

OLD STANDARD

A Unicode Font
for Classical and Medieval Studies

User's manual

Alexey Kryukov

This manual is set in Old Standard with missing font styles (e. g. bold and typewriter fonts) taken from the [CM-Unicode](#) package by Andrew Panov.

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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 antiqua in general, and its type used in the 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.

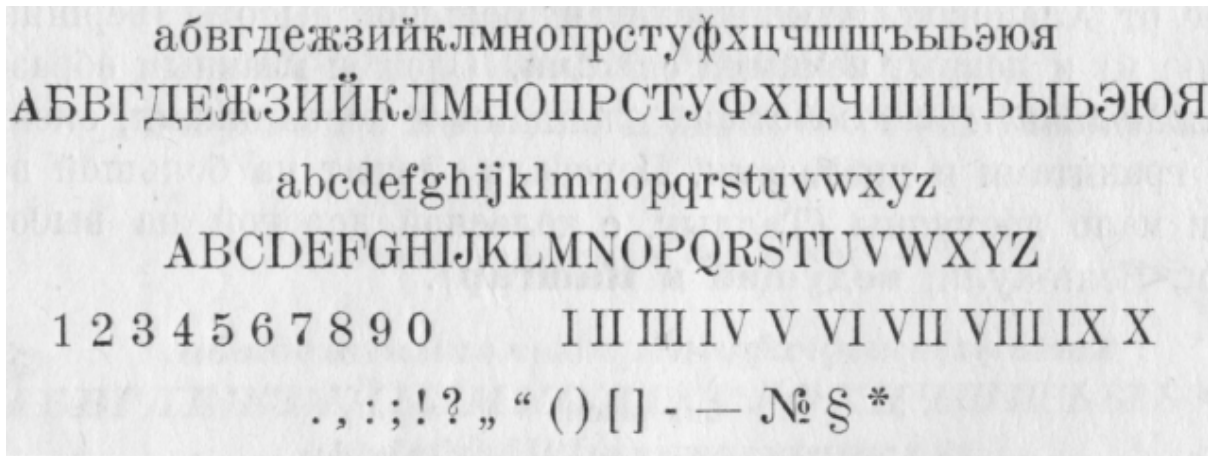


Figure 1.1: The regular version of the Russian “Standard” typeface from the 1966 font catalogue

1.1 Origin and Design

Old Standard was first intended as a digital version of *Обыкновенная* (Standard) typeface from 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 just added “Old” to stress the difference from *Обыкновенная Новая* (“New Standard”) — another, a bit similar and yet very different typeface, which was 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).

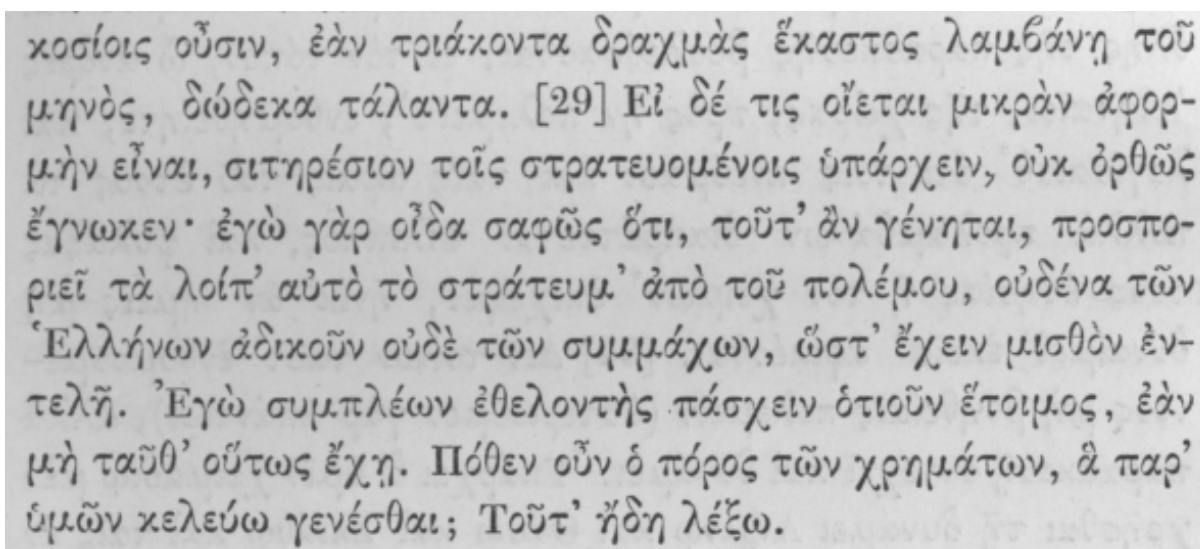


Figure 1.2: The original French version of the Didot style. The example is taken from: *Les hanrangues de Démosthène. Text grec publié d'après les travaux les plus récents de la philologie avec un commentaire critique et explicatif, une introduction générale et des notices sur chaque discours par Henri Weil. Deuxieme édition entièrement revue et corrigée.* Paris, 1881.

