-Rite Catholic and Old Ritualist communities. The package `fonts-churchslavonic` provides fonts for representing Church Slavonic text.

The fonts are designed to work with Unicode text encoded in UTF-8. Texts encoded in legacy codepages (such as HIP and UCS) may be converted to Unicode using a separate bundle of utilities. See the Slavonic Computing Initiative website for more information.

1.1 License

The fonts distributed in this package are licensed under the SIL Open Font License (version 1.1 or later).

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1.2 Description

The package provides several fonts that are intended for working with Church Slavonic text of various recensions and other texts related to Church Slavonic: modern Church Slavonic text ("Synodal Slavonic"), historical printed Church Slavonic text and manuscript uncial (ustav) Church Slavonic text (in either Cyrillic or Glagolitic), as well as text in Sakha (Yakut), Aleut (Fox Island dialect), and Romanian (Moldovan) Cyrillic, all written in the ecclesiastical script. The coverage of the various fonts agrees with the guidelines for font coverage specified in Unicode Technical Note #41: Church Slavonic Typography in Unicode. Generally speaking, it includes most (but not all) characters in the Cyrillic, Cyrillic Supplement, Cyrillic Extended-A, Cyrillic Extended-B, Cyrillic Extended-C (as of Unicode 9.0), Glagolitic, and Glagolitic Supplement blocks of Unicode. Characters not used in Church Slavonic, however, are not included (except for some characters used in modern Russian, Ukrainian, Belorussian, Serbian and Macedonian for purposes of compatibility with some applications).

1.3 Installation and Usage

If you are reading this document, then you probably have already downloaded the font package. You may check if you have the most recent version by visiting the Slavonic Computing Initiative website.

1.3.1 Font Formats

All fonts are currently available in a single format:

 OpenType fonts with PostScript outlines (also called OpenType-CFF fonts).

 TrueType fonts have been deprecated, and are no longer provided. If you need TrueType fonts, see the Legacy Fonts package.

You may need the legacy TrueType fonts in the following scenarios:

- OpenOffice.org and older versions of LibreOffice require use of SIL Graphite, which is only available in the TTF version. This limitation has been fixed as of LibreOffice 5.3, which now has full OpenType support.

- OpenType-CFF fonts were poorly supported in Java prior to Oracle Java SE 7.

- In Microsoft products, OpenType glyph positioning is not supported for glyphs in the Private Use Area or characters outside of the Unicode 7.0 range. You should use LibreOffice if you need positioning of combining Glagolitic characters.

1.4   Source Packages

You can also download the FontForge sources for all of the fonts from the GitHub repository. This is only useful if you are planning on editing the fonts in the Font-Forge font editor. In general, you will not gain any productivity improvements from rebuilding the font files, so rebuilding from source is not recommended, unless you have a real need to modify the fonts, for example, to add your own additional glyphs to the Private Use Area.

1.5   System Requirements

All of these fonts are large Unicode fonts and require a Unicode-aware operating system and software environment. Outside of a Unicode-aware environment, you will only be able, at most, to access the first 256 glyphs of a font.

1.5.1   Microsoft Windows

Unicode-encoded OpenType-CFF fonts are supported starting with Windows 2000. You will need a word processor that can handle Unicode-based documents, such as Microsoft Word 97 and above, or LibreOffice. If using TEX, you will need a Unicode-aware TEX engine, such as X͟ΗTEX or LuaTEX.

You will also need a way to enter the Unicode characters that are not directly accessible from standard keyboards. We recommend installing a Church Slavonic or Russian-Extended keyboard layout, available from the Slavonic Computing Initiative website. It is also possible to enter characters using the Windows Character Map utility or by codepoint, but this is not recommended.

1.5.2   GNU/Linux

In order to be able to handle OpenType fonts, your system should have the freetype library installed and enabled; this is normally done by default in all

modern distributions. You will need a Unicode-aware word processor, such as LibreOffice. If using TeX, you will need a Unicode-aware TeX engine, such as X∃TeX or LuaTeX.

You will need a keyboard driver to input Unicode characters. Under GNU/Linux, this is handled by the `m17n` library and database. See the Slavonic Computing Initiative website for more details.

1.5.3 OS X

Not sure.

1.6 Private Use Area

The Unicode Private Use Area (PUA) is a set of three ranges of codepoints (U+E000 to U+F8FF, Plane 15 and Plane 16) that are guaranteed to never be assigned to characters by the Unicode Consortium and can be used by third parties to allocate their own characters. The Slavonic Computing Initiative has established an industry standard for character allocation in the PUA, which is described in full in the PUA Allocation Policy.

The PUA in these fonts contains various additional glyphs: contextual alternatives, stylistic alternatives, ligatures, hypothetical and nonce glyphs, various glyphs not yet encoded in Unicode, and various technical symbols. Most of these glyphs (the alternative glyphs and ligatures) are normally accessible via OpenType features. Thus, you generally do not need to access glyphs in the PUA directly. There may be some exceptions:

- If you need to access characters not yet encoded in Unicode and nonce glyphs.

- If you need to access alternative glyphs and ligatures on legacy systems that do not support OpenType or Graphite features.

- If you are a computer programmer and need to work with glyphs on a low level without relying on OpenType: having all alternatives mapped to the PUA allows for a simple way to access glyphs by codepoint instead of working with glyph indexes, which can change between versions of a font.

For the characters mapped in the PUA and other technical considerations, please see the PUA Allocation Policy.

2 OpenType Technology

OpenType is a "smart font" technology for advanced typography developed by Microsoft Corporation and Adobe Systems and based on the TrueType font format. It allows for correct typography in complex scripts as well as providing advanced typographic effects. This is achieved by applying various *features*, or *tags*, described in the OpenType specification. Some of these features are supposed to be enabled by default, while others are considered optional, and may be turned on and off by the user when desired.

2.1 On Microsoft Windows

In order to use these advanced typographic features, in addition to a "smart" font (like the fonts in this package), you need an OpenType-aware application. Not all applications currently support OpenType, and not all applications that claim to support OpenType actually support all features or provide an interface to access features. Older versions of Microsoft's Uniscribe library did not support OpenType features for Cyrillic and Glagolitic, but beginning with Windows 7, this has been resolved.

