

OLD STANDARD

A Unicode Font
for Classical and Medieval Studies

User's manual
Version 2.0

Alexey Kryukov

This manual is set in Old Standard with Latin Modern fonts used for missing styles (e. g. typewriter fonts).

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Chapter 1

About Old Standard

Everybody who has ever thumbed through any old books printed in the late 19th or early 20th century may have noted a specific typeface style most commonly used at that time: basically, a variation of the modern (classicist) antiqua, but less contrast and more legible. This group of typefaces also had an accompanying style of italics with some specific shapes: *k* with the upper leg terminating with a rounded ball, open bowl on *g* (again, with a rounded ball at its end), curved bowl on *y* and so on. May be, you was wandering, why it is so difficult to find a digital typeface of similar style, despite of the vast amount of computer fonts currently available. In general, the Modern style was almost completely abandoned in the middle 20th century, as it no longer corresponded to the tastes of the time; moreover, contemporary typographers often consider this lettertype obsolete and out-of-fashion due to its “unnaturality”.

Nevertheless, the classicist style in general, and its modification used in early 20th century in particular, has at least one advantage: it is still very suitable for typesetting scientific papers, especially on social and humanitarian sciences, as its specific features are closely associated in the people’s eyes with old books they learned on. However, it would be even more important to stress the fact that the book printing in many non-Western languages first appeared or was greatly improved in 19th century, and thus many classical typefaces for non-Latin scripts (the most beautiful examples of Greek and Cyrillic lettertypes in particular) were designed to be harmonizable with the Modern faces — the standard Roman printing style of the time.

That’s why the Modern style should be considered an extremely good choice for typesetting multilingual texts, and so I am really surprised that still nobody has attempted to implement a multilingual typeface on this basis. Instead, multilingual typesetting is usually done with Times-styled fonts, which eliminate specific features of each script instead of stressing them. This is the main reason for which I have designed Old Standard, a multilingual font which attempts to revive the most common printing style of early 20th century. Old Standard has two main purposes: it is intended to be used as a specialized font for philologists (mainly classicists and slavists) and also as a general-purpose font for typesetting various editions in languages which use Greek or Cyrillic script. For this reason Old Standard provides glyphs for a wide range of Latin, Greek and Cyrillic characters.

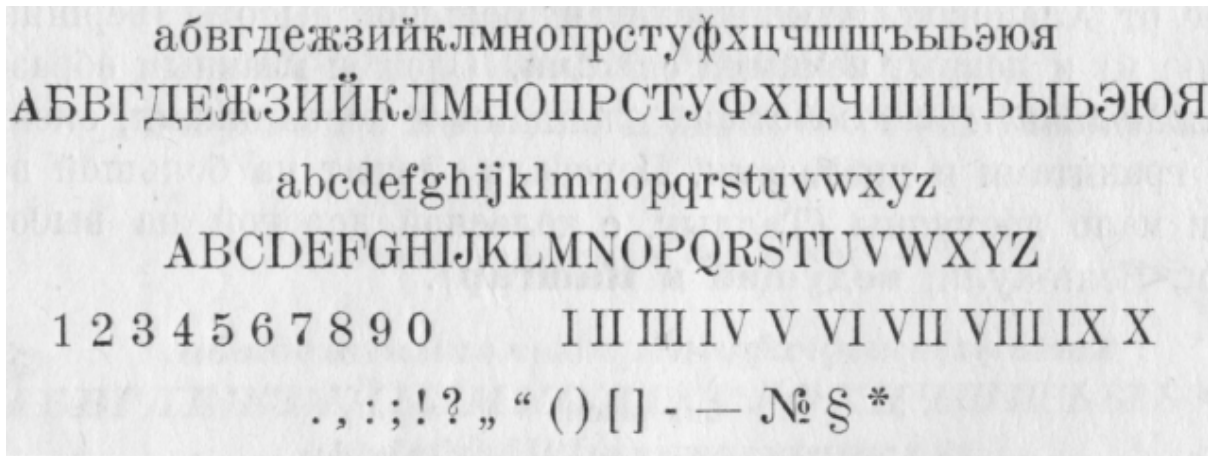


Figure 1.1: The regular version of the Russian “Standard” typeface from the 1966 font catalogue

1.1 Origin and Design

Old Standard was first intended as a digital version of *Обыкновенная* (Standard) typeface found in the following font catalogues printed in the Soviet Union:

- Каталог ручных и машинных шрифтов. М.: Книга, 1966.
- Каталог ручных шрифтов и наборных украшений. Харьков: Прапор, 1973.

That’s where the name originates from: I have only added “Old” to stress the difference from *Обыкновенная Новая* (“New Standard”) — another, a bit similar and yet quite different typeface, much more popular in the Soviet typography. Currently there is a good digital version of New Standard, available from [Paratype](#), so I was not planning to reproduce it.

Later, however, I realized that the *Обыкновенная* typeface, as it was used in Soviet printing of the second half of the 20th century, is not an independent family, but rather a bunch of various sets inherited from pre-1917 Russian typography. So I had to improve the initial design basing mainly on various Russian and German editions of the late 19th and early 20th centuries, mainly manuals of ancient languages and editions of classical (Greek and Latin) authors, where I could find good examples of Latin, Greek, and, in case of Russian books, also Cyrillic letters, used alongside. I have also brought the following font catalogue, which, unlike later Soviet catalogues, contains examples of several “Standard” typefaces, so that I could compare the letterforms and select those I considered the most elegant: Государственный трест ВСНХ «Полиграф». Образцы шрифтов. М., 1927.

Thus the current version of Old Standard doesn’t reproduce any particular typeface, but rather attempts to revive the general style of the early 20th century typography (mostly Russian and German). Nevertheless, I have decided to keep the initial name: of course, it doesn’t look very original, but seems to be a good choice for a lettertype which was once so common that no special name was associated with it (typefaces of this style are usually called just “Standard” or “Modern” in old font catalogues).

1.2 Greek font design

The Greek characters in Old Standard require a separate note. The upright letters follow the style first introduced by famous French typesetter Firmin Didot and then widely used in various editions both in Greece itself and many other European countries. It would be no exaggeration to state that the most part of Greek editions printed in continental Europe for more than 100 years was set with Didot faces. So it is no wonder that digital versions of this design have already been created by several type foundries. However almost all these fonts either cover just the Greek script and provide no support for Latin (not to say Cyrillic) characters, or combine Didot's Greek design with a stylistically incompatible (usually Times-styled) Latin face. Most of them (even some highly overpriced commercial products) also don't meet my quality standards.

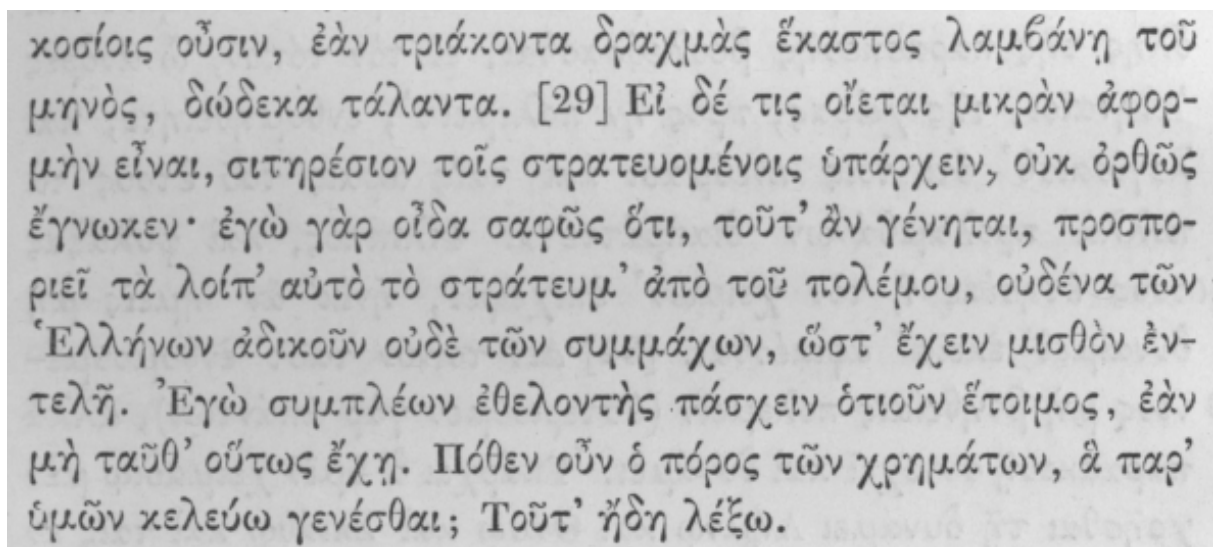


Figure 1.2: An excerpt from a French edition typeset with a Didot face. The example is taken from: *Les harangues de Démosthène*. Text grec publié d'après les travaux les plus récents de la philologie avec un commentaire critique et explicatif, une introduction générale et des notices sur chaque discours par Henri Weil. Deuxième édition entièrement revue et corrigée. Paris, 1881.

A notable exception is **GFS Didot**, now available for free from **Greek Font Society**. Unlike many others, the designers of this font did care about a matching Latin face, but, surprisingly, their choice has nothing to do with the classicist style: instead, they implemented their font as an accompanying Greek family for Adobe Palatino. For this reason the proportions and metrics of GFS Didot are quite different from those of original Greek Didot; in particular ascenders and descenders are significantly shorter. The Unicode version now comes with its own Latin alphabet, but, again, it is based mostly on the Palatino design, although some glyph features are adapted to the geometrical shapes of Greek capitals. The resulting font may be very elegant, but, again, it is not suitable to reproduce the authentic look of old editions, and essentially should have not been called Didot due to a different style of its Latin part.

It should also be noted that the historic Didot style had several variations; in particular its **German version** (popular also in Russia) is slightly different from the **font used in**

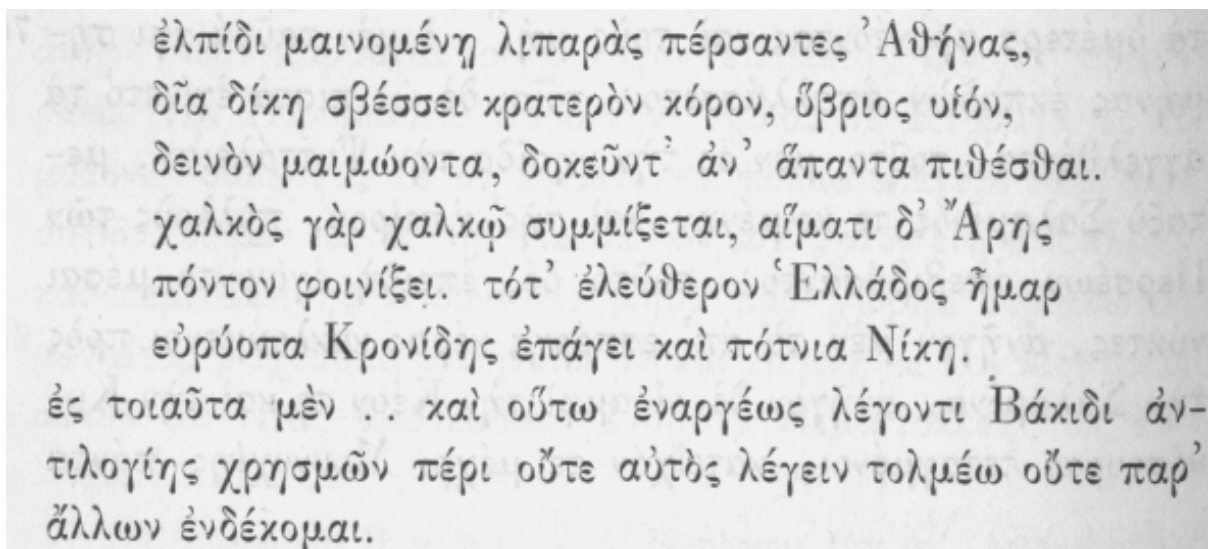


Figure 1.3: A modification of the Didot style, used in German editions. The example is taken from: Herodoti Historiae. Recensuit Henricus Stein. Tomus II. Berolini, 1871. P. 318.