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. Didot's style had several variations; in particular its **German version** (popular also in Russia) is slightly different from the **original French font**. As Old Standard is intended to reproduce mainly Russian and German printing traditions, in most such cases I followed the German samples, but for some characters (e. g. Greek circumflex) I have preferred French forms as more elegant.

One may ask why I have designed one more version of Didot's type, although it is already reproduced in several digital typefaces. Indeed, I know at least 5 such families, namely:

- Monotype Greek 90;
- **GFS Didot**;
- **Odyssea** by **Linguists's software**;
- **MgMemoriesApla** by **Magenta**;
- The Greek version of the Computer Modern Roman font family, used in the T_EX typesetting system.

Unfortunately, most of these fonts share one common problem: they all are Greek only families, and were designed without a thought about what the compatible Latin (not to

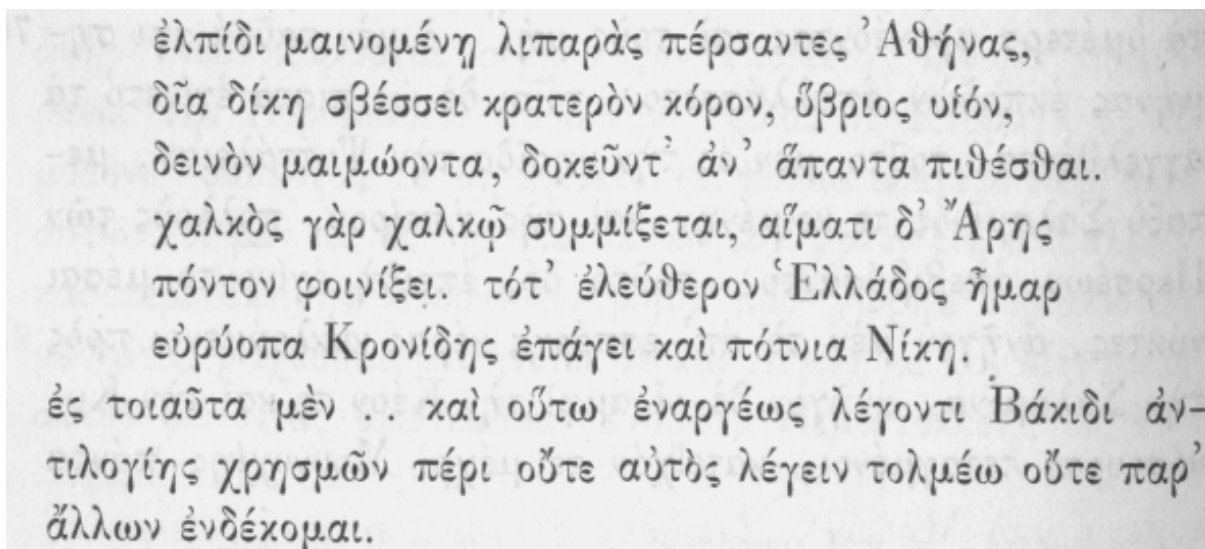


Figure 1.3: The modification of the Didot style, used in German editions. The example is taken from: Herodoti Historiae. Recensuit Henricus Stein. Tomus II. Berolini, 1871. P. 318.

mention Cyrillic) font should look like. This approach was very natural at the time when all Greek fonts were designed in 8-bit custom encodings (specific for each vendor), but moving to Unicode changed almost nothing, despite of the fact that any normal Unicode typeface now includes at least standard ASCII characters.

This is especially true for all Linguist’s software fonts, and *Odyssea* in particular. First, even Unicode versions of these fonts include only a limited set of Latin letters, namely those available in standard Western codepages (Mac Roman, Adobe Standard and windows-1252). This is because this company prefers to publish separate fonts for each Unicode block or language, so that they could sell them separately, even if this policy obviously decreases the value of their production from a user’s point of view. Second, the Latin letters in *OdysseaU* are taken from a Times-like family, so that they are not only stylistically incompatible with the Greek font, but also have absolutely different metrics.