Generally speaking, you will get best results in X⤳TEX or LuaTEX using the `fontspec` package or using advanced desktop publishing software such as Adobe InDesign. Most OpenType features are also accessible in Microsoft Office 2010 and later. LibreOffice also supports OpenType features starting with version 4.1, and support for turning off and on optional features was added in version 5.3. Please see the section Support of Advanced Features in LibreOffice, below.

2.2 On GNU/Linux

OpenType support is provided by the HarfBuzz shaping library, which is accessible through FreeType, part of most standard distributions of the X Window System. Thus, OpenType will be available in any application that uses FreeType, though some applications lack an interface to turn on and off optional features. Generally speaking, you will get best results in X⤳TEX or LuaTEX using the `fontspec` package. LibreOffice also supports OpenType features starting with version 4.1, and support for turning off and on optional features was added in version 5.3. Please see the section Support of Advanced Features in LibreOffice, below.

2.3 OpenType Features

2.3.1 Combining Mark Positioning

OpenType allows smart diacritic positioning: if you type a letter followed by a diacritic, the diacritic will be placed exactly above or below the letter; this is

provided by the mark feature. In addition, the mkmk feature is used to position two marks with respect to each other, so that an additional diacritic can be stacked properly above the first. This behavior is demonstrated below:

$$\text{ᲀ} + \acute{\circ} \longrightarrow \acute{\text{ᲀ}}$$
$$\text{Ӑ} + \acute{\circ} \longrightarrow \acute{\text{Ӑ}} \qquad \text{(glyph positioning via \textit{mark} feature)}$$
$$\overset{\circ}{\circ} + \widehat{\circ} \longrightarrow \widehat{\overset{\circ}{\circ}} \qquad \text{(glyph positioning via \textit{mkmk} feature)}$$

The fonts provide proper mark and mkmk anchor points for all Cyrillic and Glagolitic letters and combining marks, allowing you to enter them in almost any combination (even those that are implausible). Most OpenType renderers (except older versions of Adobe's Cooltype library) support these features, so you should be able to achieve correct positioning in most OpenType-aware applications (for example, in MS Word 2010 or newer, LibreOffice 4.1 or newer, and X∃TEX).

2.3.2 Glyph Composition and Decomposition

The Glyph Composition / Decomposition (ccmp) feature is used to compose two characters into a single glyph for better glyph processing. This feature is also used to create precomposed forms of a base glyph with diacritical marks when use of only mark and mkmk cannot achieve the necessary positioning. It is also used to create alternative glyph shapes, such as the alternative version of the Psili used over capital letters and the truncated forms of the letter Uk used with accent marks, as is demonstrated in the examples below:

$$\overset{\circ}{\circ} \longrightarrow \overset{\circ}{\circ} \qquad \text{(glyph substitution using \textit{ccmp} feature)}$$
$$\overset{\circ}{\circ} + \grave{\circ} \longrightarrow \overset{\circ}{\circ} \qquad \text{(ligature substitution using \textit{ccmp} feature)}$$
$$\text{ᴕ} + \boxed{\text{zw}} + \text{ᴋ} \longrightarrow \widetilde{\text{ᴋ}} \qquad \text{(ligature substitution using \textit{ccmp} feature)}$$
$$\text{Ȣ} + \overset{\times}{\circ} \longrightarrow \overset{\times}{\text{Ȣ}} \qquad \text{(contextual substitution using \textit{ccmp} feature)}$$

Generally speaking, the *ccmp* feature is not supposed to (and often just cannot) be turned off, and thus this functionality should work properly in any OpenType-aware application. For more details on ligatures, see Unicode Technical Note #41: Church Slavonic Typography in Unicode.

2.3.3 Language-based Features

Language-based features such as the locl (localized forms) feature provide access to language-specific alternate glyph forms, such as the alternate forms of the Cyrillic Letter I used in Ukrainian and Belorussian:

ı	(Church Slavonic text)
і	(Ukrainian text)

To make use of these features, you need an OpenType-aware application that supports specifying the language of text, for example X∃TEX or LuaTEX using the `fontspec` or `polyglossia` packages. Since many software applications do not allow you to specify Church Slavonic as a language of text, it is assumed by default that the font is being used to represent Church Slavonic text, and thus all glyphs have Church Slavonic appearances unless another language is specified.

LibreOffice allows you to specify that text is in Church Slavonic starting with version 5.0. This will allow you to take advantage of other features, such as Church Slavonic hyphenation (see the Slavonic Computing Initiative website for more information). Microsoft Corporation does not recognize Church Slavonic as a valid language, so you will not be able to set the language of text to Church Slavonic in any Microsoft product[1].

2.3.4 Stylistic Alternatives and Stylistic Sets

Stylistic Alternatives (`salt` feature) provide variant glyph shapes that may be selected by the user at will. Typically, these are glyphs that differ from the base glyph only in graphical appearance where the use of these glyphs does not follow any language-based or typography-based rules, but rather is just an embellishment. For example, the following variant forms of U+1F545 Symbol for Marks Chapter are provided:

U+1F545	Alternative Glyphs

Stylistic sets are used to enable a group of stylistic variant glyphs, designed to harmonize visually, and make them automatically substituted instead of the default forms. OpenType allows to specify up to 20 stylistic sets, marking them features `ss01`, `ss02`, … `ss20`.

Use of Stylistic Alternatives and Stylistic Sets requires an OpenType-aware application that provides an interface to turn off and on advanced features (since by default these features are turned off). This is possible in X∃TEX or LuaTEX using the `fontspec` package and in LibreOffice (starting with version 5.3) by use of a special syntax that appends the needed option to the font name. See the section Support of Advanced Features in LibreOffice, below. In Microsoft Office 2010 and later, Stylistic Sets may be turned off an on under `OpenType features` on the `Advanced` tab of the `Font` dialog. However, Micoosoft Office does not allow you to select multiple Stylistic Sets simultaneously or to access the `salt` feature. If necessary, you may access alternate glyphs by codepoint from the

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[1] Please do not contact the font maintainers about this issue. Instead, complain to Microsoft Customer Service in the USA at 1-800-642-7676 or in Canada at +1 (877) 568-2495.

Private Use Area (PUA). However, relying on the PUA as a data exchange mechanism is discouraged.