French editions of the same time. Old Standard seems to be the only digital typeface which follows mostly the German and Russian understanding of the Didot style, although for some characters (e. g. Greek circumflex) I have preferred French forms, considering them more elegant.

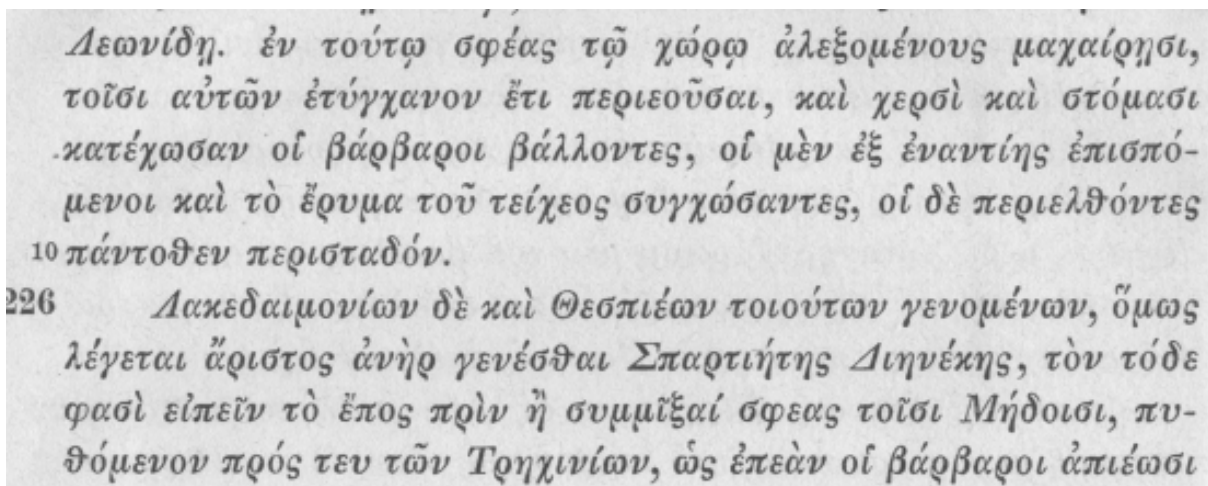


Figure 1.4: An example of the Teubner Greek font, taken from: Herodotus für den Schulgebrauch erklärt. Von Dr. K. Abicht, Direktor des Gymnasiums zu Ols. Vierter Band. Buch VIII. Dritte verbesserte Auflage. Leipzig, 1882. S. 192.

Designing an italic style for a Greek typeface represents a separate problem. Most modern implementations of Greek Didot are accompanied with italic versions obtained by applying a slant to the upright glyphs. I have chosen a different solution: instead of creating a slanted version of the Didot family (completely unknown to the traditional typography), I have based my italics on various cursive Greek fonts actually used in the German typography of the early 20th century. The most elegant of those fonts was the

face used by the famous Teubner publishing house in Leipzig for their editions of classical authors.

Surprisingly, until recently nobody has attempted to implement a digital version of the **Teubner Greek font**, and this is a pity, because Teubner editions are still considered a model of fine Greek printing in Germany, Russia and, I think, many other European countries, exactly like the Loeb classical library in the Anglo-American world. It should be noted here that the actual Teubner typeface is sometimes confused with another cursive Greek font, also called “*λιπσιακό*” in Greece, which does have some digital implementations, in particular Monotype Greek 91 and the grml/grbl fonts which Claudio Beccari has designed to provide a matching italic font for his CB Greek package. Indeed, a similar font was sometimes used in Leipzig editions (mainly for headings), but it is quite different from the standard text face these editions are set with.

I should admit however, that even Old Standard Italic doesn't provide an authentic reproduction of the Teubner font. The problem is that the Greek letters used in Leipzig editions are a bit bolder than their accompanying Latin face, so that it was really difficult to bring them into a better correspondence with Latin and Cyrillic glyphs. That's why I had to consider also some less elegant, but lighter Greek typefaces used by other printing houses in Germany at the same time. I hope however that the general style of the Teubner font is preserved, so that anybody who likes Leipzig editions of classical authors will like Old Standard as well.

Chapter 2

Installation and Usage

2.1 Obtaining Old Standard

If you are reading this document, then you probably have already downloaded Old Standard. You may check if you have the most recent version by visiting the following page at the Thessalonica web site:

<http://www.thessalonica.org.ru/en/fonts.html>

This page contains information about all font projects I am currently developing and download links.

2.2 Which format to prefer?

The Old Standard font family is currently available in two formats, so that before downloading fonts you should consider with which software you are planning to use them:



TrueType fonts, or, more precisely, **OpenType** fonts with TrueType outlines. These fonts use the file extension *.ttf, and under Windows they appear in a folder or on a disk using a dog-eared page icon with two overlapping “T’s” (for TrueType);



OpenType fonts with PostScript outlines (also called OpenType-CFF), with an *.otf extension. The Windows icon for a PostScript-flavored OpenType font is a dog-eared page icon with an “O” (for OpenType).

It is worth pointing out, that, despite of the old “TT” icon used by Windows to represent them, the TrueType fonts actually support the same set of advanced **OpenType** features as their OpenType-CFF counterparts (see [chapter 3](#) for information on how to take advantage of those features).

Note that you can install both TrueType and OpenType-CFF versions alongside, as they use different naming conventions (the TrueType fonts have a “TT” suffix in their names). However, in most cases you will probably prefer the TrueType fonts, as this format was introduced long time ago and now is widely supported on various platforms and operational systems.

OpenType-CFF is a relatively new font format, which is sometimes preferred over TrueType for the purposes of the desktop publishing. A system-level support for this font format was first introduced in Windows 2000, but in practice it was poorly supported by Microsoft software until Office 2003 was released. In particular, before Office 2003 one could not use OpenType-CFF fonts to input a non-Latin text in Microsoft Word, although it was possible to apply them to an existing text. Even now some problems still persist: the most important one is that in most applications *kerning*¹ will work only for the first 256 characters in the font. Of course this means that you can get kerning working neither for Greek nor for Cyrillic letters. The only exception are Adobe's desktop publishing applications (InDesign, Illustrator, Photoshop), which don't have this problem and provide a really good support for OpenType-CFF fonts. I hope the situation will change in future, but now I can recommend installing the OpenType-CFF versions under Windows only if you are planning to use them with the Adobe software.

You can install OpenType-CFF fonts also in Unix-like systems (since this format is supported by the FreeType library), but be aware that here you can face even more problems than under Windows. The worst thing is that OpenOffice.org currently can't access OpenType-CFF fonts at all, although this issue was already several times reported to the developers. Some other applications have no such problem, but they are still unable to access OpenType kerning information. The exceptions are rare: the only GUI application which allows to take a full advantage of the OpenType-CFF fonts is Scribus, an open source desktop publishing system. You can also use OpenType fonts with the Linux port of $\text{X}_{\text{F}}\text{T}_{\text{E}}\text{X}$ — the Unicode version of the $\text{T}_{\text{E}}\text{X}$ typesetting system. In particular this manual was set with $\text{X}_{\text{F}}\text{T}_{\text{E}}\text{X}$ and the OpenType-CFF versions of the fonts.

2.3 Source Package

You also can download the FontForge sources of the Old Standard font family. Of course this package may be useful for you only if you have the **FontForge** font editor, as well as some other font editing utilities, and know how to use them. Note that downloading the source package may make a sense for you only if you are going to apply some modifications to the original files, i. e. to prepare your own version of the fonts. Please consult the **Terms of Use** section of this document to see which license conditions should be met when distributing such derivative works.

Sometimes I am getting e-mails from packagers of Linux distributions asking if they could build Old Standard from sources just like they used to do for application executables. Well, I can't prohibit this (as the fonts are available under a free license and even the name itself is not reserved, as explained **below**) but **I strongly discourage doing so**. The reason is that, despite the common name, font sources aren't very much like application sources, and similarly TTF or OTF fonts have very few common with compiled programs. When an application is built from sources, the resulting files are usually suitable only for a particular platform or system and cannot be used in other environments. Fonts represent just an opposite case: font sources are specific for a particular font editing

¹Kerning is the adjustment of space between pairs of letters, especially by placing two characters closer together than normal. Kerning makes certain combinations of letters, such as WA, MW, TA or VA, look better. Kerning data is specific for each particular font and for this reason is normally specified in the font file; carefully designed fonts normally have a large number of kerning pairs.

application, while the output files are suitable for various platforms and can be easily disassembled/opened/edited.

This means rebuilding fonts from sources will not give you any productivity improvements, but you can easily lose some functionality (e. g. because your FontForge version doesn't work exactly like one I used to build the original font files). That's why I can recommend this approach only if you know what you are doing and your intent is to apply some real changes/ improvements to the font sources.

2.4 System Requirements

2.4.1 Windows

Old Standard is a large Unicode font.

For Windows, you need at least Windows 95 (or at least Windows 2000 for the PostScript-flavored OpenType fonts) and a word processor that can handle Unicode-based documents: either Microsoft Word 97 / 2000 / 2002 (= XP) / 2003 / 2007 or OpenOffice.org 1.0 or above. For more information about OpenOffice.org, a full-featured, open-source cross-platform suite comparable to Microsoft Office that is attracting considerable interest these days, see <http://www.openoffice.org>.

You will also need a way to enter the Unicode characters that are not directly accessible from standard keyboards. Remember that you can browse the contents of any font and copy characters to the clipboard by using the Character Map utility that comes with Windows. Character Map does not support Unicode values beyond the Basic Multilingual Plane; an excellent alternative is Andrew West's [BabelMap](#) (free). Some applications also provide their own mechanisms for entering characters, such as Insert→Symbol in MS Word or Insert→Special Character in OpenOffice.org. In Microsoft Office applications you can also enter a Unicode character by typing its hexadecimal number followed by ALT-x.

Of course inputting Unicode characters via a character table or accessing them directly by their hexadecimal codes has some significant disadvantages: first, it is relatively slow and so may be used only for characters which you need relatively rare, and second, it may be recommended only for experienced users, since Unicode includes a lot of similar characters, which, however, are intended for different purposes, so that sometimes it is difficult to make the correct choice without consulting the documentation. So normally you will need a special keyboard utility allowing to input characters needed for the language of your choice. Some custom keyboard layouts for such languages as Classical Greek are provided by my [Thessalonica](#) package. Alternatively, you may use [Tavultesoft Keyman](#) — the leading keyboard mapping utility, providing an extensive range of features. There is a large number of keyboard layouts already designed for Tavultesoft Keyman, so you probably just have to check [the list of available keyboard](#) to select one or more which are suitable for your needs.