MgMemoriesApla UC Pol by Magenta shares the same problem: its Latin letters are also not well harmonized with Greek ones, and, in general, the Unicode version of this family is implemented much less accurately than the initial 8-bit font. On the other hand, *Monotype Greek 90*, despite of its high quality, has no Latin letters at all: this is obviously better than the previous solution, but practically it again means that the user will have to combine Greek letters, implemented in the Didot style, with an incompatible Latin typeface.

The case of **GFS Didot**, now available for free from **Greek Font Society**, is more interesting. 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 is very elegant indeed, and yet it actually has very

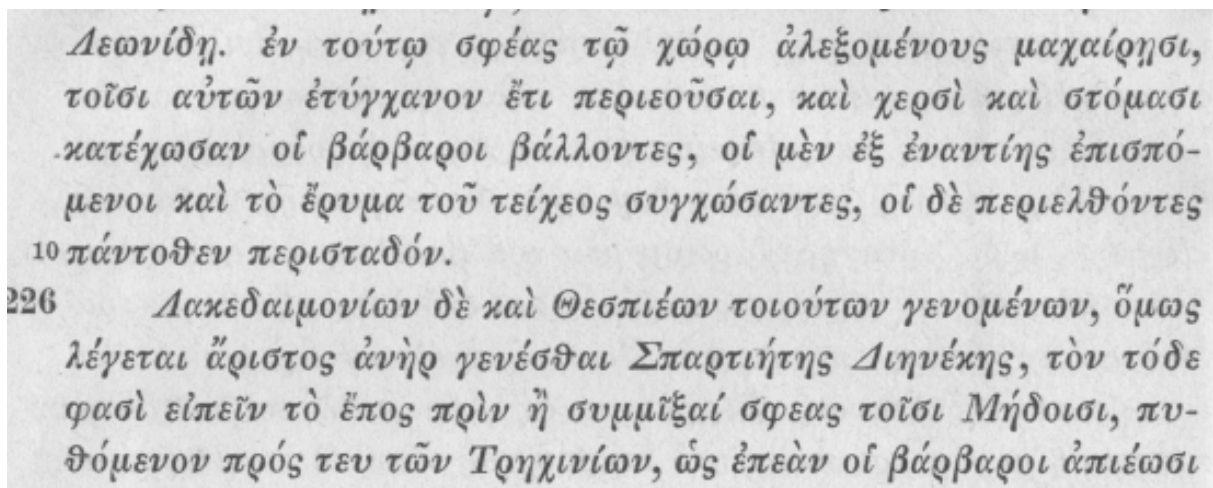


Figure 1.4: An example of the Teubner Greek font, taken from: Herodotus für den Schulgebrauch erklärt. Von Dr. K. Abicht, Direktor des Gymnasiums zu Ols. Vierter Band. Buch VIII. Dritte verbesserte Auflage. Leipzig, 1882. S. 192.

few to do with the historical Didot style¹.

Thus the only remaining font which is actually suitable for multilingual publishing and actually has a compatible Latin family implemented in the Modern style is the Greek version of Computer Modern Roman, first designed by Silvio Levi, and now greatly improved by Claudio Beccari. Until recently CM-like fonts were rarely used outside the T_EX environment, but things are changing now, as several attempts have been made to convert their METAFONT sources into more common formats (like Type 1 or OpenType-CFF). In particular a good set of multilingual CM-based fonts is provided by the **CM-Unicode** package prepared by Andrey Panov. It should be noted however, that Computer Modern, although its design is obviously inspired by the “Modern” style, is a completely new typeface: in particular it has less contrast than the traditional fonts of early 20th century; that’s why its companion Greek font is also quite different from other implementations of the Greek Didot style. Also, some glyphs in this font are obviously infelicitous: in particular, iota subscript is ugly, and circumflex is positioned too low in combinations with breathings, causing the breathings itself to be hardly distinguishable from each other.

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 now 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 coun-

¹In 2007 GFS released a new version of the Didot typeface, called GFS Didot Classic, which reproduces Didot’s original type design, as is documented in publications during the first decades of the 19th century. However, this font doesn’t include Latin letters.

tries, 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. The only disadvantage of the TrueType version of this particular family is that the italic version probably will look poor on screen, unless you enable font antialiasing in your system settings (both for MS Windows and Unix/X11). This is because the TrueType format uses a very complicated technique of *hinting*, or *instructing* glyphs in order to improve their screen appearance. Writing such instructions is a very difficult and time-consuming work, and for now I have finished them only for the regular font.