2.4 SIL Graphite Technology

🛑 As of version 1.3 of this package, support for SIL Graphite features has been discontinued. If you need Graphite support, see the Legacy Fonts package.

2.5 Support of Advanced Features in LibreOffice

Support for OpenType features is available in LibreOffice and all OpenOffice.org derivatives starting with version 3.2 of OpenOffice.org. While correct positioning, attachment and substitutions will work automatically, earlier versions of LibreOffice had no mechanism to turn off and on optional features. Support for turning OpenType features off and on is available starting with LibreOffice version 4.1. As of LibreOffice 6.2, OpenType features may be turned off and on via the Font Features window, which is accessible from the Character window. From the Format menu choose Character, then in the Character window, press the Features button. The Font Features window will display all of the features available in the given font, and you can use the checkboxes to turn specific features off and on.

This functionality will be useful for LibreOffice users relying on automatic hyphenation. Since LibreOffice has no mechanism to set the hyphenation character, the Ponomar Unicode and Monomakh Unicode fonts provide the underscore as a hyphenation character via Stylistic Set 1 in OpenType.

Prior to version 6.2, OpenType features had to be turned off and on using a special extended font name. This method is still available if you don't wish to use the graphical interface: in order to activate an optional feature, its ID, followed by an equals sign and the ID of the desired setting, are appended directly to the font name string. An ampersand is used to separate different feature/settings pairs.

For example, the following "font" should be used in order to enable the ss01 (Stylistic Set 1) feature:

```
Ponomar Unicode:ss01=1
```

The same syntax is used to turn off and on optional Stylistic Alternatives (salt), where 1 indicates the first alternate glyph, 2 – the second alternate glyph, and so forth.

3 Fonts for Synodal Slavonic

3.1 Ponomar Unicode

Ponomar Unicode is a font that reproduces the typeface of Synodal Church Slavonic editions from the beginning of the 20th Century. It is intended for working with modern Church Slavonic texts (Synodal Slavonic). Ponomar Unicode is based on the Hirmos UCS font designed by Vlad Dorosh, but has been modified by the authors of this package. Examples of text set in Ponomar Unicode are presented below.

Бл҃же́нъ мꙋ́жъ, и҆́же не и҆́де на совѣ́тъ нечести́выхъ, и҆ на пꙋти́ грѣ́шныхъ не ста̀, и҆ на сѣда́лищи гꙋби́телей не сѣ́де: но въ зако́нѣ гдⷭ҇ни во́ла є҆гѡ̀, и҆ въ зако́нѣ є҆гѡ̀ поꙋчи́тсѧ де́нь и҆ но́щь. И҆ бꙋ́детъ ꙗ҆́кѡ дре́во насажде́ное при и҆схо́дищихъ во́дъ, є҆́же пло́дъ сво́й да́стъ во вре́мѧ своѐ, и҆ ли́стъ є҆гѡ̀ не ѿпаде́тъ: и҆ всѧ̑, є҆ли̑ка а҆́ще тво_ри́тъ, оу҆спѣ́етъ. Не та́кѡ нечести́вїи, не та́кѡ: но ꙗ҆́кѡ пра́хъ, є҆го́же возмета́етъ вѣ́тръ ѿ лица̀ землѝ. Сегѡ̀ ра́ди не воскре́снꙋтъ нечести́вїи на сꙋ́дъ, нижѐ грѣ́шницы въ совѣ́тъ првⷣныхъ. Ꙗ҆́кѡ вѣ́сть гдⷭ҇ь пꙋ́ть првⷣныхъ, и҆ пꙋ́ть нечести́выхъ поги́бнетъ.

Kievan Church Slavonic uses a number of variant glyph forms, such as U+1C81 Long-Legged De (ᲁ) and U+A641 Variant Ze (ꙁ):

Бл҃же́нъ мꙋ́жъ, и҆́же не и҆́де на совѣ́тъ нечести́выхъ, и҆ на пꙋти́ грѣ́шныхъ не ста̀, и҆ на сѣда́лищи гꙋби́телей не сѣ́де: но въ зако́нѣ гдⷭ҇ни во́ла є҆гѡ̀, и҆ въ зако́нѣ є҆гѡ̀ поꙋчи́тсѧ де́нь и҆ но́щь. И҆ бꙋ́детъ ꙗ҆́кѡ дре́во насажде́ное при и҆схо́дищихъ во́дъ, є҆́же пло́дъ сво́й да́стъ во вре́мѧ своѐ, и҆ ли́стъ є҆гѡ̀ не ѿпаде́тъ: и҆ всѧ̑, є҆ли̑ка а҆́ще тво_ри́тъ, оу҆спѣ́етъ. Не та́кѡ нечести́вїи, не та́кѡ: но ꙗ҆́кѡ пра́хъ, є҆го́же возмета́етъ вѣ́тръ ѿ лица̀ землѝ. Сегѡ̀ ра́ди не воскре́снꙋтъ нечести́вїи на сꙋ́дъ, нижѐ грѣ́шницы въ совѣ́тъ првⷣныхъ. Ꙗ҆́кѡ вѣ́сть гдⷭ҇ь пꙋ́ть првⷣныхъ, и҆

пꙋ́ть нечести́выхъ поги́бнетъ.

Other Languages The Ponomar Unicode font may also be used to typeset liturgical texts in other languages that use the ecclesiastic Cyrillic alphabet. Three such examples are fully supported by the font: Romanian (Moldovan) in its Cyrillic alphabet, Aleut (Fox Island or Eastern dialect) in its Cyrillic alphabet, and Yakut (Sakha) as written in the alphabet created by Bishop Dionysius (Khitrov).

Here is an example of the Lord's Prayer in Romanian (Moldovan) Cyrillic:

Та́тъль но́стрꙋ ка́реле є҆щй а҆ Че́рюрй: сфѣнцѣ́скъсе Нꙋ́меле тъꙋ́: вїе а҆пъръцїа та: фїе во́а та, прекꙋ́мь а҆ Че́рю шѝ пре пъмѧ́нть. Пъ́йнѣ но́лстрꙋ чѣ̀ депꙋ́рꙋрѣ дъ́не но́аѡ а҆́стъзй. Шѝ не е҆́ртъ но́аѡ грешѧ́леле но́астре, прекꙋ́мь шѝ но́й є҆ртъ́мь грешѝцилѡрь но́црн. Шѝ нꙋ́не дꙋ́че пре но́й а҆ испи́тъ. Чѝ не и҆збъвѣ́ще де че́ль ръꙋ́.