2.4.2 Linux and X11 Windowing Environment

Most Unix-like systems now use the same basic framework, called X Window System (commonly X or X11) to build graphical user interfaces. This means that all issues related

with font installation and usage are basically the same, no matter, if you use Linux, BSD, Solaris or some other system. In order to be able to handle TrueType or OpenType fonts your system should have the **freetype** library installed and enabled; this is normally done by default in all modern distributions. As under Windows, you will need a Unicode-aware word processor. Presumably you will do most of your work in OpenOffice.org; other, less powerful word processors, like AbiWord or KWord, support Unicode as well.

As under Windows, you may input Unicode characters using either a character map utility (both the most full-featured X11-based desktop environments, KDE and Gnome, include such utilities, comparable with the Windows Character Map), or a special keyboard driver. Again, you can try **Thessalonica** for OpenOffice.org. Another good choice is **kmfl** — a keyboarding input method which aims to bring Tavultesoft Keyman functionality to *nix operating systems. KMFL is being jointly developed by **SIL International** and **Tavultesoft**. Note that KMFL is not available by default in some popular Linux distributions, so that you may have to compile, install and configure it yourself. This task is a bit difficult for an average user, but the result surely worth efforts.

2.5 Installation Instructions

2.5.1 Windows

Font installation under Windows is simple. You can install Old Standard as you would any TrueType or OpenType-CFF font by placing the font files to the Windows **fonts** folder. To do that:

1. Go to the Windows Control Panel and open the “Fonts” applet;
2. On the File menu, select “Install New Font...”;
3. Switch to the drive and directory that contain the fonts you want to add;
4. To select more than one font to add, press and hold down the CTRL key, click the fonts you want, then click on OK.

You may need to restart some applications before they can access the fonts you have just installed.

2.5.2 Linux and X11

Currently there are no prepackaged RPM or DEB files for Old Standard, but, of course, you can always install the fonts manually, which is actually not so complex task with modern Linux distributions. A tricky part is related with the fact that there are actually two engines responsible for font installation and handling in X11 environment: **fontconfig** and an older X11 engine. Since fontconfig is used by almost all recent applications (including those based on GTK2 and QT4), in most cases it is sufficient to install fonts via fontconfig (this is the only option in case of OpenType-CFF fonts). On most distributions you can do that just by placing the font files to your `/usr/local/share/fonts` directory. After that you may need to run

```
$ fc-cache
```

from your command line to update your fontconfig configuration. You can also use a graphical font installation tool provided by KDE (the most powerful graphical desktop environment for X11), but be aware that this tool actually does just the things described above, i. e. copies the fonts to the appropriate directory and runs `fc-cache`.

However, if you want to make TrueType fonts accessible to some older X11 applications, then additional steps are required:

1. Find the place in your directory tree where your X stores TTF fonts. The usual place is `/usr/X11R6/lib/X11/fonts/truetype` and the subdirectories therein;

2. create under that location a subdirectory for the fonts you are going to install, for example:

```
$ mkdir /usr/X11R6/lib/X11/fonts/truetype/oldstand.
```

You should become root to do that. Then copy the *.ttf files there:

```
$ cp *.ttf /usr/X11R6/lib/X11/fonts/oldstand/;
```

3. switch to the directory where you have just copied the font files and run the following commands:

```
$ ttmkfdir > fonts.scale $ mkfontdir
```

4. Now the hardest part: we have to inform your X server about the path where the recently installed fonts are placed. This can be done by two ways:

- (a) in most distributions fonts are managed directly by the X11 system. In this case the information about font paths is stored in the main X11 server configuration file, which is located under `/etc/X11` and may be called `xorg.conf`, `XF66Config` or `XF86Config-4` depending from your distribution and the version of the X11 server it uses. So open that file in your favorite text editor, and add the following line to the “Files” section:

```
FontPath "/usr/X11R6/lib/X11/fonts/oldstand/";
```

- (b) some Linux distributions (**Alt Linux** in particular) handle fonts using a special X Font Server (xfs). You can easily determine if your distribution belongs to this second group, as in this case the only “FontPath” element in your `xorg.conf` or `XF86Config` will look as follows:

```
FontPath "unix/:-1"
```

If you have noticed such a line in your main X11 configuration file, you should keep it untouched and instead edit the `/etc/X11/xfs/config` file and add the new font path there.

5. Finally, if everything is done correctly, the fonts will be accessible for X11 applications when you restart your X Server. However, you can also activate your new fonts immediately. Again, this can be done by two ways:

- (a) if your system doesn’t use xfs, then you should execute the following commands:

```
$ xset fp+ /usr/X11R6/lib/X11/fonts/oldstand/
```

```
$ xset rehash
```

- (b) otherwise you have to restart your X Font Server. Usually this can be done by executing

```
$ service xfs restart
```

2.5.3 OpenOffice.org

Under MS Windows OpenOffice.org just uses system-wide installed fonts, but Unix versions have their own font administration utility, inherited from the dark times when no suitable engine that would be able to properly handle scalable fonts existed at the X11 level. Normally OpenOffice.org can automatically detect X11 fonts and add them to its configuration (so no additional steps are required), but sometimes it fails to find them. In this case you should let OpenOffice.org know about your new fonts using the `spadmin` utility. You can either run this tool manually from your OpenOffice.org directory, or select the “OpenOffice.org printer administration” GUI menu item in KDE or Gnome (you should close any open OpenOffice.org instances before you can do this). When the `spadmin` window appears, do the following:

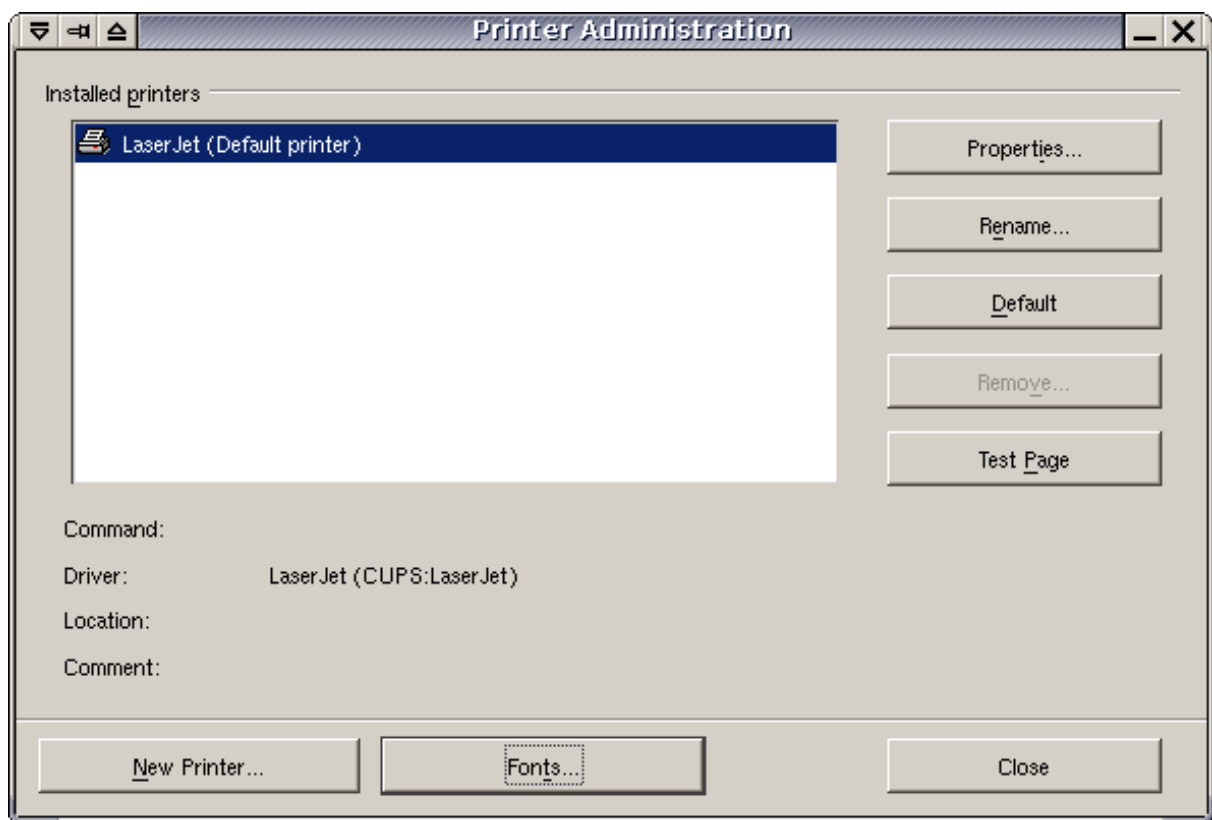


Figure 2.1: The OpenOffice.org printer administration utility: main window

1. click on the “Fonts...” button;
2. click on ”Add...“;
3. look for the directory where the fonts are installed
(e. g. `/usr/share/fonts/truetype/oldstand/`), as [Figure 2.2](#) shows;

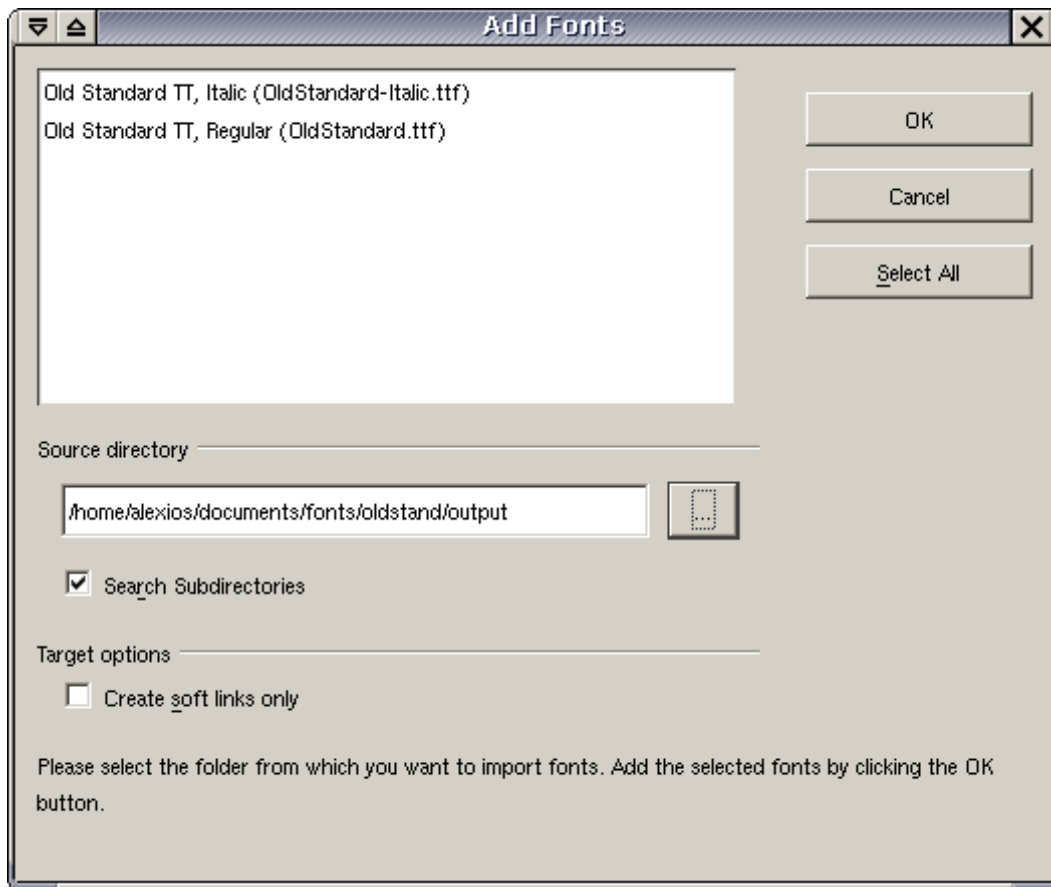


Figure 2.2: Adding new fonts to OpenOffice.org via spadmin

4. Click on “Select all”;
5. Click on OK.

When you restart OpenOffice.org, the fonts should be available to its applications.