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 X_YTEX — the Unicode version of the T_EX typesetting system. In particular this manual was set with X_YTEX and the OpenType-CFF versions of the fonts.

Finally, 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.

2.3 System Requirements

2.3.1 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 or OpenOffice.org

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.

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 Word's Insert→Symbol or OpenOffice's Insert→Special Character. 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.

2.3.2 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 currently not available by default in most Linux distributions, so that probably you have to compile, install and configure it yourself. This task is a bit difficult for an average user, but the result surely worth efforts.

2.4 Installation Instructions

2.4.1 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.

2.4.2 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 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 `/.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
```

2.4.3 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 particular this is the case when the fonts have been installed only via fontconfig). 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:

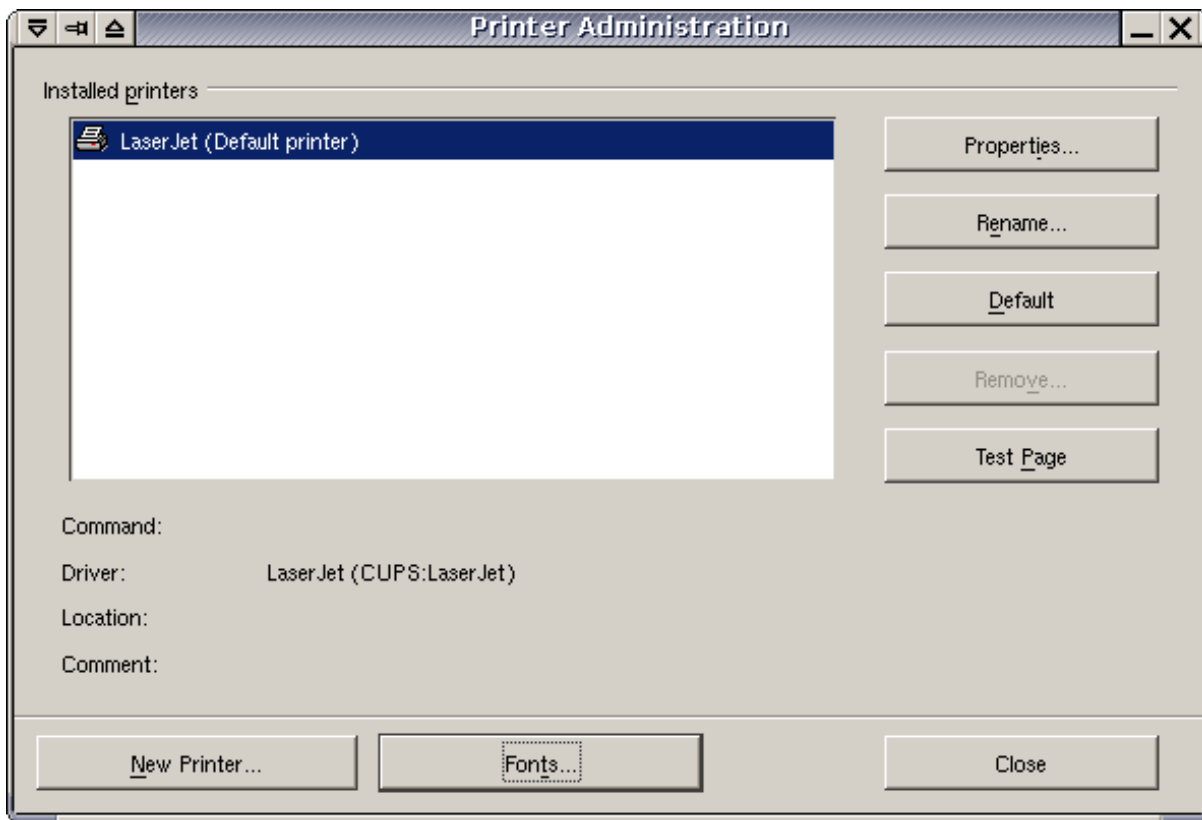


Figure 2.1: The OpenOffice.org printer administration utility: main window

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

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

2.4.4 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 two shapes (regular and italic), 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

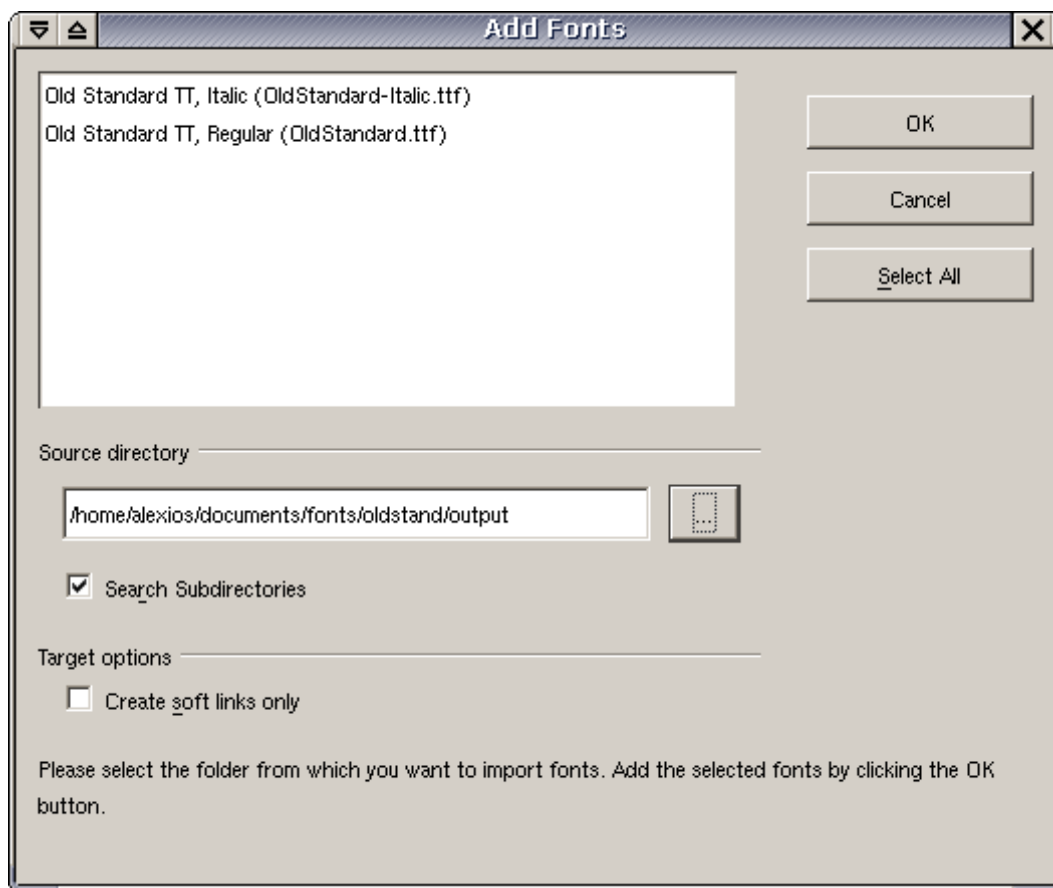


Figure 2.2: Adding new fonts to OpenOffice.org via spadmin

or OpenType-CFF font) in your $\text{T}_{\text{E}}\text{X}$ documents without any additional steps if you install $\text{X}_{\text{F}}\text{T}_{\text{E}}\text{X}$ — a Unicode enabled version of the $\text{T}_{\text{E}}\text{X}$ compiler, currently actively developed by [SIL international](#).

$\text{X}_{\text{F}}\text{T}_{\text{E}}\text{X}$ has many other advantages over traditional $\text{T}_{\text{E}}\text{X}$ 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 $\text{X}_{\text{F}}\text{T}_{\text{E}}\text{X}$.

2.5 Terms of use

The current version of Old Standard is distributed under the [SIL Open Font License](#) (OFL). 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).

OFL also includes one condition which I don't like very much: this license prohibits using original font names in any derivative packages "in part or in whole". OFL FAQ also recommends to be "creative" and avoid names that sound like the original. Particularly I think that it is much better when the name of a modified version is based 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". Fortunately, this limitation can be easily worked around, as OFL *does allow* using the reserved font names, if only an explicit written permission to do so is granted by the copyright holder. On the other hand, of course I can't prohibit using such common words as "Old" and "Standard" in names of any other font products. So, if you are planning to distribute your own modification of Old Standard, contact me and we will discuss which name to choose.