And here is an example of the Lord's Prayer in Aleut Cyrillic:

Тꙋманйнъ А҆́дакъ! А҆́манъ акꙋ́хтхинъ йнинъ кꙋ́гинъ, А҆́санъ амчꙋ́гасъа́да́гьта, Я҆гали́нъ а҆ка́гьта, Я҆нꙋ́хтана́тхинъ малга́гьтанъ йнимъ кꙋ́ганъ ка́юхъ та́намъ кꙋ́ганъ. Кал_га́дамъ анꙋ́хтана̀ игꙋ́нъ акача́ Ꙋ̂а́амъ: ка́юхъ тꙋма́нинъ а҆дꙋ́нъ игꙋ́нъ игнйда, а҆ма́кꙋнъ тꙋ́манъ ка́юхъ малгалиги́нъ игꙋ́нъ адꙋ́гйнанъ игнида́кꙋнъ: ка́юхъ тꙋ́манъ сꙋ́глатачꙋ̂и́га_нахꙋ̂тхинъ, та́га а҆да̀алю́дамъ илѧ́нъ тꙋ́манъ агьгича.

And here is an example of the Lord's Prayer in Yakut (Sakha):

Халланнаръ юрдюлѧригѧрь баръ агабытъ бисенѧ! Свѧ_тейдѧннинь а̄тынгъ ꙫенѧ ; каллинь царствангъ ꙫенѧ ; сирь юрдюгѧрь кёнгюлюнгь ꙫенѧ , халланъ юрдюгѧрь кꙋрдукъ бол_лунъ ; бюгюнгю кюннѧги асыръ аспытынъ бисеннинь кꙋлꙋ бисехѧ бюгюнь ; бисиги да естѧрбитинь халларъ бисехѧ , хай_тахъ бисиги да халларабытъ беꙫбить естѧхтарбитигѧрь ;

КНІΛѦРИМѦ ДА БИСИГИНИ АΛЬДЖАРХАЙГА ; ХАТА БЫСА БИСИГИНИ ΛΛБЫНТАНЪ .

3.1.1 Advanced Features of the Font

Ponomar Unicode places some characters in the Private Use Area (PUA). For the general PUA mappings, please see the PUA Allocation Policy.

In addition to the general PUA mappings, some characters have been allocated the open range section of the PUA. These are:

- U+F400 – Alternatives of SMP glyphs: This section contains copies in the BMP of SMP glyphs for support in legacy applications. Currently, the following are available: U+F400 - U+F405 – Typicon symbols (copies of U+1F540 through U+1F545).

- U+F410 – Presentation forms: Contains various presentation forms and ligatures used internally by the font. Generally, these are not intended to be called by users or external applications.

- U+F420 – Linguistic alternatives: Contains alternative shapes of glyphs that are language specific. Right now, these are modern punctuation shapes for use with Latin characters. These are not intended to be called externally.

- U+F441 and on – stylistic alternatives of Latin characters (Blackletter forms). These can be called via the Stylistic Set 2, but, if necessary, they may be called from the PUA directly. They are mapped to in the same order as in the Basic Latin block, beginning with U+F441 (for U+0041 Latin Capital Letter A). In addition to the Basic Latin repertoire, we also have: U+F4DE – Blackletter Thorn; U+F4FE – Lowercase Blackletter Thorn; and U+F575 – Blackletter Long S

The font provides a number of ligatures, which are made by inserting the Zero Width Joiner (U+200D) between two characters. A list of ligatures is provided in Table 1.

Table 1: Ligatures available in Ponomar Unicode

Name	Sequence	Appearance
Ligature A-U	U+0430 U+200D U+0443	᷉
Ligature El-U	U+043B U+200D U+0443	᷉
Ligature Te-Ve	U+0442 U+200D U+0432	᷉

In OpenType, a number of Stylistic Alternatives are defined. They are listed in Table 2. In addition to additional decorative glyphs for the Symbol for Mark's Chapter, the feature provides the alternate forms of the letter U+0423 Ꙋ that look exactly like U+A64A Uk (this usage is found in some publications), and an alternative form for the U+0404 Wide Ye for use in contexts where it needs to be distinguished from U+0415 Ye (mostly for Ukrainian text stylized in a Church Slavonic font).

Table 2: Stylistic Alternatives in Ponomar Unicode

	Base Form	Alternate Forms		
U+1F545	🕅	🕅	🕅	🕅	🕅
		🕅	🕅	🕅	🕅
U+0423	Ꙋ	Ꙋ			
U+040E	Ў	Ў			
U+0404	Є	Є			

For the Cyrillic letters, the stylistic alternatives feature also allows access to truncated letter forms; the order of the alternate forms is always: lower truncation, upper truncation, left truncation, right truncation. Table 3 demonstrates which truncated forms are available. Generally speaking, truncation should be handled automatically by desktop publishing software and TeX, though this is difficult to accomplish.

Table 3: Truncated Forms Accessible via Stylistic Alternatives Feature in Ponomar Unicode

	Base Form	Truncated Forms		
U+0440	р	р		
U+0443	у	у		
U+0444	ф	ф	ф	
U+0445	х	х	х	х
U+0446	ц	ц		
U+0449	щ	щ		
U+0471	ѱ	ѱ	ѱ	
U+A641	ꙁ	ꙁ		
U+A64B	ꙋ	ꙋ	ꙋ	ꙋ

Stylistic Set 1 (ss01) is provided as a temporary workaround to LibreOffice Bug 85731, which does not allow you to specify the hyphenation character in LibreOffice. When turned on, it replaces all instances of U+002D Hyphen-Minus and U+2010 Hyphen with U+005F Low Line (underscore) for use as a hyphenation character. Please note that this feature will be deprecated once the neces-

sary functionality is added to LibreOffice.