2.5.4 TeX systems

Adding new fonts to a TeX installation is always difficult for an average user, as in order to use a font with TeX typesetting system one has to generate many additional files, TeX font metrics files (TFM) in particular. Yet I still haven’t provided a TeX support package for Old Standard, mainly because Old Standard currently has only three shapes (regular, italic and bold), and thus such a package would have very limited functionality from the TeX point of view. However, you can easily use Old Standard (as well as any other TrueType or OpenType-CFF font) in your TeX documents without any additional steps if you install X_YTeX — a Unicode enabled version of the TeX compiler, currently actively developed by [SIL international](#).

X_YTeX has many other advantages over traditional TeX compilers, as it combines the full Unicode support with a very good support of advanced **OpenType** features. In particular, this manual (including all examples demonstrating smart font rendering features available in Old Standard) was typeset with X_YTeX.

2.6 Terms of use

The current version of Old Standard is distributed under the [SIL Open Font License \(OFL\)](#) v. 1.1. I have selected OFL for my typeface because it is the only known license developed specially for fonts, which meets the standards of the FLOSS (Free/Libre and Open Source Software) community, in particular the Debian Free Software Guidelines. Both the text of the license itself and the OFL FAQ are included into the fonts package, so I don't reproduce them here. Basically licensing under OFL means that you can freely use, copy, modify and distribute the fonts, as long as the terms of the license are not violated. In particular you are not allowed to remove the original copyright notices from the font software and to change licensing conditions (i. e. distribute either original or modified versions under a different license). One more significant restriction is that you can't sell the fonts alone (however OFL allows to bundle and sell them together with any other software, either free or commercial).

A large part of OFL is devoted to so-called Reserved Font Names which can't be used in derivative works without a written permission of the original author. However there are no Reserved Font Names specified for Old Standard. This is because I think I can't prohibit anybody from using such common words as "Old" or "Standard" in their font names. In fact I even encourage you to base names of your modified versions on the original one, so that the user can easily determine where the main design comes from. For example, if you have modified Old Standard in order to get Serbian Cyrillic glyphs displayed by default instead of Russian ones, it might be logical to call your version "Old Standard Serbian". It is still desired however that you don't take the original name as is, but add some suffix specific for your version.

Note that this manual is NOT covered by SIL OFL, but distributed under the [GNU Free Documentation license](#). See [chapter 4](#) for more information.

2.7 Acknowledgments

I would like to thank:

- George Williams for his excellent [FontForge](#) program, and especially for his responsiveness in fixing bugs and adding new features. Without his assistance this package would never be released!
- Peter Baker for his [xgridfit](#) utility, which provides a good Open Source solution for adding TrueType instructions to a font, and also for valuable information on the design of the Middle English letter yogh he provided;
- Tavmjong Bah (Tav), who kindly granted me his Perl scripts (originally written for his [Arev fonts](#)) used to convert separate kerning pairs defined in a FontForge source file into kerning classes;
- [Andrew Panov](#) for valuable remarks on the design of mathematical characters and scanned images he provided.

Chapter 3

Multilingual Support, Unicode and OpenType

3.1 Unicode coverage

3.1.1 General principles

Since Old Standard is a multilingual font family, I will always do my best to extend the range of supported characters, thus providing support for more languages. Nevertheless, I would like to protect my typeface from some problems shared by many similar free font projects. The developers of those fonts are often attempting to cover the widest possible number of scripts and Unicode blocks, even if the Unicode [code charts](#) is the only source of their knowledge about the design of a specific character. Of course, the resulting glyphs not always look really acceptable for actual typesetting. Moreover, due to the lack of time and resources the designers are often unable to keep all glyphs at the same quality level: for example, we often can see autogenerated accented characters with mispositioned diacritics. In particular, there are so many fonts which are claimed to support the extended Greek range, but actually are not suitable for typesetting classical Greek... Another common problem is that only the regular version of each particular font is really actively developed, while all additional weights and shapes fall far behind it (e. g. support much less Unicode characters).

That's why I have formulated for myself several principles which I am always trying to follow when designing additional glyphs:

- I shall never add any new characters just for completeness, i. e. to get a specific Unicode range fully covered. Before drawing a new glyph I must ensure that I really understand its intended purpose and the principles of its design;
- since Old Standard is supposed to reproduce the actual printing style of the early 20th century, I shall avoid implementing new characters basing just on general considerations. Ideally, all glyphs should be based on real examples taken from some old editions. Of course, exceptions from this rule are sometimes necessary, as many characters were first introduced only in 20th century, or even never existed in traditional typography before they were adopted by the Unicode standard;

- I shall try to develop all font styles (currently regular, italic and bold) only simultaneously, i. e. if a specific character is added to the regular font, it should also be designed for italics and bold. The exceptions are allowed for glyphs which don't have dedicated codepoints and supposed to be accessible via smart font features, as well as for those characters which have no corresponding italic or slanted style (this is the case of many mathematical symbols).

3.1.2 Character repertoire

Currently the following Unicode ranges are fully or partially covered by Old Standard:

Basic Latin (0000–007F) Fully supported.

Latin 1 Supplement (0080–00FF) Fully supported.

Latin Extended-A (0100–017F) Fully supported.

Latin Extended-B (0180–024F) Old Standard implements two groups of characters from this block, namely several letters needed for various Old Germanic languages and Croatian accented characters and digraphs.

IPA Extensions (0250–02AF) From this range Old Standard currently implements a few characters which can be used in other contexts, except IPA. One such example is U+0280 LATIN LETTER SMALL CAPITAL R, needed for the transliteration of Old Norse runic inscriptions.

Spacing Modifier Letters (02B0–02FF) Old Standard implements spacing versions of some combining diacritical marks, available in the next block.

Combining Diacritical Marks (0300–036F) Most standard accents, commonly used in various European languages, are supported.

Greek and Coptic (0370–03FF) Almost fully covered, except Coptic letters, editorial signs and some archaic characters, recently added to Unicode. These characters are rarely used and there is no stable tradition of their typographic representation. However, if you really need them, write me and I'll add them for you.

Cyrillic (0400–04FF) Old Standard implements all modern Slavic (i. e. Russian, Ukrainian, Byelorussian, Serbian and Macedonian) characters, as well as historical characters and extensions for Old Slavonic.

Phonetic Extensions (1D00–1D7F) Only one character (U+1D79 LATIN SMALL LETTER INSULAR G) is implemented. Note that the uppercase version of this letterform is now encoded in Latin Extended-D range.

Latin Extended Additional (1E00–1EFF) Old Standard implements accented combinations with W for Welsh and LATIN CAPITAL LETTER SHARP S (U+1E9E) for German.

Greek Extended (1F00–1FFF) Fully supported.

General Punctuation (2000–206F) Almost fully supported, although some characters, which might be of some interest for philologists, are still missing. Report me if you need them.

Superscripts and Subscripts (2070–209F) Subscript and superscript forms of digits and math operators (but not letters), available in this block, are covered.

Currency Symbols (20A0–20CF) The EURO SIGN U+20AC.

Letterlike Symbols (2100–214F) In this block Old Standard implements a few characters, belonging to the following two categories: first, a few standard symbols, present in most Western or Cyrillic fonts (in particular NUMERO SIGN U+2116, TRADE MARK SIGN U+2122 and OHM SIGN U+2126), and second, some characters which may be useful for textual criticism (such as Fraktur C and S).

Number Forms (2150–218F) Fully covered.

Mathematical Operators (2200–22FF) This block is far from being finished, and yet it already includes (I hope) all symbols which are most commonly used in mathematical typesetting.

Miscellaneous Technical (2300–23FF) In this block Old Standard implements angle brackets U+2329 and U+232A (these characters should probably be avoided: use “mathematical” angle brackets at U+27E8/U+27E9 instead) and ancient metrical symbols (23D1–23D9).

Geometric Shapes (25A0–25FF) Old Standard implements only a few of these symbols, for compatibility with legacy fonts and charsets.

Miscellaneous Mathematical Symbols-A (27C0–27EF) Old Standard implements mathematical angle, square and double angle brackets (useful also for critical text editions).

Supplemental Mathematical Operators (2A00–2AFF) In this block I have implemented only a few characters, in particular alternate “less than” and “greater than” symbols with a slanted bar, which actually were preferred forms in the traditional European typesetting before the arrive of modern standards.

Cyrillic Extended-A (2DE0–2DFF) Fully covered.

CJK Symbols and Punctuation (3000–303F) Again, Old Standard includes angle and square brackets at U+3008/U+3009 and U+301A/U+301B correspondingly, as some people have used to use them for textual criticism. Nevertheless “mathematical” versions of those characters (see above) should probably be preferred for their purposes.

Cyrillic Extended-B (A640–A69F) Old Standard implements letters and signs for Old Cyrillic (but not letters for old Abkhasian orthography).

Latin Extended-D (A720–A7FF) LATIN CAPITAL LETTER INSULAR G (U+A77D) and Ancient Roman epigraphic letters.

Private Use Area This block includes many different glyphs, but it is not recommended to use them directly. Instead, you should access them by applying various OpenType features (see [subsection 3.2.1](#) for more information), if only your application allows this.

Alphabetic Presentation Forms (FB00–FB4F) In this block the standard Latin f-ligatures are available.

Math Alphanumeric Symbols (1D400–1D7FF) Old Standard includes a few Fraktur letters, useful for critical editions of ancient/biblical texts. This block is far from being complete (and I am not planning to implement the whole alphabet anyway); however, it already includes all characters which appear in the Nestle—Aland New Testament.

3.1.3 TODO

As you can see, still lots of characters are waiting to be implemented. Since Old Standard is oriented mainly to historians and philologists, I am especially interested in adding those characters which might be useful for textual studies and studying various ancient languages. Here are some priorities:

- Some characters useful for medievalists are still missing from the Latin Extended-B range;
- Some accented characters from the Latin Extended Additional range (the first part, 1E00-1E9F), useful for Indic and Semitic transliterations. However, currently you already can type almost anyone of those characters using combining diacritical marks, if only your application supports smart accent positioning (as Microsoft Word 2003 for example);
- Some IPA characters (at least those needed for English phonetic transcription);
- Supplemental Punctuation (2E00—2E0D) and New Testament editorial symbols in particular. Again, I need some good examples showing these characters used in editions of the pre-computer era;
- A large group of medievalist additions has been adopted in Unicode 5.1. Of course it would be nice to implement them in Old Standard.