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

2.6 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 help 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 and italic) only simultaneously, i. e. if a specific character is added to the regular font, it should also be designed for italics. The exceptions are allowed only for alternate forms and 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) Old Standard implements only one character from this range: 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 letters used in Russian pre-1918 orthography.

Phonetic Extensions (1D00–1D7F) Only one character (U+1D79 LATIN SMALL LETTER INSULAR G) is implemented. Unicode still doesn't provide a relevant codepoint for the uppercase version of this letterform, so it is mapped to a position in the PUA.

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) Old Standard implements subscript and superscript forms of digits 0–9.

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 \mathfrak{C} and \mathfrak{S}).

Number Forms (2150–218F) Currently only vulgar fractions are implemented.

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.

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.

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 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:

- Medieval and Old Germanic characters, still not implemented in the Latin Extended-B range (*z with hook* in particular);
- 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;
- More combining marks;
- Additional Roman numerals and Claudian letters;
- Historical Cyrillic characters at 0460—0489. The main problem with those characters is that the currently available set is not actually sufficient for typesetting Old or Church Slavonic; so I am still waiting for some recently proposed additions to be adopted by Unicode.

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 (ideally 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 doesn't support diacritic positioning, but provides access to many optional features offered by OpenType, such as small caps, stylistic sets and various types of ligatures. To say the truth, all such features are very important from the point of view of a fine typography, but in most cases are almost useless for a linguist. Nevertheless, Old Stan-

ard supports some features which can be accessed in InDesign and other applications developed by Adobe.