There is also defined Stylistic Set 2 ("ss02"), Blackletter forms. When this stylistic set is turned on, Latin letters appear in blackletter as opposed to their modern forms. This is useful for setting Latin text side-by-side with Slavonic in some contexts. See the following example:

Regular   The quick brown fox. 1234567890. А̊ сїѐ по слове́нскн.
Blackletter   𝕿𝖍𝖊 𝖖𝖚𝖎𝖈𝖐 𝖇𝖗𝖔𝖜𝖓 𝖋𝖔𝖝. 1234567890. А̊ сїѐ по слове́нскн.

Note that as of version 2.0 of the font, the ASCII digits (commonly called "Arabic numerals") are provided in roman form. Use Stylistic Set 2 to access the blackletter forms, if necessary.

4   Fonts for Pre-Nikonian Printed Slavonic

4.1   Fedorovsk Unicode

Fedorovsk Unicode is based on the Fedorovsk font designed by Nikita Simmons. It has been re-encoded for Unicode, with added OpenType features. The Fedorovsk typeface is supposed to reproduce the typeface of the printed editions of Ivan Fedorov produced in Moscow, for example, the Apostol of 1564. The font is intended primarily for typesetting pre-Nikonian (Old Rite) liturgical texts or for working with such texts in an academic context.

Here is an example from the 1564 Apostol of Ivan Fedorov:

Пе́рвое оу҆́бо сло́во сотвори́хъ ѡ҆ всѣ́хъ , ѽ , ѳео́фїле , ѡ҆ нн́же нача́тъ і҆с , твори́тнже н̆ оу҆чн́тн . донего́же дне̑ , за повѣ́лавъ а̑п҃ломъ дх҃омъ ст҃ы̑ , н̆х́же н̆збра̑ вознесе́са . преⷣ нн́мнже н̆ поста́вн себѐ жн́ва по страда́нїн свое́мъ . во мно́зехъ н̆стннныхъ зна́менїн́хъ . дн҃ьмн четы́рндесатьмн н̆авла́аса н̆мъ н̆ гл҃а ӑ́же ѡ҆ цр҃ствїн бж҃їн . снн́мнже н̆а́ды̑ , повелѣ́ва́ше н̆́мъ ѿ і̑еросалн́ма не ѿлꙋча́тнса . но́ жда́тн ѡ҆бѣ́тованїе ѿц҃е , ӑ́же слы́шасте ѿ менѐ . ӑ́кѡ і̑ѡа́ннъ оу҆́бо кр҃тнлъ ӑ́есть водо́ю . вы́же н̆́мате крестн́тнса дх҃омъ ст҃ы́мъ , не по мно́зѣхъ снхъ дн҃е̑ .

Here is an example from the Flowery Triodion of 1648:

сⷮры па́сцѣ . гла́съ , є̑҃ . Да воскр҃нетъ бг҃ъ ,* н̆ разы́ідꙋтса врази̑ є̑гѡ̑ . Па́сха сщ҃е́ннаа на́мъ днесь показа́са , па́сха но́ва ст҃а́а , па́сха та́нньственнаа , па́сха всечестна́а , па́сха хрⷭта̑ н̆з ба́внтела , па́сха непоро́чнаа , па́сха велн́каа , па́сха вѣ́рнымъ ,

па́сха дв҃ри ра́йскїѧ на́мъ ѿверза́ющаѧ , па́сха всѣ́хъ ѡсщ҃а́ющаѧ вѣ́рныхъ .

4.1.1 Advanced Features of the Font

The font provides a number of ligatures, which are made by inserting the Zero Width Joiner (U+200D) between two characters. A list of ligatures is provided in Table 4.

Table 4: Ligatures available in Fedorovsk Unicode

Name	Sequence	Appearance
Ligature A-U	U+0430 U+200D U+0443	ꙋ
Ligature El-U	U+043B U+200D U+0443	ꙋ
Ligature A-Izhitsa	U+0430 U+200D U+0475	ѵ
Ligature El-Izhitsa	U+043B U+200D U+075	ѵ
Ligature Te-Ve	U+0442 U+200D U+0432	҄
Ligature Er-Yat	U+0440 U+200D U+0463	҄

In OpenType, a number of Stylistic Alternatives are defined. They are listed in Table 5. In addition to providing alternative glyph shapes for U+1F545 Symbol for Mark's Chapter, they allow you to control the positioning of diacritical marks over certain letters.

Additionally, three stylistic sets have been defined in the font. Stylistic Set 1 ("Right-side accents") positions the accents over the Yat and the Uk on the right side and Stylistic Set 2 ("Left-side accents") positions the accents over the Yat and the Uk on the left side. These stylistic sets are useful when a text uses one of these positionings throughout. Stylistic Set 10 ("Equal Baseline Variants") sets the capital letters on the same baseline as the lowercase letters (useful for working with the font in an academic context where the traditionally lowered baseline of uppercase letters can cause vertical spacing issues when working with text that is both in Latin and Cyrillic scripts). Here is an example:

Хрⷭ҇то́съ воскрⷭ҇е ѿ ме́ртвыхъ   (regular text)
Хрⷭ҇то́съ воскрⷭ҇е ѿ ме́ртвыхъ   (Stylistic Set 10 enabled)

5   Fonts for Working with Ancient Manuscripts

5.1   Menaion Unicode

The Menaion typeface is supposed to be used for working with text of Ustav-era manuscripts. It contains the full repertoire of necessary Cyrillic and Glagolitic

Table 5: Stylistic Alternatives in Fedorovsk Unicode

	Base Form	Alternate Forms					
U+0404	Є	Є					
U+0426	Ц	Ц					
U+0491	г	г					
U+A64C	Ꙍ	Ꙍ					
U+047C	Ѽ	Ѽ					
U+047E	Ѿ	Ѿ					
U+047F	ѿ	Ѿ					
U+1F545	М	М	Ӝ	М	М	ᾶ	Ꙗ
U+0463 U+0486	ѣ	ѣ					
U+0463 U+0300	ѣ	ѣ	ѣ				
U+0463 U+0301	ѣ	ѣ	ѣ				
U+0463 U+0311	ѣ	ѣ	ѣ				
U+0463 U+0486 U+0301	ѣ	ѣ					
U+A64B U+0486	ꙋ	ꙋ					
U+A64B U+0300	ꙋ	ꙋ	ꙋ				
U+A64B U+0301	ꙋ	ꙋ	ꙋ				
U+A64B U+0311	ꙋ	ꙋ	ꙋ	ꙋ			
U+A64B U+0486 U+0301	ꙋ	ꙋ					

glyphs as well as glyphs of Byzantine Ecphonetic notation of the kind used in Cyrillic or Glagolitic manuscripts.

