churchslavonic package — Church Slavonic Typography in LaTeX

Aleksandr Andreev and Mike Kroutikov
version 0.2

May 9, 2016

Abstract

Package churchslavonic provides fonts, hyphenation patterns and supporting macros to typeset Church Slavonic texts.

Contents

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 `churchslavonic` provides fonts, hyphenation patterns and supporting macros to typeset Church Slavonic texts in TEX.

The package is designed to support 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. To use the tools in this package, you will need a Unicode-aware TEX engine such as XETEX or LuaTEX.

1 How to use the package

To use the churchslavonic package one needs to include the following declarations into the document preamble:

```
\usepackage{polyglossia}
\setmainlanguage{churchslavonic}
\usepackage{churchslavonic}
```

This makes the Church Slavonic hyphenation patterns immediately available. After that, use the standard polyglossia commands to control current language. Church Slavonic fonts are provided by the fonts-churchslavonic package, which should have been installed automatically when you installed this package. See the fonts-churchslavonic documentation for information about fonts.

1.1 Options `color`, `gray`, and `bw`

These options control what color is actually being used for text coloring commands like `\cuKinovar`.

- `color` this is the default option; it indicates the original color (a shade of red).
- `gray` replaces the red color with gray - useful if you are printing on media that does not support color, but is capable of grayscale.
- `bw` replaces the red color with black (effectively turning off commands like `\cuKinovar` and `\cuKinovarColor`). Use this option to generate a document that will be printed in black-and-white.

Example:

```
\usepackage[gray]{churchslavonic}
```

1.2 Underscore

The underscore symbol (_, U+005F Low Line) is a valid text symbol in Church Slavonic (it has roughly the same role as the hyphen in English). The package churchslavonic redefines the underscore in a way that it can be directly entered in text mode, for example:

> Послѣ́дованїе моле́бнагѡ пѣ́нїѧ ст҃ы̑мъ мч҃камъ к҃_гѡ вѣ́ка,
> въ Са́нктъ_Петербꙋ́ржстѣй дꙋхо́внѣй ѧ҆каде́мїи
> нача̑льствовавшимъ, ѹ҆чи̑вшимъ и҆ ѹ҆чи̑вшимсѧ

Attention: if you have an older version of the fontspec package installed on your system, the redefined underscore symbol cannot be used in font names and font options in fontspec commands like `\setXXXfont` and `\newfontfamily`.

Typically you need to set underscore as the hyphenation character for Church Slavonic fonts: `HyphenChar=_`. With older versions of fontspec this will cause errors. This problem exists in TeX `Live 2013` and in fontspec v2.3c.

We recommend upgrading your TeX distribution to at least TeX `Live 2015`. Alternatively you can selectively upgrade the fontspec package to version `v2.4c` or better.

If upgrading is not an option, you can work around this problem by either specifying the hexadecimal code for the hyphenation character: `HyphenChar="005F`, or by declaring all fonts before loading churchslavonic.

2 Numbers

The Church Slavonic numbering system (Cyrillic numerals) is based on Greek Ionian numerals and uses letters as digits. For more information on the implementation, consult the appropriate section of [1].

2.1 `\cuNum`

Use this command to typeset a Cyrillic numeral. The command takes a single argument that should expand to a number.

`\cuNum{1}`	а҃
`\cuNum{12}`	в҃і
`\cuNum{123}`	рк҃г
`\cuNum{1234}`	҂асл҃д
`\cuNum{10345}`	҂ітм҃є
`\cuNum{12345}`	҂в҃і тм҃є
`\cuNum{123456}`	҂рк҃г ѵн҃ѕ
`\cuNum{800456}`	҂ѿѵн҃ѕ
`\cuNum{1234567}`	҂҂а҃ ҂сл҃д фѯ҃з
`\cuNum{1500567}`	҂҂а҃ ҂ффѯ҃з
`\cuNum{12345678}`	҂҂в҃і ҂тм҃є хѻ҃и
`\cuNum{123456789}`	҂҂рк҃г ҂ѵн҃ѕ ѱп҃ѳ