Currently I have no plans of providing support for any other scripts except Latin, Greek and Cyrillic, as there are other needs that are much higher priority. It is also very unlikely that I can implement small capitals and some other nice typographic features in the near future, although it would be really nice to have them supported.

3.1.4 How you can help

If you would like to get a specific character available in Old Standard, then probably the best help you can offer is to provide some high resolution (normally 600dpi) scans showing you character used in an old book, where the rest of text is set with a Modern typeface

(this condition is especially important for additional Latin letters). If it is impossible to find such examples (e. g. because your character had not yet been introduced at the time when Modern typefaces were popular), then at least provide a clear description on how it should be designed (or point me to a such description). Also remember that, except the upright character, I will have to implement also an italic version, and the design of italic glyphs may often require additional notes.

Of course you can also design the desired character(s) yourself and then contribute them to Old Standard. Such contributions are always very welcome, but be aware that I will review the submissions carefully in order to be able to guarantee a high level of quality for the fonts. Please don't be discouraged if I do not include a submission for this reason, or ask you to make some specific revisions.

3.2 Smart Font Capabilities and Language Support

This section is intended to demonstrate, how Old Standard can be used for typesetting texts in various languages. This assumes discussing two types of issues: “smart” font rendering features intended to provide a better support for each specific language and some glyph design peculiarities. As the implementation of “smart” features in Old Standard is based on the OpenType technology, I had to start this section from a special paragraph about OpenType. After that the manual describes various language-specific details, sorting them by scripts: Latin, Greek and Cyrillic.

3.2.1 What is OpenType?

OpenType is a smart font rendering technology, that allows proper typographic treatment of complex scripts and advanced typographic effects for simpler scripts. This is achieved by applying various *features*, or *tags*, described in the OpenType specification. Some of those features are supposed to be enabled by default, while others are considered optional. In order to get advantage of all those advanced typographic features, you need two basic components: a “smart” font including certain extra tables, where the features applicable to this font are specified, and an OpenType-aware application. Not all applications currently support OpenType, although their number is growing. So before relying on any smart features provided by Old Standard or another typeface you should carefully examine which of those features are expected to work in your application, and which are not.

The most popular OpenType rendering engine for Windows platform is the *Uniscribe* library, developed by Microsoft. This library is used not only by own Microsoft software, but also by many other Windows applications, for example, the Windows version of OpenOffice.org. Initially Uniscribe supported only complex scripts (like Arabic or Devanagari), but the most recent versions, supplied with Microsoft Windows XP SP2 and Microsoft Office 2003 (note that MS Office uses its own version of Uniscribe rather than the system library) also perform some processing for Latin, Greek and Cyrillic. The Uniscribe support for Western scripts is still limited: Microsoft Word 2003 performs only **accent positioning** and **character composition/decomposition**. On the other hand, the supported features are actually the most important ones, and they are really sufficient for proper text rendering, although without additional typographic niceties.

Adobe’s applications (such as InDesign) use another shaping engine, called *CoolType*, which provides access to many optional features offered by OpenType, such as small caps, stylistic sets and various types of ligatures. Old Standard currently supports some of those optional features, such as stylistic sets. To tell the truth, this functionality is very important from the point of view of a fine typography, but in most cases almost useless for a linguist. However beginning from the CS3 version Adobe Creativity Suite applications are said to support a wider range of OT features, including mark positioning and glyph composition/decomposition, which makes them much more suitable for typesetting linguistic texts when previously.

In the Unix world, there are at least two free OpenType rendering libraries. One such library is *Pango*, used in applications based on the GTK2 toolkit. This library currently has nearly the same capabilities as MS Uniscribe (although still there are some glitches). Another, even more powerful rendering engine is *ICU*, used by X_YTEX. ICU properly handles virtually all features provided by Old Standard, even those not supported by most other rendering engines (language-dependent substitutions for example). Unix versions of OpenOffice.org also use ICU, but, unfortunately, this is not very useful for our purposes, as they enable complex text processing only for complex scripts.

I know very little about Mac, but I have to mention that many applications for this platform also have a very good level of OpenType support. One such application is [Mel-lel](#), the leading word processor for Mac OS X, designed to serve scholars, creative and technical writing and multilingual word processing.

3.2.2 Latin Script

Standard Ligatures

Old Standard currently includes 5 standard f-ligatures (namely *ff*, *fi*, *fl*, *ffi* and *ffl*) present in most OpenType fonts and also *ffj* and *fflj* ligatures which are required for proper typesetting in Nordic languages. All these ligatures are accessible via the `liga` feature, enabled by default in most applications which support it (such as Adobe InDesign). Two language-dependent exceptions have been made from this rule, according to the common convention usually applied to OpenType fonts:

- Turkish, Azerbaijani and Crimean Tatar alphabets have two distinct versions of the letter *i*, one dotted and the other dotless. For this reason the *fi* and *ffi* ligatures are not applied for those language systems to avoid the confusion which would be possible otherwise.
- No ligatures are enabled by default for German, since this language has very complex rules of ligature processing. You still can get them if you enable the `dlig` feature tag in addition to `liga`.

Note that the exceptions described above will work as expected only if your application can perform OpenType processing depending from the current language.

Combining Mark Positioning

One of the most attractive possibilities offered by OpenType is smart diacritic positioning: if you type a letter followed by a diacritic from the Unicode “Combining Diacritics” range,

the diacritic will be placed exactly above or below the letter. To achieve this effect, an OpenType font should support the `mark` feature tag. This feature allows to add *anchor points* both to base letters and diacritics, so that, when an accent mark is typed after a base character, the glyphs are positioned by such a way that their anchor points are coincident. Another type of anchor points, specified by 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.

Old Standard provides proper `mark` and `mkmk` anchor points for most Latin letters and combining marks, so that you can type them in almost any combination and the result will be visually identical with the corresponding precomposed accented characters (in case they are available in the font). Most OpenType renderers (except older versions of Adobe's Cooltype library) support the corresponding feature tags, and so you can safely use these features in most OpenType-aware applications (MS Word 2003 for example).

Unicode Composition and Decomposition

Another important OpenType feature is `ccmp`. This feature allows to decompose a character into two glyphs or, on the contrary, to compose two characters into a single glyph for better glyph processing. Often such substitutions correspond to canonical (de)compositions specified in the Unicode character database, but this is not a required condition. So if we would like to replace a specific glyph or a group of glyphs with another glyph or a group of glyphs, such replacement can almost always be implemented via `ccmp`: the only important limitation here is that this feature is not supposed to (an often just cannot) be turned off, and thus it should not be used for optional typographic refinements, such as Latin ligatures.

Old Standard uses `ccmp` mainly to compose accented glyphs from an accent and a base character in those cases where a simple accent positioning would not produce the desired result. For example, the Czech alphabet has some accented characters (*d', l', t'*) where the accent is identified with the haček (caron), but actually looks like an apostrophe. So when you type *d, l* or *t* followed by combining haček, Old Standard just substitutes the corresponding Czech character for you.

There are also some situations where `mark` and `ccmp` should be used together to produce a better result. For example, before you can place an accent above letters like *i* or *j* you have to replace the base letter with a dotless variant first, and this can be done only with `ccmp`. For this reason all OpenType renderers which support accent positioning support also this feature (Word 2003 does).

Stylistic Sets

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 `ss01`, `ss02`... `ss20`. The following stylistic sets, currently available in Old Standard, are relevant for the Latin script:

ss01 This set allows to automatically substitute small and capital *s* and *t* with commaaccent (U+0218, U+0219, U+021A, U+021B) instead of the corresponding letters with cedilla (U+015E, U+015F, U+0162, U+0163), as required by Romanian typographic rules. The same substitution can be done automatically for

Romanian and Moldavian languages, if only your application supports the `local` feature tag; otherwise you can use `ss01` instead. Of course this is important only if the glyph variants with commaaccent are not typed directly (which is also possible, as now those letterforms have separate Unicode codepoints).

rațiune și conștiință ⇒ rațiune și conștiință
rațiune și conștiință ⇒ *rațiune și conștiință*

ss02 By enabling this feature tag you can get all occurrences of small and capital Latin *g* automatically replaced with “insular” forms, sometimes preferred for typesetting Old English:

Gosfregð ⇒ Œosfrezð
Gosfregð ⇒ *Œosfrezð*

This stylistic set is preserved for backwards compatibility: I no longer recommend using it, as both capital and small insular *g* now have dedicated Unicode codepoints, and it is probably better to type them directly.

Sample Text Fragments in Old and Classical Languages

Classical Latin Of course classical Latin is supported. Just an example:

Gallia est omnis divīsa in partes tres, quārum unam incōlunt Belgae, aliam Aquitāni, tertiam qui ipsōrum lingua Celtae, nostra Galli appellantur. Hi omnes lingua, institūtis, legībus inter se diffērent. Gallos ab Aquitānis Garumna flumen, a Belgis Matrōna et Sequāna dividit. Horum omnium fortissimi sunt Belgae, propterea quod a cultu atque humanitāte provinciae longissime absunt, minimeque ad eos mercatōres saepe commeant atque ea, quae ad effeminandos anīmos pertīnent, important, proximique sunt Germānis, qui trans Rhenum incōlunt, quibuscum continenter bellum gerunt. Qua de causa Helvetii quoque reliquos Gallos virtūte praecēdunt, quod fere cotidiānis proeliis cum Germānis contendunt, cum aut suis finibus eos prohibent aut ipsi in eōrum finibus bellum gerunt.

Gallia est omnis divīsa in partes tres, quārum unam incōlunt Belgae, aliam Aquitāni, tertiam qui ipsōrum lingua Celtae, nostra Galli appellantur. Hi omnes lingua, institūtis, legībus inter

se differunt. Gallos ab Aquitānis Garumna flumen, a Belgis Matrōna et Sequāna dividit. Horum omnium fortissimi sunt Belgae, propterea quod a cultu atque humanitāte provinciae longissime absunt, minimeque ad eos mercatōres saepe commeant atque ea, quae ad effeminandos anīmos pertīnent, important, proximique sunt Germānis, qui trans Rhenum incōlunt, quibuscum continenter bellum gerunt. Qua de causa Helvetii quoque reliquos Gallos virtūte praecēdunt, quod fere cotidiānis proeliis cum Germānis contendunt, cum aut suis finibus eos prohibent aut ipsi in eōrum finibus bellum gerunt.

Old English The following text (a writ from William the Conqueror to the citizens of London, 1066) demonstrates several specific characters used in Old English. Note the insular “G” automatically substituted instead of the regular Latin “G” by applying the stylistic set O2.

Will(el)m kynz gret Will(el)m bisceop and Ʒosfrezð portirēfan and ealle þā burhwaru binnan Londone, Frencisce and Englisce, frēondlice. And ic kȳðe ēow þæt ic wylle þæt zet bēon eallre þāra laza weorðe þē ȝyt wāran on Eadwerdes dæge kynzes. And ic wylle þæt ælc cyld bēo his fæder yrfnume æfter his fæder dæge. And ic nelle ȝepolian þæt æniz man ēow æniz wranz bēode. Ʒod ēow ȝehealde!