The Menaion font was originally designed by Victor A. Baranov at the Manuscript Project. It was re-encoded for Unicode by Aleksandr Andreev with permission of the original author.

Samples of text in Menaion Unicode are presented in Figures 1 and 2. Please note that combining Glagolitic letters (Glagolitic Supplement) became available in Unicode 9.0. In older versions of Microsoft software, correct glyph positioning for these characters using OpenType features may not be possible. To achieve the desired output, we recommend you use LibreOffice, XTEX, LuaTEX, or advanced desktop publishing software such as Adobe InDesign.

5.1.1 Advanced Features of the Font

The font provides a number of ligatures, which are made by inserting the Zero Width Joiner (U+200D) between two characters. The list of ligatures is provided in Table 6.

6 Fonts for Academic Work

6.1 Monomakh Unicode

Monomakh Unicode is based on the Monomachus font designed by Alexey Kryukov. It has been modified with permission. Monomakh Unicode is a Cyrillic font implemented in a mixed ustav/poluustav style and intended to cover needs of researches dealing with Slavic history and philology. It includes all historical Cyrillic characters currently defined in Unicode, as well as a set of Latin letters designed to be stylistically compatible with the Cyrillic part. This may be useful for typesetting bilingual editions in Church Slavonic and languages written in the Latin script, especially those that use many diacritical marks, as in the Romanian example below.

Блже́нъ мꙋ́жъ, и́же не и́де на совѣ́тъ нечести́выхъ, и̍ на пꙋти̍ грѣ́шныхъ не ста̍, и̍ на сѣда́лищи гꙋби́телей не сѣ́де: но въ зако́нѣ гдⷭ҇ни во́ла ѐгѡ̀, и̍ въ зако́нѣ ѐгѡ̀ поꙋчи́тсѧ де́нь и̍ но́щь. И̍ бꙋ́детъ я̍кѡ дре́во насажде́ное при и̍сходи́щихъ во́дъ, ѐ҆же пло́дъ сво́й да́стъ во вре́мѧ свое̍.

Fericit bărbatul, care n-a umblat în sfatul necredincioșilor și în calea păcătoșilor nu a stat și pe scaunul hulitorilor n-a șezut; ci în legea Domnului e voia lui și la legea Lui va cugeta ziua și noaptea. și va fi ca un pom răsădit lângă izvoarele apelor, care rodul său va da la vremea sa.

Figure 1: Cyrillic text from the Ostromir Gospel (11th century)

1	НСКОНН БѢ СЛОВО
2	Н СЛОВО БѢ ОТЪ
3	БА Н БЪ БѢ
4	СЛОВО ÷ СЄ БѢ
5	НСКОНН ОУ
6	БА ⁙ Н ТѢМЬ ВСА БЪІ
7	ША ÷ Н БЄЗ НЄГО НН
8	ЧЬТОЖЄ НЄ БЪІСТЬ ·
9	НЖЄ БЪІСТЬ ÷ ВЪ ТО
10	МЬ ЖНВОТЪ БѢ · Н
1	ЖНВОТЪ БѢ СВѢТЪ
2	ЧЛОВѢКОМЪ ÷ Н СВѢ
3	ТЪ ВЪ ТЬМѢ СВЬТН
4	ТЬСА · Н ТЬМА КГО
5	НЄ ОБАТЪ ÷ БЪІСТЬ
6	ЧЛВКЪ ПОСЪЛАНЪ
7	ОТЪ БА · НМА КМОУ
8	НОАНЪ ÷ ТЪ ПРНДЄ
9	ВЪ СЪВѢДѢТЕЛЬ
10	СТВО · ДА СЪВѢДѢТЄ
2.2 1	ЛЬСТВОУКТЬ О СВѢ
2	ТѢ ÷ ДА ВЬСН ВѢРѪ
3	НМѪТЬ НМЬ ⁙ НЄ БѢ
4	ТЪ СВѢТЪ ⁙ НЪ ДА
5	СЪВѢДѢТЄЛЬСТВОУ
6	КТЬ О СВѢТѢ ÷ БѢ
7	СВѢТЪ НСТНЬНЪІ
8	Н · НЖЄ ПРОСВѢЩАК
9	ТЬ ВСЬАКОГО ЧЛКА ,
10	ГРАДѪЩА ВЪ МНРЪ ÷

18

Figure 2: Glagolitic text from *Codex Assemanius* (11th century)