3 Dates

`\cuDate{2016-4-21}`	к҃а а҆прі́ллїа, лѣ́та ҂вѕ҃і
`\cuDateJulian{2016-4-21}`	и҃ а҆прі́ллїа, лѣ́та ҂вѕ҃і
`\cuDate{\cuToday}`	д҃ ма́їа, лѣ́та ҂вѕ҃і

3.1 `\cuDate`

This command formats the date (according to the current format). The argument is a triplet of numbers `YYYY-MM-DD` specifying the date. The output will be something like this: к҃в а҆прі́ллїа, лѣ́та ҂вѕ҃і.

Note that `YYYY-MM-DD` values are not being normalized or interpreted in any way. Thus, it is totally fine to call `\cuDate{2016-4-32}` even though April 32 is not a valid date. It will be formatted and printed as April 32. This makes it possible to use this macro in a phrase like "the date `\cuDate{2016-4-32}` is not a valid date in any calendar".

However, if your date format uses \cuDOW (day of the week) or \cuYEARAM (year Anno Mundi), the later quantities are computed by interpreting the date as a Gregorian calendar date. In this case, if the input date is not a valid date, it will be normalized via extrapolation. For example, April 32 will be interpreted as May 2 for the purpose of determining values of the day of the week and year Anno Mundi.

If your format uses \cuDOW or \cuYEARAM, and you specify a date according to the Julian, not Gregorian, calendar, you must use \cuDateJulian to correctly format days of the week and year Anno Mundi.

The best practice is to always use \cuDate with Gregorian calendar dates and use \cuDateJulian with Julian calendar dates regardless of the current date format. This way you can switch the date formatting style without worrying about getting the wrong output.

3.2 \cuDateJulian

Formats the date, just like \cuDate does, but the argument is interpreted as a date on the Julian calendar ("old style") instead of the Gregorian calendar. This makes a difference only if your format is using symbolic names \cuDOW and/or \cuYEARAM.

3.3 \cuDefineDateFormat

This command allows you to define your own date format. It does not change how \cuDate formats its output (for that, use \cuUseDateFormat). Example:

```
\cuDefineDateFormat{long}{%
  \cuDayName{\cuDOW},
  \cuNum{\cuDAY}_гѡ~%
  \cuMonthName{\cuMONTH},~%
  лѣ́та ѿ сотворе́нїѧ мі́ра~%
  \cuNum{\cuYEARAM}%
}
```

defines a format with name long. If we use this format to print the same date as before, we will get: пѧто́къ, к҃в_гѡ ѧ҆прі́ллїа, лѣ́та ѿ сотворе́нїѧ мі́ра ҂з҃фк҃є.

The following symbolic names can be used when formatting the date:

- \cuYEAR — the year part of a date (a number, like 2016)

- `\cuYEARAM`[1] — the year Anno Mundi, that is, since the creation of the world accoding to the Byzantine reckoning (aka "the Byzantine era"; a number, like `7525`)
- `\cuMONTH` — the month part of a date (a number from 1 to 12, with January set to 1)
- `\cuDAY` — the day of the month
- `\cuDOW`[1] — the day of the week (number from 0 to 6, where 0 means "Sunday")
- `\cuINDICTION` — the indiction[2] (a number from 1 to 15)

3.4 `\cuUseDateFormat`

This command sets the date format to be used by the subsequent `\cuDate` and `\cuDateJulian`.

3.5 `\cuMonthName`

This command expands a numeric argument (month number) into textual representation. It is typically used when defining a date format. For example, a date format named `default` is defined as:

```
\cuDefineDateFormat{default}{%
  \cuNum{\cuDAY}~\cuMonthName{\cuMONTH},%
  ~лѣта~\cuNum{\cuYEAR}%
}%
```

3.6 `\cuDayName`

Expands a numeric argument into a textual representation of the day of the week in the nominative case.