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_YT_EX. ICU properly handles all features provided by Old Standard, even those none else currently supports (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 few 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 *Mellel*, 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 *fj* and *ffj* 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 (none does, as of fall 2006, except X_YT_EX).

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 (unfortunately, except 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 commaaccents are not typed directly (which is also possible, as now those letterforms have separate Unicode codepoints).

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.

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 diffērunt. 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 diffērunt. 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 02.

Will(el)m kynz gret Will(el)m bisceop and ȝosfrezð portirēfan and ealle þā burhwaru binnan Londone, Frencisce and Englisce, frēondlice. And ic kȳðe ēow þæt ic wylle þæt zet bēon eallre þāera laza

weorðe þē ȝyt wāeran on Eadwerdes dæge kynȝes. And ic wyllle þæt ælc cyld bēo his fæder yrfrume æfter his fæder dæge. And ic nelle ȝeþolian þæt æniȝ man ēow æniȝ wranȝ bēode. Ȝod ēow ȝehealde!

Will(el)m kynȝ ȝret Will(el)m bisceop and Ȝosfrezð portirēfan and ealle þā burhwaru binnan Londone, Frencisce and Englisce, frēondlice. And ic kȳðe ēow þæt ic wyllle þæt ȝet bēon eallre þāera laȝa weorðe þē ȝyt wāeran on Eadwerdes dæge kynȝes. And ic wyllle þæt ælc cyld bēo his fæder yrfrume æfter his fæder dæge. And ic nelle ȝeþolian þæt æniȝ man ēow æniȝ wranȝ bēode. Ȝod 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 liȝtyng and my helpe. Our Lord is defendour of my lif; for what þyng shal ich drede? To þat noiand comen neȝe vp me, þat hij etand my flesshes: Myn enemys, þat trubleden me, ben made sike, and hij fellen. Ȝif hij setten manaces oȝains me, myn hert ne shal nouȝt drede. Ȝyf myn enemy arere bataile oȝains 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; Pat ich se þe wille of our Lord and uisite his temple.

Our Lord, which ich shal douten, is my liȝtyng and my helpe. Our Lord is defendour of my lif; for what þyng shal ich drede? To þat noiand comen neȝe vp me, þat hij etand my flesshes: Myn enemys, þat trubleden me, ben made sike, and hij fellen. Ȝif hij setten manaces oȝains me, myn hert ne shal nouȝt drede. Ȝyf myn enemy arere bataile oȝains 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; Pat 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 qimip 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 Hrólfr konung ok kapp 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“, sögðu þeir. Kómusk þá fyrir Hrólfr konung öll 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 skömm, at göra slíkt. Hefi ek jafnan røtt 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“.