1 ∴ ꙀꙊⰕ ⰛⰞ ⰲꙊꙀ

2 ⰲꙀⰺⰀⰼⰓ ⰿⰃ

3 ꙀⰑꙀꙊꙀ ·

4 ⰲ ꙀⰑꙀꙊꙀ

5 ⰿⰃ ꙋ ⰿⰕ ·

6 ⰲ ⰿꙀ ⰿⰃ

7 ꙀⰑꙀꙊꙀ ·

8 ⰛꙀ ⰿⰃ ⰲꙀⰺ

9 ⰼⰲ · ꙋ ⰿⰕ · ꙊꙀ

10 ꙀⰀ ⱅⰀⰼꙀ ⰿꙀⰲ

11 ⱎⰅ · ⰲ ⰿꙀⰲ ⰼꙀⰼꙀ

12 ⰼⰖⰞꙀⰲꙀⱈꙀ

13 ⰼꙀ ⰿꙀⰲⰲⰲⱅꙀ · Ꙁ

14 ⱈꙀ ⰿꙀⰲⱅꙀ ·

15 ꙊꙀ ⱅꙀⰼꙀ ⱈⰖꙊꙀ

16 ⱅꙀ ⰿⰃ · ⰲ ⱈⰖꙊꙀ

17 ⱅꙀ ⰿⰃ ꙀꙊⰀⱅꙀ

18 ⱏⰿⰺⰼꙀ · ⰲ ꙀꙊꙀⰀ

19 ꙊꙀ ⱅꙀⰼⰀ ꙀꙊꙀ

20 ⱅⰖⱅꙀ ⰛⰅ · ⰲ ⱅꙀ

21 ⰼⰕ ꙀⰼꙀ ⰼꙀ ꙀⰿⰅⱅ

Table 6: Ligatures available in the Menaion Unicode font

Name	Sequence	Appearance
Small Ligature I-Ye	U+0438 U+200D U+0435	ни
Small Ligature En-I	U+043d U+200D U+0438	ни
Small Ligature En-Small Yus	U+043d U+200D U+0467	на
Small Ligature Es-Ve	U+0441 U+200D U+0432	св
Small Ligature Te-Er	U+0442 U+200D U+0440	тр
Capital Litagure A-U	U+0410 U+200D U+0423	ау
Small Ligature A-U	U+0430 U+200D U+0443	ау
Small Ligature A-Te	U+0430 U+200D U+0442	ат
Capital Ligature I-Ye	U+0418 U+200D U+0415	ИЕ
Capital Ligature El-Ge	U+041b U+200D U+0413	ЛГ
Small Ligature El-Ge	U+043b U+200D U+0433	лг
Capital Ligature En-I	U+041d U+200D U+0418	НИ
Capital Ligature En-Small Yus	U+041d U+200D U+0466	НА
Capital Ligature Es-Ve	U+0421 U+200D U+0412	СВ
Small Ligature Te-Yat	U+0442 U+200D U+0463	тѣ
Capital Ligature Te-Ve	U+0422 U+200D U+0412	ТВ
Small Ligature Te-Ve	U+0442 U+200D U+0432	тв
Capital Ligature Te-I	U+0422 U+200D U+0418	ТИ
Small Ligature Te-I	U+0442 U+200D U+0438	ти
Capital Ligature Te-Er	U+0422 U+200D U+0420	ТР
Ligature Capital A-Small Te	U+0410 U+200D U+0442	Ат
Capital Ligature Te-Soft Sign	U+0422 U+200D U+042c	ТЬ
Small Ligature Te-Soft Sign	U+0442 U+200D U+044C	ть
Small Ligature Te-A	U+0442 U+200D U+0430	та

6.1.1 Advanced Features of the Font

The Monomakh font offers a number of optional OpenType features that may be turned on or off by the user. These are:

- Stylistic Set 1 (*ss01*) is provided as a temporary workaround to LibreOffice Bug 85731, which does not allow you to specify the hyphenation character in LibreOffice. When turned on, it replaces all instances of U+002D Hyphen-Minus and U+2010 Hyphen with U+005F Low Line (underscore) for use as a hyphenation character. Please note that this feature will be deprecated once the necessary functionality is added to LibreOffice.

- Stylistic Set 6 (*ss06*) displays U+0456 Cyrillic Small Letter Ukrainian / Belorussian I with one dot above and Stylistic Set 7 (*ss07*) displays the same character with two dots above. By default, U+0456 is displayed with no dots.

- Stylistic Set 8 (*ss08*) displays the characters U+0417 Cyrillic Capital Letter Ze and U+0437 Cyrillic Small Letter Ze as a "sharp zemlya", i.e., like the characters U+A640 Cyrillic Capital Letter Zemlya and U+A641 Cyrillic Small Letter Zemlya, respectively. Generally, this change should be handled at the codepoint level, so the use of this feature is discouraged.

- Stylistic Set 9 (*ss09*) displays the characters U+0427 Cyrillic Capital Letter Che and U+0447 Cyrillic Small Letter Che in their archaic form, with the descender in the middle (e.g., ꙮ instead of ч).

- Stylistic Set 10 (*ss10*) displays the characters U+0429 Cyrillic Capital Letter Shcha and U+0449 Cyrillic Small Letter Shcha in their modern form, with the descender on the right (e.g., щ instead of ꙳).

- Stylistic Set 11 (*ss11*) displays the characters U+044B Cyrillic Small Letter Yeru and U+A651 Cyrillic Small Letter Yeru with Back Yer with the two glyphs connected (e.g., ы instead of ы).

- Stylistic Set 13 (*ss13*) displays the character U+0463 Cyrillic Small Letter Yat with the left stem extended to the baseline (e.g., as ѣ). Please note that this is not the same as U+A653 Cyrillic Small Letter Iotified Yat.

- The same functionality of these Stylistic Sets is provided in OpenType also by the Stylistic Alternatives (*salt*) feature.

- 🛑 Previous versions of the font provided Stylistic Set 1 (*ss01*), which displayed U+015E Latin Capital Letter S with Cedilla, U+0162 Latin Capital Letter T with Cedilla, and their lowercase analogs, as U+0218 Latin Capital

Letter S with Comma Below, U+021A Latin Capital Letter T with Comma Below, and their lowercase analogs. However, since the use of U+015E, U+0162 and their lowercase analogs for the encoding of Romanian text is considered erroneous, this feature is deprecated. Users are strongly encouraged to convert their text at the codepoint level to use the correct characters for Romanian orthography. However, for the sake of compatibility with text that has been erroneously encoded, this feature is still available.

✋ Stylistic Set 15 (*ss15*), which provides combining Cyrillic letters with an automatic *pokrytie* where warranted by Synodal orthography is also deprecated and may be removed. Users should explicitly encode the *pokrytie* as U+0487 Combining Cyrillic Pokrytie. See UTN 41: Church Slavonic Typography in Unicode for more information.

Two additional features were available in SIL Graphite only; however support for SIL Graphite has been discontinued. If you need these features, see the Legacy Fonts package:

✋ The Graphite feature Convert Arabic Digits to Church Slavonic (*cnum*), when turned on, will automatically display Western Digits ("Arabic numerals") as Cyrillic numerals. This is helpful, for example, for page numbering in software that does not support Cyrillic numerals.

✋ The Graphite feature Convert HIP-6B Keystrokes to Church Slavonic Characters (*hipb*), when turned on, will display text encoded in the legacy HIP codepage as Church Slavonic. The use of this feature is discouraged and users are encouraged instead to convert HIP-encoded text to Unicode.

6.2   Shafarik

The Shafarik font is a specialized font intended for an academic presentation of Old Church Slavonic (OCS) texts written in both the Cyrillic or Glagolitic alphabets. The documentation for the font is provided in a separate file.