3.7 `\cuDayNameAccusative`

Expands a numeric argument into a textual representation of the day of the week in the accusative case.

[1] If your format uses this value, make sure that you format the date with the correct macro: you must use `\cuDate` for dates on the Gregorian calendar and `\cuDateJulian` for dates on the Julian calendar.

[2] See `https://en.wikipedia.org/wiki/Indiction`.

3.8 `\cuToday`

This macro expands to a triplet `YYYY-MM-DD`. The date is generated according to the Gregorian calendar.

3.9 `\cuTodayJulian`

This macro expands to a triplet `YYYY-MM-DD`. The date is generated according to the Julian calendar.

It is a shortcut for `\cuAsJulian{\cuToday}`.

3.10 `\cuAsJulian`

Converts a date on the Gregorian calendar to a date on the Julian calendar. Input and output use numeric triplet format `YYYY-MM-DD`.

Useful when the same date needs to be formatted both according to the Gregorian and Julian calendars.

3.11 `\cuAsGegorian`

Converts a date according to the Julian calendar to a date according to the Gregorian calendar. Input and output use numeric triplet format `YYYY-MM-DD`.

4 Kinovar

Printed and hand-written Church Slavonic texts often use color to highlight sectional and paragraph structure and to indicate liturgical rubrics, section names, comments, and marginal notes. The first letter of each paragraph is also often colored red.

4.1 `\cuKinovar`

Takes a single argument and prints it using red color. For example, explicitly specifying its argument one gets the expected result:

`\cuKinovar{ли́къ:} гдⷭ҇и поми́лꙋй.`	ли́къ: гдⷭ҇и поми́лꙋй.

If one uses the TEX mechanism of implicit argument detection, then the first character of the text after this command will be printed in red. However, a non-trivial feature of this command is that it will also “collect” all of the

diacritical marks that belong to this first character, and thus all accents will also be colored in red! Use this command in the indirect parameter mode to print in red the first letter of each paragraph.[1]

\cuKinovar Пои́мъ гдⷭ҇ви пѣ́снь но́вꙋю	Пои́мъ гдⷭ҇ви пѣ́снь но́вꙋю
\cuKinovar Ꙗ҆́кѡ тꙋ́ча на тро́скотъ	Ꙗ҆́кѡ тꙋ́ча на тро́скотъ

4.2 \cuKinovarColor

Switches the current color to red. One would typically use this command inside a group that limits the scope of red text, unless you want all subsequent text to be colored red.

5 Miscellaneous

5.1 \cuMarginMark, \cuMarginMarkSkip, & \cuMarginMarkText

The command \cuMarginMark is used to place short text in the margin at the same level as the line where the macro is placed. Example:

```
\cuMarginMark{в҃}\cuKinovar Бл҃гослови̑ дꙋ́шѐ моѧ̀ гдⷭ҇а и҆ не забыва́й
всѣ́хъ воздаѧ́нїй є҆гѡ̀. \cuMarginMark{а҃}\cuKinovar Ѡ҆чища́ющаго
всѧ̑ беззакѡ́нїѧ твоѧ̑, и҆сцѣлѧ́ющаго всѧ̑ недꙋ́ги твоѧ̑:
\cuMarginMark{в҃}\cuKinovar И҆збавлѧ́ющаго ѿ и҆стлѣ́нїѧ живо́тъ тво́й,
вѣнча́ющаго тѧ̀ мл҃тїю и҆ щедро́тами: \cuMarginMark{а҃}\cuKinovar
И҆сполнѧ́ющаго во бл҃ги́хъ жела́нїе твоѐ, ѡ҆бнови́тсѧ ꙗ҆́кѡ ѻ҆́рлѧ
ю҆́ность твоѧ̀.
```

Will result in:

[1] You can also experiment with the TeX command \everypar to automate this, but the success or failure of this technique critically depends on the LaTeX class used and packages loaded. We found it very fragile and thus the churchslavonic package does not offer any automation for this task. It may be easier and more robust to use the Find/Replace functionality embedded in any non-trivial text editor to just automatically place a \cuKinovar command before every paragraph of the source text.