Will(el)m kynz gret Will(el)m bisceop and Ʒosfrezð portirēfan and ealle þā burhwaru binnan Londone, Frencisce and Englisce, frēondlice. And ic kȳðe ēow þæt ic wylle þæt zet bēon eallre þāra laza weorðe þē ȝyt wāran on Eadwerdes dæge kynzes. And ic wylle þæt ælc cyld bēo his fæder yrfnume æfter his fæder dæge. And ic nelle ȝepolian þæt æniz man ēow æniz wranz bēode. Ʒod ēow ȝehealde!

Middle English No special typographic features are required for typesetting Middle English, so the following example just demonstrates some characters, specific for this language, in particular the ȝ (yogh):

Our Lord, which ich shal douten, is my liztyng and my helpe. Our Lord is defendour of my lif; for what þyng shal ich drede? To þat noiand comen neze vp me, þat hij etand my flesshes: Myn enemys, þat trubleden me, ben made sike, and hij fellen. Ȝif hij setten manaces ozains me, myn hert ne shal nouzt drede. Ȝyf myn

enemy arere bataile ozains me, y shal hopen in þat. Ich asked þe lif þat euer shal last of our Lord; ich shal bisechen þat, þat ich mai wonne in þe hous of our Lord alle þe daies of my lif; Þat ich se þe wille of our Lord and uisite his temple.

Our Lord, which ich shal douten, is my liztyng and my helpe. Our Lord is defendour of my lif; for what þyng shal ich drede? To þat noiand comen neze vp me, þat hij etand my flesshes: Myn enemys, þat trubleden me, ben made sike, and hij fellen. 3if hij setten manaces ozains me, myn hert ne shal nouzt drede. 3yf myn enemy arere bataile ozains me, y shal hopen in þat. Ich asked þe lif þat euer shal last of our Lord; ich shal bisechen þat, þat ich mai wonne in þe hous of our Lord alle þe daies of my lif; Þat ich se þe wille of our Lord and uisite his temple.

Gothic Transliteration Two additional letters are used in Gothic transliteration: *þ* (þiuþ, thorn) and *h* (hwair). Both of them are available in Old Standard:

Akei ik sunja izwis qiþa: batizo ist izwis ei ik galeiþau; unte jabai ik ni galeiþa, parakletus ni qimiþ at izwis; aþþan jabai gagga, sandja ina du izwis. Jah qimands is gasakiþ þo manaseþ bi frawaurht jah bi garaihtiþa jah bi staua; bi frawaurht raihtis, þata þatei ni galaubjand du mis; iþ bi garaihtiþa, þatei du attin meinamma gagga, jah ni þanaseiþs saihiþ mik; iþ bi staua, þatei sa reiks þis fairhaus afdomiþs warþ.

Akei ik sunja izwis qiþa: batizo ist izwis ei ik galeiþau; unte jabai ik ni galeiþa, parakletus ni qimiþ at izwis; aþþan jabai gagga, sandja ina du izwis. Jah qimands is gasakiþ þo manaseþ bi frawaurht jah bi garaihtiþa jah bi staua; bi frawaurht raihtis, þata þatei ni galaubjand du mis; iþ bi garaihtiþa, þatei du attin meinamma gagga, jah ni þanaseiþs saihiþ mik; iþ bi staua, þatei sa reiks þis fairhaus afdomiþs warþ.

Old Icelandic A fragment of text in Old Icelandic. Note some specific letters used in that language, as well as the *ff* ligature.

Kømr nú þessi fregn fyrir Hrólf konung ok kappa hans upp í kastalann, at maðr mikilúðligr sé kominn til hallarinnar ok hafi drepit einn hirðmann hans, ok vildu þeir láta drepa manninn.

Hrólfr konungr spurðisk eptir, hvárt hirðmaðrinn hefði verit saklauss drepinn. „Því var næsta“, sǫgðu þeir. Kómusk þá fyrir Hrólfr konung ǫll sannindi hér um. Hrólfr konungr sagði þat skyldu fjarri, at drepa skyldi manninn — „hafi þit hér illan vanda upp tekit, at berja saklausa menn beinum; er mér í því óvirðing, en yðr stór skǫmm, at gǫra slíkt. Hefi ek jafnan rǫett um þetta áðr, ok hafi þit at þessu engan gaum gefit, ok hygg ek at þessi maðr muni ekki alllítill fyrir sér, er þér hafið nú á leit; ok kallið hann til mín, svá at ek viti hverr hann er“.

Kǫmr nú þessi fregn fyrir Hrólfr konung ok kappa hans upp í kastalann, at maðr mikilúðligr sé kominn til hallarinnar ok hafi drepit einn hirðmann hans, ok vildu þeir láta drepa manninn. Hrólfr konungr spurðisk eptir, hvárt hirðmaðrinn hefði verit saklauss drepinn. „Því var næsta“, sǫgðu þeir. Kómusk þá fyrir Hrólfr konung ǫll sannindi hér um. Hrólfr konungr sagði þat skyldu fjarri, at drepa skyldi manninn — „hafi þit hér illan vanda upp tekit, at berja saklausa menn beinum; er mér í því óvirðing, en yðr stór skǫmm, at gǫra slíkt. Hefi ek jafnan rǫett um þetta áðr, ok hafi þit at þessu engan gaum gefit, ok hygg ek at þessi maðr muni ekki alllítill fyrir sér, er þér hafið nú á leit; ok kallið hann til mín, svá at ek viti hverr hann er“.

A special note is required on the shape of the Icelandic letter *þ* (thorn). In modern fonts this character’s design is almost always based on the lowercase *p* with an ascender added. This design is also the only mentioned by Icelandic type designer Gunnlaugur SE Briem in his article [Thorn and eth: how to get them right](#). And yet this letterform doesn’t look characteristic for the traditional typography. Generally speaking, there were two styles of *thorn* most commonly used in the late 19th and early 20th century printing:

- a glyph based on the lowercase *p*, but with a double sided serif at the top of the ascender;
- a glyph with its top and bottom serifs positioned under an angle to the vertical stem and the bowl stretched upwards.

In both cases the upper element often doesn’t reach the full ascender height, which makes a significant advantage over the modern letterform where the glyph often looks unbalanced due to the fact that the ascender is significantly longer than the descender.

I have preferred the second form for the upright font, as it looks more elegant and seems to be preferable for Old English and the Gothic transliteration. However, it is important to stress the fact, that it is also perfectly suitable for Norse languages. In particular it was actively used for this purpose in the German printing, as for example the

“Sammlung kurzer Grammatiken Germanischer Dialekte” series, published in Halle a.S. in early 20th century and now, thanks to the [Germanic Lexicon Project](#), available on the web in the form high resolution scans, can demonstrate.

In the same books, however, the italic thorn already has the contemporary style. So I have implemented this letterform too in the italic font (where, indeed, it looks more appropriate than in the regular version).

3.2.3 Greek Script

Alternate Forms

In addition to the basic Greek alphabet the Unicode standard includes alternate forms for several letters, such as script *theta*, stroked *phi* and so on. These characters were included mainly for compatibility with legacy character sets (Symbol for example), and using them anywhere except mathematical contexts is strongly discouraged. Nevertheless, the fact these characters are encoded causes a great mess by itself, since it convinces font designers to think that any Greek typeface can and should include two basic forms for several Greek letters, and that some of these forms are always preferred for a Greek text, while others are intended only for mathematical usage. Of course this assumption is wrong: in fact all such letterforms are font-specific, so that normally only one of them is stylistically compatible with each particular typeface.

That’s why, although OldStandard implements several alternate forms for Greek letters, only a few of them can be considered really useful. The most important of such exceptions is curly *beta* U+03D0: this character, indeed, should be available in any correct Greek font, since according to the French typographic rules it is used instead of the regular *beta* with descender as a medial and final form (the same rule was sometimes applied also in Greece itself). For this reason French classicists often type U+03D0 directly in their documents, and particularly I see nothing wrong in this practice, although it is not recommended by Unicode. However, in a “smart” font it is also possible to implement a contextual substitution rule, allowing initial/medial forms to be automatically substituted at the correct places.

In Old Standard v. 1.0 I used contextual alternates (the `ca1t` feature tag) for this purpose, but later I realized this feature is normally enabled by default in most applications which support it, and, since contextual forms are not very common in contemporary Greek publishing outside France, most classicists would probably be discouraged if they appear automatically in their texts. So now a stylistic set (`ss06`) is used instead.

Theta is another letter, which can have two different forms, both of which are stylistically compatible with Didot faces. The Unicode code chart displays the closed *theta* θ at U+03B8 (thus making it the default letterform), while the open, or script variant form ϑ is mapped to U+03D1 and intended only for mathematical usage. Most fonts currently follow this convention. Historically, however, selection of one or another form has been made depending from national typographic traditions. In particular, French and Greek publishers certainly preferred the closed letterform, although in some 19th century editions the open *theta* is used at the beginning of words, i. e. a rule, similar to one of *beta*, is applied (see [Figure 3.1](#) for example). On the other hand, in German and Russian typography the open *theta* was normally used; this is also the only style of this letter found in the Teubner font and other cursive Greek typefaces of a German origin.

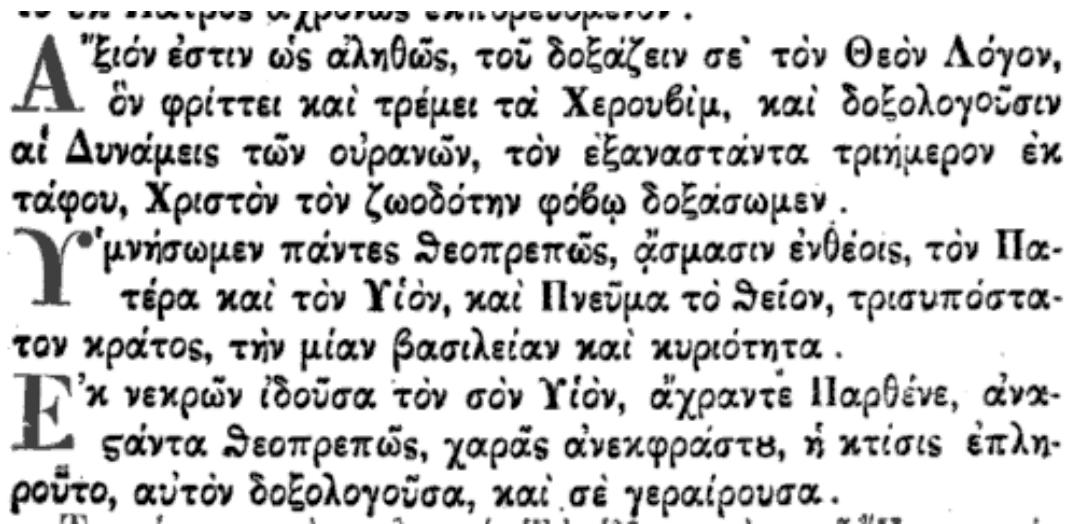


Figure 3.1: Contextual forms of *beta* and *theta* in traditional Greek typesetting. This example has been taken from: Ὁρολόγιον τὸ μέγα, περιέχον ἀπάσαν τὴν ἀνήκουσαν αὐτῷ ἀκολουθίαν, κατὰ τὴν τάξιν τῆς ἀνατολικῆς τοῦ Χριστοῦ ἐκκλησίας, καὶ ἐξαιρέτως τῶν ὑποκειμένων αὐτῇ εὐαγγῶν μοναστηρίων. Ἐκδοσις ἐβδόμη. Ἐν Βενετία, 1851. Σ. 32.