7   Decorative Fonts

7.1   Indiction Unicode

The Indiction Unicode font reproduces the decorative style of drop caps used in Synodal Slavonic editions since the late 1800's.

The original Indyction font was developed by Vladislav V. Dorosh and was distributed as Indyction UCS as part of CSLTeX, licensed under the LaTeX Project

Public License. The font was reencoded for Unicode and edited by Aleksandr Andreev, and is now distributed as Indiction Unicode under the SIL Open Font License. It is intended for use with *bukvitsi* (drop caps) in modern Church Slavonic editions.

Ӕ҄же́нъ мꙋ́жъ, и҆́же не и҆́де на совѣ́тъ нечести́выхъ, и҆ на пꙋти́ грѣ́шныхъ не ста̀, и҆ на сѣда́лищи гꙋби́телей не сѣ́де: но въ зако́нѣ гд҃ни во́ля є҆гѡ̀, и҆ въ зако́нѣ є҆гѡ̀ поꙋчи́тсѧ де́нь и҆ но́щь. И҆ бꙋ́детъ ꙗ҆́кѡ дре́во насажде́ное при и҆схо́дищихъ во́дъ, є҆́же пло́дъ сво́й да́стъ во вре́мѧ своѐ, и҆ ли́стъ є҆гѡ̀ не ѿпаде́тъ: и҆ всѧ̑, є҆ли̑ка а҆́ще твори́тъ, оу҆спѣ́етъ.

7.2 Vertograd Unicode

Vertograd Unicode (based on Vertograd UCS by Vlad Dorosh) is another font for decorative dropcaps and titling. The typeface was commonly used in pre-revolution Russian liturgical editions. Note that some letters that are typically not encountered in capital form are not available. Please file an issue if you need a letter that is not available.

Ӕ҄же́нъ мꙋ́жъ, и҆́же не и҆́де на совѣ́тъ нечести́выхъ, и҆ на пꙋти́ грѣ́шныхъ не ста̀, и҆ на сѣда́лищи гꙋби́телей не сѣ́де: но въ зако́нѣ гд҃ни во́ля є҆гѡ̀, и҆ въ зако́нѣ є҆гѡ̀ поꙋчи́тсѧ де́нь и҆ но́щь. И҆ бꙋ́детъ ꙗ҆́кѡ дре́во насажде́ное при и҆схо́дищихъ во́дъ, є҆́же пло́дъ сво́й да́стъ во вре́мѧ своѐ, и҆ ли́стъ є҆гѡ̀ не ѿпаде́тъ: и҆ всѧ̑, є҆ли̑ка а҆́ще твори́тъ, оу҆спѣ́етъ.

7.3 Cathisma Unicode

Cathisma Unicode is based on Kathisma UCS, designed by Vlad Dorosh. The typeface is used for titling in many 18th–20th century liturgical editions.

ЧИ́НЪ ОУ҆́ТРЕНИ ВСЕНО́ЩНАГѠ БДѢ́НІѦ

7.4 Oglavie Unicode

Oglavie Unicode is based on Oglavie UCS, designed by Vlad Dorosh. The typeface is also used for decorative titling in 18th–20th century liturgical editions.

ТРЇѼДЬ НО́ТНАГѠ ПѢ́НЇѦ

7.5 Pomorsky Unicode

The Pomorsky Unicode font is a close reproduction of the decorative calligraphic style of book and chapter titles, which was most likely developed in the 1700's by the scribes of the Old Ritualist Vyg River Hermitage (Выговская пустынь). It is seen extensively in the chant manuscripts, liturgical manuscripts, hagiographic and polemical works of the Pomortsy and Fedoseyevtsy communities, and is a traditional and "organic" style of lettering lacking any obvious influence from Western European typography. The Pomorsky typeface was originally designed by Nikita Simmons. It is intended for use with *bukvitsi* (drop caps) and decorative titling.

ЧИ́НЪ ВЕЧЕ́РНИ.

7.5.1 Advanced Features of the Font

Several versions of many glyphs are provided in the font. The ornate forms of the letters are default and provided at the uppercase Cyrillic codepoints; they should be used as much as possible. Simpler forms can be used whenever the letters need a less ornate appearance, or when diacritics might conflict with the ornamentation (or when the ornamentation of one character will conflict with the ornamentation of another); these simple forms are available as `Stylistic Set 1`. There are a few additional characters that are stylistic variants, which are provided as Stylistic Alternatives (`salt`). Since the font is intended for drop caps and titling, lowercase characters are not available. The base form, the "simple" form, and any stylistic alternatives of a character are demonstrated in Table 7.

8 Technical Fonts: FiraSlav

FiraSlav is a monospaced font for Church Slavonic, intended for editing Church Slavonic text in a text editor. All diacritical marks and combining letters are presented as spacing symbols and a monospaced appearance is maintained. The

Table 7: Character shapes provided by Pomorsky Unicode

font includes both regular (`FiraSlav Regular`) and bold (`FiraSlav Bold`) flavors. It is especially useful for software and website development applications:

```
$number =  /^(?:≠([$h]))*(?:≠([$o]))*([$h]?)([клмнѯопч]?)([$o]?)$/;
var letter = '(?:oy|Oy|oy\\S)[а҄с҄а҄с҄с҄у҄҇п�҄ᲂ҇ᲂ҇е̑б в г д е ж з и і к]*';
Блже́нъ мꙋ́жъ, и́же не и́де на совѣ́тъ нечести́выхъ
```

9   Known Issues

See the Issue Tracker. Before reporting issues, please check that your software properly supports OpenType. We suggest checking for expected behavior in X͟ǝTEX or LuaTEX.

10   Credits

The authors would like to thank the following people:

- Vladislav Dorosh, who allowed his Hirmos font to be re-encoded in Unicode and modified, leading to the creation of the Ponomar font.

- Viktor Baranov of the Manuscripts project, who allowed the re-encoding and modification of his Menaion font.

- Michael Ivanovich for help in designing the characters for Sakha (Yakut), partially taken from his Sakha UCS font.

- Alexey Kryukov, who answered various questions about FontForge, allowed his Monomachus font to be modified and repackaged, and whose extensive documentation for the Old Standard font was consulted and partially reused.

- Mike Kroutikov, who put together the TEX package of the fonts.