Бл҃гословѝ дꙋшѐ моѧ̀ гдⷭ҇а и҆ не забыва́й всѣ́хъ воздаѧ́нїй в҃
є҆гѡ̀. Ѡ҆чища́ющаго всѧ҄ беззакѡ́нїѧ твоѧ҄, и҆сцѣлѧ́ющаго д҃
всѧ҄ недꙋ́ги твоѧ҄: И҆збавлѧ́ющаго ѿ и҆стлѣ́нїѧ живо́тъ в҃
тво́й, вѣнча́ющаго тѧ̀ млⷭ҇тїю и҆ щедро́тами: И҆сполнѧ́ющаго д҃
во бл҃ги́хъ жела́нїе твоѐ, ѡ҆бнови́тсѧ ꙗ҆́кѡ ѻ҆́рла ю҆́ность
твоѧ̀.

The marginal mark is placed on the right margin for odd pages and on the left margin for even pages (e.g. the mark is placed on the "outer" margin, not the spine margin), which is usualy the desired behavior.

The distance between the mark and the text is controlled by the value of `\cuMarginMarkSkip`. The default is:

```
\def\cuMarginMarkSkip{0.6em}
```

To globally customize the font and color of the margin mark use `\cuMarginMarkText`. For example, to make margin marks appear in red color, redefine `\cuMarginMarkText` in the preamble of your document like this:

```
\def\cuMarginMarkText#1{\cuKinovar{#1}}
```

If you need to change the font/size/color just for a single mark, you can do it directly with `\cuMarginMark`:

```
\cuMarginMark{{\tiny *}}
```

5.2 Dropcaps

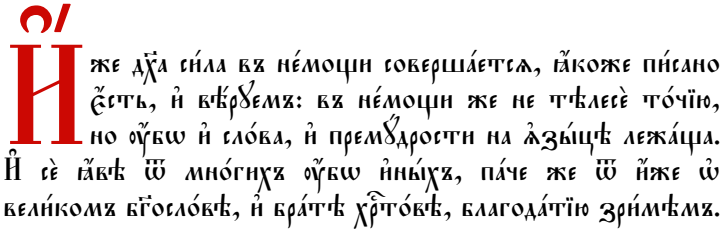
The mechanism that the `\cuKinovar` macro is using to collect all accents (when the argument is specified implicitly) can be useful for many other purposes. One example is to typeset a dropletter at the beginning of a chapter (this is often used in Church Slavonic texts). For this purpose, the standard LaTeX package lettrine works just fine. The only nuisance is that one has to be careful to pass to `\lettrine` not just the first letter, but also any diacritical marks that attach to this letter. Naturally, we want to reuse the clever mechanism that `\cuKinovar` uses, and automatically collect the diacritical marks!

Here is an example of how to accomplish this:

```
\def\cu@lettrine{\lettrine[lines=3,findent=0pt,nindent=0pt]}
\def\cuLettrine{\cu@tokenizeletter\cu@lettrine}
\renewcommand{\LettrineFontHook}{\cuKinovarColor}
```

Once this definition of `\cuLettrine` is created (somewhere in the preamble, between the declarations `\makeatletter` and `\makeatother`), you can create drop capitals like this:

```
\cuLettrine Йже дх҃а сила вх немощи совершается...
```



References

[1] Aleksandr Andreev, Yuri Shardt, and Nikita Simmons. *Church Slavonic Typography in Unicode*, Uncode Technical Note 41. 2015. `http://www.unicode.org/notes/tn41/`