Kømr nú þessi fregn fyrir Hrólfr konung ok kapp 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“, sögðu þeir. Kómusk þá fyrir Hrólfr konung öll 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 skömm, at göra slíkt. Hefi ek jafnan røtt 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 added ascender. 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 on 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, Old Standard provides a better option: if your application supports contextual alternates (like Adobe InDesign), you can get curly beta automatically substituted at the middle and the end of words by enabling the `calt` feature.

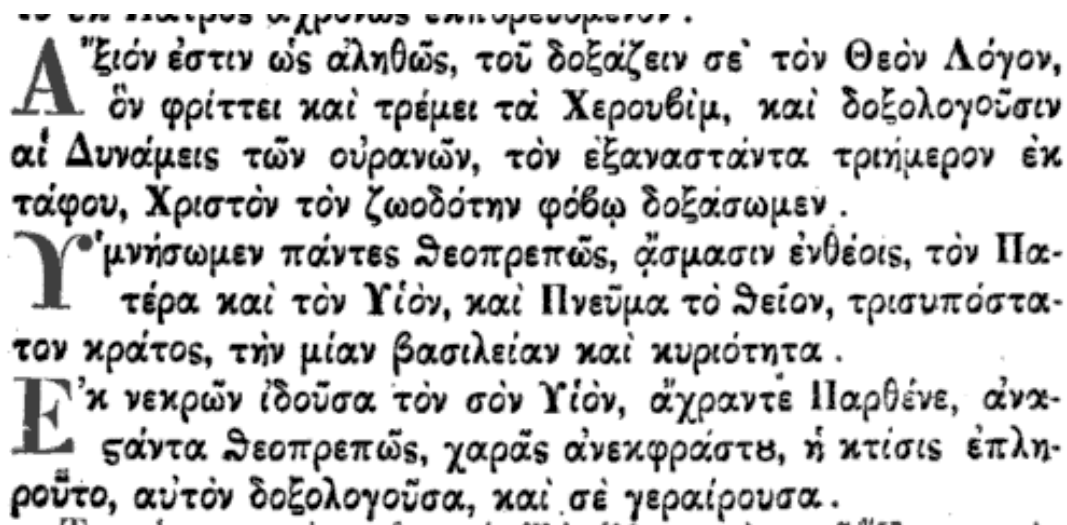


Figure 3.1: Contextual forms of *beta* and *theta* in traditional Greek typesetting. This example has been taken from: Ὁρολόγιον τὸ μέγα, περιέχον ἀπάσαν τὴν ἀνήκουσαν αὐτῷ ἀκολουθίαν, κατὰ τὴν τάξιν τῆς ἀνατολικῆς τοῦ Χριστοῦ ἐκκλησίας, καὶ ἐξαιρέτως τῶν ὑποκειμένων αὐτῇ εὐαγγῶν μοναστηρίων. Ἐκδοσις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

Theta is another letter, which can have two different forms, both of which are stylistically compatible with Didot typefaces. 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.

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 when 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;
- in any position, if the stylistic set 06 is applied;
- at the middle and the end of words, if contextual alternates (the `calt` feature tag) are enabled.

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 Ἑλληνας, 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 Ἑλληνας, 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».

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

Old Standard also implements stroked *phi* (U+03D5), omega-like *pi* (U+03D6) and lunate epsilon (U+03F5), but these glyphs are not available 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: this letterform was completely unknown to continental European typography (so using it in documents you are typing with Old Standard makes no sense) but I had to implement

it in order to make texts which use this character (such as some texts from the [Thesaurus Linguae Graecae](#) corpus) legible.

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 || ἔ γνῶσίαι κακριθέῃ τῶν χρῆμάτων, |
 πὲ τοῖς φοικιάται(ς) τᾶς θεῶ ἔναι, κα φοικίας δάσασθαι τὰς ἄν ὄδ'
 ἑάσας. εἰ τοῖς φῶφλεκόσι ἐπὶ τοῖδ' ἐδικάσαμε[ν], | ἄ τε θεὸς κας οἱ
 δικασταί, ἀπυσεδομίν[ος] || τῶν χρῆμάτων τὸ λάχος, ἀπεχομίνος |
 κα τὸρρέντερον γένος ἔναι | ἄματα πάντα ἀπὸ τοῖ ἱεροῖ, ἴλαον ἔναι.

ὀσέοι ἄν χρῆστέριον κακρίνῃ || ἔ γνῶσίαι κακριθέῃ τῶν χρῆμάτων, |
 πὲ τοῖς φοικιάται(ς) τᾶς θεῶ ἔναι, κα φοικίας δάσασθαι τὰς ἄν ὄδ'
 ἑάσας. εἰ τοῖς φῶφλεκόσι ἐπὶ τοῖδ' ἐδικάσαμε[ν], | ἄ τε θεὸς κας οἱ
 δικασταί, ἀπυσεδομίν[ος] || τῶν χρῆμάτων τὸ λάχος, ἀπεχομίνος
 | κα τὸρρέντερον γένος ἔναι | ἄματα πάντα ἀπὸ τοῖ ἱεροῖ, ἴλαον
 ἔναι.

Old Standard includes also several precomposed accented Greek characters in the PUA, added for compatibility with [Ralph Hancock'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 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 font 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.