Since my sources contained good examples of both open and closed *theta* in Didot-styled Greek fonts, I have implemented them both, and have added a closed letterform even to the italic font for better compatibility with the regular version. However, since Old Standard mainly follows German typographic conventions, it seemed inappropriate to map this form to U+03B8 and thus make it the only accessible glyph for the case advanced Open Type features are not supported by user's application. Instead the following solution has been preferred: the open *theta* is mapped both to U+03B8 (GREEK SMALL LETTER THETA) and U+03D1 (GREEK THETA SYMBOL), while the closed glyph is placed to a slot in the PUA and can be automatically substituted instead of U+03B8 in one of the following situations:

- in any position, if the `mgrk` (Mathematical Greek) feature tag is applied. Thus in mathematical contexts you can get a glyph mapping which exactly corresponds to one defined by Unicode;
- at the middle and the end of words, if stylistic set 06 (the `ss06` feature tag) is applied.

Thus enabling `ss06` will turn on contextual forms both for *beta* and *theta*, as demonstrated below:

θαυμασθεῖς βάρβαρος ⇒ θαυμασθεῖς βάρβαρος
 θαυμασθεῖς βάρβαρος ⇒ θαυμασθεῖς βάρβαρος

Note that the U+03D1 character will always be displayed as a script *theta*, no matter, which feature tags you have applied.

The following example shows a fragment of Greek text with contextual alternates (note the medial *beta* and the closed *theta* substituted in the appropriate places):

Κῦρος δὲ συγκαλέσας τοὺς στρατηγούς καὶ λοχαγούς τῶν Ἑλλήνων συνεβουλεύετό τε πῶς ἂν τὴν μάχην ποιοῖτο καὶ αὐτὸς παρήνει θαρρύνων τοιάδε· «ὦ ἄνδρες Ἕλληνες, οὐκ ἀνθρώπων ἀπορῶν [βαρβάρων] συμμάχους ὑμᾶς ἄγω, ἀλλὰ νομίζων ἀμείνονας καὶ κρείττους πολλῶν βαρβάρων ὑμᾶς εἶναι, διὰ τοῦτο προσέλαβον. ὅπως οὖν ἔσεσθε ἄνδρες ἄξιοι τῆς ἐλευθερίας ἧς κέκτησθε καὶ ἧς ὑμᾶς ἐγὼ εὐδαιμονίζω. εὖ γὰρ ἴστε ὅτι τὴν ἐλευθερίαν ἐλοίμην ἂν ἀντὶ ὧν ἔχω πάντων καὶ ἄλλων πολλαπλασίων».

Κῦρος δὲ συγκαλέσας τοὺς στρατηγούς καὶ λοχαγούς τῶν Ἑλλήνων συνεβουλεύετό τε πῶς ἂν τὴν μάχην ποιοῖτο καὶ αὐτὸς παρήνει θαρρύνων τοιάδε· «ὦ ἄνδρες Ἕλληνες, οὐκ ἀνθρώπων ἀπορῶν [βαρβάρων] συμμάχους ὑμᾶς ἄγω, ἀλλὰ νομίζων ἀμείνονας καὶ κρείττους πολλῶν βαρβάρων ὑμᾶς εἶναι, διὰ τοῦτο προσέλαβον. ὅπως οὖν ἔσεσθε ἄνδρες ἄξιοι τῆς ἐλευθερίας ἧς κέκτησθε καὶ ἧς ὑμᾶς ἐγὼ εὐδαιμονίζω. εὖ γὰρ ἴστε ὅτι τὴν ἐλευθερίαν ἐλοίμην ἂν ἀντὶ ὧν ἔχω πάντων καὶ ἄλλων πολλαπλασίων».

Old Standard also implements stroked *phi* (U+03D5), omega-like *pi* (U+03D6) and lunate epsilon (U+03F5), but these glyphs are not accessible via any OpenType features, and using them anywhere except mathematical contexts is not recommended. In other cases I had just to put the same glyph image to more than one Unicode slot. For example, U+03F0 (GREEK KAPPA SYMBOL) just contains a reference to U+03BA (the regular Greek kappa), as the only possible form for this letter both in the Didot and Teubner styles is the x-shaped one. All such “alternate” codepoints are supported only for compatibility with other existing Greek fonts and for the case you have occasionally used them in some texts.

The same statement is true for the lunate *sigma*, both small and capital: although it is sometimes reasonable to use this form e. g. for typesetting papyrological texts (where word breaks and thus the usage of final sigmas are sometimes not obvious), it is probably impossible to implement a lunate sigma fully conforming the Didot style. So I don’t recommend using this letterform and have implemented it mainly in order to make existing documents which use this character (such as some texts from the [Thesaurus Linguae Graecae](#) corpus) readable.

Combining Mark Positioning

Unicode provides codepoints for all accented characters needed for the standard Greek orthography, and yet this set is often insufficient for classicists. The most common problem is combining a breathing and/or an accent with a macron or a breve mark. Also one often has to put a macron, a breve or a circumflex above *epsilon* or *omicron* when publishing epigraphical documents, although such combinations make no sense for literary Greek.

For this reason some Unicode Greek fonts include a huge number of additional accented characters in the Unicode Private Use Area. The most important problem here is that each vendor uses its own arrangement of PUA slots, so that fonts are often incompatible with each other, especially because very few of them have more or less correct OT layouts allowing to access those glyphs without typing them directly.

Old Standard uses a different approach: it has a carefully adjusted set of anchor points and `ccmp` rules, which allow to correctly position accent marks relatively to each other and combine breathings with accents to specially designed combinations, when necessary. Moreover, when you type a capital letter followed by one or more accents, these accents are placed *before* the letter, and the letter itself is shifted right to the necessary amount of space. Thus you can type any possible accented combination using combining marks, if only your application supports smart accent positioning (but this is not a problem at least with Microsoft Word 2003 and above). Note that you should observe the following order of typing diacritics: first a macron or a breve, then a breathing and finally an accent. For example, combining marks were used to type the following fragment of the Mantinea inscription:

ὀσέοι ἄν χρῆστέριον κακρίνῃ || ἔ̄ γνῶσῖαι κακριθέ̄ε τῶν χρῆμάτων, |
 πὲ τοῖς φοικιάται(ς) τᾶς θεῶ̄ ἔ̄ναι, κᾱ φοικίας δάσασθαι τὰς ἄν ὄδ̄
 ἔ̄ασας. εἰ τοῖς φῶφλεκόσι ἐπὶ τοῖδ̄ ἔδικάσαμε[ν], | ἄ̄ τε θεὸς κᾱς οἱ
 δικασσται, ἀπυσεδομίν[ος] || τῶν χρῆμάτων τὸ λάχος, ἀπεχομίνος
 | κᾱ τῶρρέντερον γένος ἔ̄ναι | ἄ̄ματα πάντα ἀπὸ τοῖ ἱεροῖ, ἴλαον
 ἔ̄ναι.

ὀσέοι ἄν χρῆστέριον κακρίνῃ || ἔ̄ γνῶσῖαι κακριθέ̄ε τῶν χρῆμάτων, |
 πὲ τοῖς φοικιάται(ς) τᾶς θεῶ̄ ἔ̄ναι, κᾱ φοικίας δάσασθαι τὰς ἄν ὄδ̄
 ἔ̄ασας. εἰ τοῖς φῶφλεκόσι ἐπὶ τοῖδ̄ ἔδικάσαμε[ν], | ἄ̄ τε θεὸς κᾱς οἱ
 δικασσται, ἀπυσεδομίν[ος] || τῶν χρῆμάτων τὸ λάχος, ἀπεχομίνος
 | κᾱ τῶρρέντερον γένος ἔ̄ναι | ἄ̄ματα πάντα ἀπὸ τοῖ ἱεροῖ, ἴλαον
 ἔ̄ναι.

Old Standard includes also several precomposed accented Greek characters in the PUA, added for compatibility with [Ralph Hancoek's](#) fonts. However, you should use those characters with a caution and only if your application doesn't support combining mark positioning.

Tilda-Shaped Circumflex vs. Lunate Circumflex

Greek circumflex (perispomeni) often becomes a matter of discussions. I know, that some (mostly English and American) classicists prefer porsonic (lunate) circumflex, similar to an inverted breve, mainly because this form is characteristic for most Greek fonts traditionally used in English and American typography. However, in fact the preferred design of this accent is a purely font specific question. For most typefaces of the continental European origin (such as Didot or Teubner) only the tilde-shaped form is acceptable, as inverted breve just cannot be harmonized with most letters. So, don't ask me to implement a version with "porsonic" circumflex.

Iota Adscript vs. Iota Subscript

Combinations of Greek vowels with “mute” iota, defined in Unicode, is one more important group of glyphs, which may be designed by various ways, depending from the designer’s preferences. Most ancient Greek language manuals state that mute iota (called *iota subscript*) is written below lowercase letters, but after capital vowels a regular small iota, written inline and so called *iota adscript*, should be used instead. Currently most Unicode Greek fonts follow this convention, and many classicists even suppose any over implementations of uppercase combinations with mute iota to be illegal.

However, iota subscript below capital letters also may occur in some editions. In particular, this orthography is very common for liturgical books of the Greek Orthodox church. Particularly I prefer this typographic tradition, not only because it is inherited from fine Greek typography of the past centuries, but also for some technical reasons. The problem here is that, if a mute iota is designed as a regular iota and printed inline, it should behave as a separate character. This means that, when letterspacing for the surrounding text is changed, the distance between the iota and the preceding vowel should be scaled too. Of course this is impossible if both characters are implemented as a single glyph.

That’s why in Old Standard mute iota is implemented as iota subscript in all accented combinations with capital vowels. Note that *unaccented* capital vowels with mute iota represent a special case: unlike their accented counterparts, they are used in upper case only, i. e. may occur only in a fully capitalized text. So for these glyphs (namely, Unicode characters U+1FBC, U+1FCC, U+1FFC) I have designed a special version of iota adscript, which looks like a *capital* Iota, decreased in size. To my mind, this shape will better match to the design of surrounding capital glyphs.

Such an implementation of capital vowels with mute iota has nothing wrong by itself, but, of course, it would be nice to allow replacing each of affected Unicode codepoints with a pair of glyphs: the vowel itself and a regular iota. Theoretically, this can be done by applying an OpenType feature, but, unfortunately, I am not aware of any suitable OpenType feature, which:

- can be used for replacing a single glyph with two or more glyphs, as in our case;
- can be disabled if a user doesn’t like it.

So for now I can’t provide an alternative for the implementation which looks preferred for me. If you absolutely don’t like capital vowels with iota subscript, at least you can always type regular iota as a separate character.

3.2.4 Cyrillic Script

Combining Mark Positioning

Smart combining mark positioning is often necessary for Cyrillic. Although the stress is usually not indicated in modern languages which use the Cyrillic script, accentuation is still mandatory for textbooks, dictionaries and books for children. This is especially important for Serbian, which has long and short vowels and four types of accent. Nevertheless, there are virtually no precomposed Cyrillic accented characters in Unicode, so

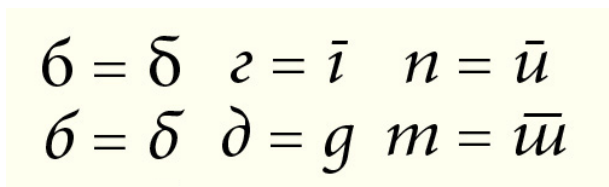


Figure 3.2: Serbian and Macedonian variant forms. Russian norms on the left, Serbian and Macedonian norms on the right

that using combining marks remains the only option. So Old Standard provides all necessary anchor points allowing to place accents above Cyrillic vowels (see the following sections about Serbian and Old Slavonic for examples).

Serbian Alternate Forms

It is a well known fact, that, except several specific letters, Serbian Cyrillic alphabet also has different preferred shapes for some letters common for most languages which use the Cyrillic script. According to the most common opinion, four Serbian variant forms are specific for the italic style, while one can occur both in roman and italic styles, as [Figure 3.2](#) demonstrates. This practice was adopted by many font designers, and Adobe even included Serbian variant forms into its Cyrillic specification, although they have not been accepted by Unicode.

However, after studying several examples of old Serbian printing (a small [collection of such examples](#) is available at the site of the faculty of Mathematics at the Belgrade university) I have an impression that the modern practice is not fully justified by the preceding tradition.

As far as I can see, there are only two letters (namely Cyrillic *n* and *m*), which always have typically “Serbian” forms, clearly distinct from their Russian counterparts. However, the late 19th and early 20th century editions, set with Modern typefaces, also show a significant difference from the contemporary “Serbian” style, as the horizontal bar (the most characteristic feature of “Serbian” *n* and *m*) is attached to the base glyph rather than positioned above it (like a diacritical mark). The *m* also may look like a slanted upright glyph, but I have preferred to draw both *n* and *m* in the same “historical” style.

It is especially important to stress that “Serbian” *џ* with a hook below seems to never occur in the traditional Serbian printing, although there was absolutely no problem to reproduce this form, if somebody considered it correct, as Latin italic *g* has exactly the same shape in Modern typefaces of the early 20th century. My own opinion is that the contemporary Serbian letterform first appeared as a result of uncritically reproducing the handwritten shape, erroneously considered typically Serbian (actually it is not, as the same style is preferred also in the Russian handwriting, which doesn’t mean this practice should necessarily be reflected in printing). On the other hand, I have an impression that the “Russian” italic *џ* (with an ascender) is also not so common in Serbian printing: often it is replaced with a slanted version of the upright letter. This glyph seemed a good compromise for me: based on the historical tradition and at the same time certainly acceptable for those Serbs who absolutely don’t like the Russian form.

In Old Standard only three italic letters, listed above (*џ*, *n* and *m*) form the default set of Serbian alternate forms, which are automatically enabled when you mark a text with

Serbian language. Alternatively, if your application doesn't support the `loc1` feature tag (which is probably the case) you can achieve the same result by enabling the stylistic set 11. Here an example of a fully accentuated Serbian text, which demonstrates both the combining mark positioning and the localized forms in the italic style:

На нòвѐмбарскòм с̀унцу прѐврћѐ се прљавā ўтроба нāшѐ кѹћѐ.
 Ч̀удно сам т̀ужан. И док нòсѝм с мāјкòм с̀иву̀ о̀трцāнѹ
 слāмарицу т̀упо зāгледан у јѐдан м̀ртвѝ о̀блāк над ц̀рнѝм,
 нѝскѝм крòвовима нāшѐг прѐдгрāђа — с̀аплицѝм се о прāг. Òна
 ми кāжѐ: „Пāзи“. Òндā брѝжно: „Штā ти је дāнас?“ Òна је
 вѐлика глāднā жѐна, с̀ивòст ѝзбѝјā ѝз њѐ. Ўопште, свѐ је дāнас
 с̀иво. И нѐбо, и нāша àвлија, и ш̀упаљ, грāнат òрах сред њѐ, и
 òвѐ нāше ствāри кòјѐ, јѐдна по јѐдна, ѝзлазѐ на дāн.

*На нòвѐмбарскòм с̀унцу прѐврћѐ се прљавā ўтроба нāшѐ кѹћѐ.
 Ч̀удно сам ш̀ужан. И док нòсѝм с мāјкòм с̀иву̀ о̀трцāнѹ слāма-
 рицу ш̀упо зāгледан у јѐдан м̀ртвѝ о̀блāк над ц̀рнѝм, нѝскѝм
 крòвовима нāшѐг прѐдгрāђа — с̀аплицѝм се о прāг. Òна ми
 кāжѐ: „Пāзи“. Òндā брѝжно: „Штā ти је дāнас?“ Òна је
 вѐлика глāднā жѐна, с̀ивòст ѝзбѝјā ѝз њѐ. Ўопште, свѐ је
 дāнас с̀иво. И нѐбо, и нāша àвлија, и ш̀упаљ, грāнат òрах
 сред њѐ, и òвѐ нāше ствāри кòјѐ, јѐдна по јѐдна, ѝзлазѐ на дāн.*

The case of the letter *б* is basically the same as one of the *д*. The only difference here is that the “script” form actually seems to be more common for Russian, than for Serbian printing, although in the Russian tradition it is applicable only for the italic style. At least it was used in the italic version of one particular “Standard” typeface of early 20th century. That’s why I have implemented this letterform in Old Standard, although the italic version of the glyph is actually based on a Russian source, and the upright shape has been added just for completeness. These glyphs are not automatically applied for Serbian text by default, but you can enable the stylistic set 12 to get them substituted, as in the following example:

м̀ртви о̀блāк ⇒ м̀ртви о̀блāк
м̀ртви о̀блāк ⇒ м̀ртви о̀блāк

Finally, the case of “Serbian” *з* is a bit special: here the specific shape is really justified by the peculiarities of the Serbian handwriting tradition, and yet the letterform normally used in pre-computer Serbian printing was typically Russian, i. e. had no horizontal bar above. Particularly I think the modern “Serbian” variant has nothing wrong by itself, but, of course, it is difficult to implement it, if both *n* and *m* are designed in the historical style, so that there is no gap between the bar and the base glyph. Nevertheless I have attempted to implement a Serbian *з* in the same style as *n* and *m*, basing on [the recommendations by Nikola Kovanovich](#), but this glyph is purely experimental, and thus currently it is not accessible via any OpenType features.

Old Slavonic and Church Slavonic

Until 2008, Unicode included only a subset of historical Cyrillic characters, which was not sufficient for typesetting any actual texts. Thus legacy encodings or PUA-based solutions were the only solution for representing historical documents in old Slavic languages which used the Cyrillic script. In Unicode 5.1 the range of supported early Cyrillic characters was greatly extended and now includes all letters and signs normally used in scientific publication and Orthodox liturgical books (including even combining letters). Beginning from the version 2.0 Old Standard fully supports historical Cyrillic, including Unicode 5.1 extensions.

However, except just having all necessary characters available in a font, typesetting Old Slavonic or Church Slavonic also requires some complex text rendering. So the following smart font features necessary for this purpose are implemented in Old Standard:

Combining mark positioning Old Slavonic (and especially modern Church Slavonic) has a wide range of combining characters, such as accents, breathings, titlos and superscript letters. Basically the accentuation system is very similar to Greek one, but, unlike for Greek, there are no precomposed accented characters available in Unicode, so that using combining marks is the only option.

Enclosing combining marks Church Slavonic inherited from Greek its numeric system, where numbers are denoted with letters. However, special enclosing marks, shown in the following table, have been invented to denote large numbers beginning from 10000:

<i>Notation</i>	<i>Numerical meaning</i>	<i>Old Slavonic name</i>
	10 000	тъма
	100 000	легион
	1 000 000	леодр
	10 000 000	ворон
	100 000 000	колода

Old Standard implements two types of OT lookups to achieve proper positioning for this kind of marks: first, standard anchor points (the `mark` feature) used to attach a mark to a base character, and second, contextual positioning lookups allowing to increase the base character bearings and advance width when it is followed by enclosing marks. Unfortunately, this technique is not guaranteed to work in all OpenType-aware applications: in particular at the time this manual was written contextual positioning did not properly work in X_YTEX.

Historic letterforms Although the modern Cyrillic script (so called “civil” style) is often used to typeset medieval texts, some of the modern letterforms are especially closely associated with the typographic reform under Peter the Great, and thus would look out of place in a historical context. That’s why Old Standard provides some stylistic alternates, specially intended for Old Russian and Old (Church) Slavonic:

не вѣдыи будущаго ⇒ не вѣдыи будущаго
не вѣдыи будущаго ⇒ не вѣдыи будущаго

These alternates are automatically enabled for Old Church Slavonic, if your application understands the `loc1` feature tag and allows to mark a text with this language. Alternatively you can get the same substitutions by applying the stylistic set 14 (`ss14`).

Contextual letterforms Some Cyrillic letters have tall ascenders, while in medieval manuscripts the same letters normally did not extend above x-height, so that it was possible to put an accent or a combining letter above them. Old Standard includes special low forms for some of such letters (namely *б* and *ѣ*) and can automatically substitute them when the letter is followed by an accent:

прѣдъ богомъ ⇒ прѣ̂ б̂омъ
прѣдъ богомъ ⇒ прѣ̂ б̂омъ

Finally an example of Old Slavonic text with combining marks and historic letters and letterforms:

Ѧ ѡ сѣ Ираклии ѡною притчею рекоша сѣ Феѡфѡи̂ м̂рыи хроногрѡ
 написа. Ёрмии же рѡумѣвъ на нь творащъся братю Ѱиде, злато
 многѡ вземъ, ѡ ѡде въ Ёгѡпѣ̂ къ колениѡ Хамову сѣна Ноева. ѡ ѡ
 приаша ѣго с̂ честию. ѡ живе тоу вѡ вѣлице чьсти, носѡ ризу злѡу
 ѡ м̂рствѡѡше па Ёгѡпетскѡи̂ влѡхвѡ̂, влѡхвоуѡ ѡ повѣда ѡмъ
 хотѡща̂ быти. бѡ же ѡ хѡтръ бесѣдѡ̂. ѡ кланѡхъсѡ ѣму глѡще
 бѡ Ёрмиин ѡко повѣдающѡ ѡ хотѡща̂ быти ѡмъ и повѣдающѡ
 ѡ ѡмѣниѣ ѣго̂ и датѡла богѡствоу нарицахоу ѡко златѡнаго бѡ
 мнѡще.

*Ѧ ѡ сѣ Ираклии ѡною притчею рекоша сѣ Феѡфѡи̂ м̂рыи
 хроногрѡ написа. Ёрмии же рѡумѣвъ на нь творащъся братю
 Ѱиде, злато многѡ вземъ, ѡ ѡде въ Ёгѡпѣ̂ къ колениѡ
 Хамову сѣна Ноева. ѡ ѡ приаша ѣго с̂ честию. ѡ живе тоу
 вѡ вѣлице чьсти, носѡ ризу злѡу ѡ м̂рствѡѡше па
 Ёгѡпетскѡи̂ влѡхвѡ̂, влѡхвоуѡ ѡ повѣда ѡмъ хотѡща̂
 быти. бѡ же ѡ хѡтръ бесѣдѡ̂. ѡ кланѡхъсѡ ѣму глѡще
 бѡ Ёрмиин ѡко повѣдающѡ ѡ хотѡща̂ быти ѡмъ и
 повѣдающѡ ѡ ѡмѣниѣ ѣго̂ и датѡла богѡствоу
 нарицахоу ѡко златѡнаго бѡ мнѡще.*

Chapter 4

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