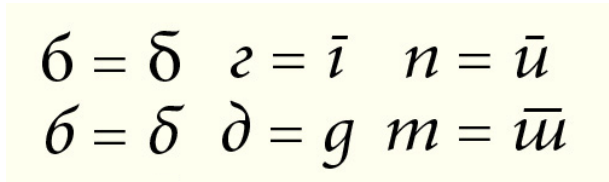


Figure 3.2: Serbian and Macedonian variant forms. Russian norms on the left, Serbian and Macedonian norms on the right

3.2.4 Cyrillic Script

Combining Mark Positioning

Smart combining mark positioning is especially important for Cyrillic. Although the stress is usually not indicated in modern languages which use the Cyrillic script, accentuation is still necessary 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 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 subsection 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” *ѓ* 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 *đ* (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 (*đ*, *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 к̀ўћѐ.
 Ч̀ўдно сам т̀ўжан. И док нòсѝм с мāјкòм сѝв̀ў òтрцāн̀ў слāмарицу
 т̀ўпо зāгледан у јѐдан м̀ртвѝ òблāк над ц̀рнѝм, нѝскѝм к̀рòвовима
 нāшѐг прѐдгрāђа — с̀аплицћѐм се о прāг. Òна ми кāжѐ: „Пāзи“.
 Òндā брѝжно: „Штā ти је дāнас?“ Òна је вѐлика глāднā жѐна,
 сѝвòст ѝзбѝјā ѝз њѐ. Ўопште, свѐ је дāнас сѝво. 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 к̀ўћѐ.
 Ч̀ўдно сам т̀ўжан. И док нòсѝм с мāјкòм сѝв̀ў òтрцāн̀ў слāма-
 рицу т̀ўпо зāгледан у јѐдан м̀ртвѝ òблāк над ц̀рнѝм, нѝскѝм
 к̀рòвовима нāшѐг прѐдгрāђа — с̀аплицћѐм се о прāг. Òна ми кāжѐ:
 „Пāзи“. Òндā брѝжно: „Штā ти је дāнас?“ Òна је вѐлика глāд-
 нā жѐна, сѝвòст ѝзбѝјā ѝз њѐ. Ўопште, свѐ је дāнас сѝво. 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 *đ*. 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. The following example shows the same Serbian text, as above, but with “Serbian” forms for both upright and italic *б*:

На нòвѐмбарскòм с̀унцу прѐврћѐ се прљавā ўтроба нāшѐ к̀ўћѐ.
 Ч̀ўдно сам т̀ўжан. И док нòсѝм с мāјкòм сѝв̀ў òтрцāн̀ў слāмарицу

тѹпо за̀гледан у један мр̀тви ђбл̄ак над цр̀нѣм, нѣскѣм кр̀вовима
 н̄ашѣг прѣдгр̄ађа — с̄аплиц̄ѣм се о пр̄аг. ђна ми к̄ажѣ: „П̄ази“.
 ђнд̄а бр̄ѣжно: „Шт̄а ти је д̄анас?“ ђна је вѣлика гл̄адн̄а ж̄ена,
 с̄ѣвѣст ѣзб̄ѣј̄а ѣз њѣ. ђопште, свѣ је д̄анас с̄ѣво. И нѣбо, и н̄аша
 а̀влија, и ш̄упаљ, гр̄анат ђрах сред њѣ, и ђвѣ н̄аше ств̄ари кѡјѣ,
 једна по једна, ѣзлазѣ на д̄ан.

*На нѡвѣмбарскѡм с̄унцу прѣвр̄ћѣ се пр̄љав̄а ѣшрѡба н̄ашѣ к̄ѹћѣ.
 Ч̄ѹдно сам ш̄ѹжан. И док нѡс̄ѣм с̄ мајкѡм с̄ѣвѣ ђшр̄ѣц̄ан̄ѹ сл̄ама-
 рицу ш̄ѹпо за̀гледан у један мр̀тви ђбл̄ак над цр̀нѣм, нѣскѣм
 кр̀вовима н̄ашѣг прѣдгр̄ађа — с̄аплиц̄ѣм се о пр̄аг. ђна ми к̄ажѣ:
 „П̄ази“. ђнд̄а бр̄ѣжно: „Шшт̄а ти је д̄анас?“ ђна је вѣлика гл̄ад-
 н̄а ж̄ена, с̄ѣвѣст ѣзб̄ѣј̄а ѣз њѣ. ђопште, свѣ је д̄анас с̄ѣво. И
 нѣбо, и н̄аша а̀влија, и ш̄упаљ, гр̄анат ђрах сред њѣ, и ђвѣ н̄аше
 ств̄ари кѡјѣ, једна по једна, ѣзлазѣ на д̄ан.*

Finally, the case of “Serbian” *z* 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 *z* 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.

Chapter 4

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