

fonts

Installing fonts in LaTeX: a user's experience

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abstract

This paper presents a user's experience with installing fonts for use in LaTeX. It will be shown that it is not hard to make a standard Type 1 font work, if you use modern font installation software for LaTeX. All the steps necessary to install the example fonts will be shown. The example fonts used are Adobe Garamond from Adobe and Mrs. Eaves from Emigre.

keywords

fonts, LaTeX, user

Introduction

Installing fonts in LaTeX has the name of being a very hard task to accomplish. But it is nothing more than following instructions. However, the problem is that, first, the proper instructions have to be found and, second, the instructions then have to be read and *understood*. We will show that it is not hard, by sharing with you our experience with installing two commercially available font families, that work out of the box on most computer systems.

We will only deal with fonts in the so-called Type 1, or Postscript, format. Truetype fonts are not within the scope of this paper. Also so-called expert fonts, containing lots of special characters, will not be discussed. We confine ourselves to fonts containing the Latin alphabet, with accents used in Western Europe. Furthermore we have installed all fonts within a TeX Live 7 installation on the Linux operating system. But the procedures should be similar on any TeX system which adheres to the TeX Directory Standard.

A very good book on the subject of installing fonts for use with TeX and LaTeX is Alan Hoenig's "TeX unbound" [5]. We have not read it completely, but what we have read indicates this book goes into quite some depth on explaining the issues with installing fonts for use with TeX. Unfortunately it is a rather expensive book, and when you have spent a lot of money on acquiring a set of nice, new fonts, you do not want to spend another substantial amount of money on a 580 page book. And you definitely do not want to spend a few days reading and (trying to) understand that book to be able to use your fonts with your favorite typesetting software.

Fortunately, there is another document available. An excellent guide is Philipp Lehman's guide [7]. Maybe its best feature is that it is available for free. You can simply download it from CTAN [3]. It certainly is a very good guide to help you installing and using your fonts without having to read hundreds of pages.

Both Alan Hoenig and Philipp Lehman recommend the use of the programme `fontinst` to help you install your fonts. Before we tried to install the font Mrs. Eaves, available from Emigre [4], we had never used this programme before. But with the use of Philipp Lehman's "Font Installation Guide" it turned out not to be too difficult to use, at least when the installation of a simple Latin alphabet is all that is required. Philipp Lehman suggests to read at least the general, introductory bits of the `fontinst` manual [6], the *Fontname* scheme by Karl Berry [2] and the standard LaTeX font selection guide [1], all available from CTAN [3], to acquire a reasonable understanding of the material.

Installing Adobe Garamond

The standard font family Adobe Garamond, also known as Adobe's Type 1 font package number 100, consists of six fonts. These are called:

AGaramond-Regular *AGaramond-Italic*
AGaramond-Semibold *AGaramond-SemiboldItalic*
AGaramond-Bold *AGaramond-BoldItalic*

When you buy this package from Adobe, these fonts are what you get. Adobe provides nice instructions on how to install and use them, just not for TeX. Luckily for you and me, TeX and LaTeX support has already been taken care of.

Table 1. Renaming of Adobe Garamond files

Font name	Original file name	New <i>Fontname</i> file name
AGaramond-Regular	gdrg____.pfb	padr8a.pfb
AGaramond-Italic	gdi____.pfb	padri8a.pfb
AGaramond-Semibold	gdsb____.pfb	pads8a.pfb
AGaramond-SemiboldItalic	gdsbi____.pfb	padsi8a.pfb
AGaramond-Bold	gdb____.pfb	padb8a.pfb
AGaramond-BoldItalic	gdbi____.pfb	padbi8a.pfb

When you want to use a newly acquired font, it is important to always check first if ready-made support is available, to save you a lot of work. For many Type 1 fonts this is the case, and it can be found on CTAN [3] in the directory `/fonts/psfonts`. Adobe Garamond support has been written by Sebastian Rahtz and is available on CTAN in the directory `/fonts/psfonts/adobe/agaramon`.

All that is needed now are only two things. First, the actual font files need to be renamed according to Karl Berry's *Fontname* scheme. Second, all files need to be copied to the correct spot in the standard TeX directory tree. All of this is nicely documented by Philipp Lehman [7].

The renaming bit is easy in this case, as the fonts are actually listed literally in Karl Berry's *Fontname* [2]. In the current version, which dates from May 2003, they are listed on page 37. But the best way to look for them is by performing a file contents search on all files with file extension `map` in the `fontname` subdirectory of your `TEXMF` tree. The files, as supplied by Adobe, should be renamed according to table 1. We only need the actual font data files, with file extension `pfm`, in this case. Note that the font name we will use in TeX or LaTeX later is *pad*.

Then the files should be copied to the proper place. But, what is that proper place. Actually that is pretty straightforward. First of all, all locally added TeX things should be installed in your `TEXMFLOCAL` tree. Where this actually is, depends on your installation. With TeX Live, you can select this location when you install it. In this local tree, you should create a directory `fonts` (if it not already exists), with subdirectories `tfm`, `type1`, and `vf`. Within each of these subdirectories a directory with the name of the foundry should be created. For Adobe we use the name `adobe`. And within each of these three directories we need a directory with the name `agaramon`, the same as the name Sebastian Rahtz gave to his package. In the same way we also need a `dvips/config` and `tex/latex/adobe/agaramon` subdirectory in `TEXMFLOCAL`. So we now have a directory tree which contains at least the directories shown in figure 1.

We now need to simply copy all files with extension `tfm` to the `fonts/tfm/adobe/agaramon` directory, all files with extension `pfm` to the `fonts/type1/adobe/agaramon` directory, and all files with extension `vf` to the `fonts/vf/adobe/agaramon` directory. All files with extension `fd` need to be copied to the `tex/latex/adobe/agaramon` directory. And finally the supplied file `pad.map` needs to be copied to the `dvips/config` subdirectory.

To make sure the TeX engine can find all these files, we now need to update the search database. For the TeX Live system the actual command is `mktexlsr` or `texhash`, but yours may be different. This can be found in the documentation of your TeX distribution. After this step we need to enable the map file. Again, on TeX Live just run the com-

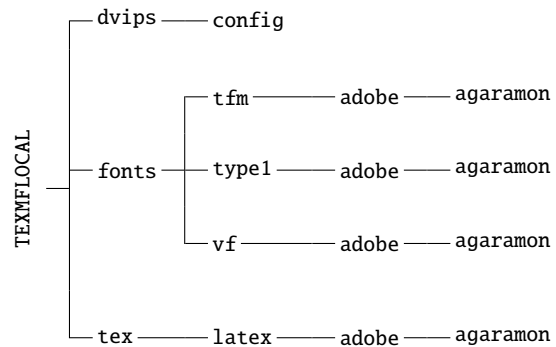


Figure 1. Directory tree for Adobe Garamond

mand `updmap -enable Map pad.map`. You should look in your documentation for the exact way of doing this.

Now all is set to use the newly installed Adobe Garamond font. You simply need to add the line

```
\renewcommand{\rmdefault}{pad}
```

to the preamble of your LaTeX document and you are in business. Or you can write a simple package by creating a file containing this line, followed by the line `\endinput`, naming it `agaramon.sty`, and placing it in the directory `tex/latex/adobe/agaramon`. Sebastian Rahtz did not include such a file in his package, although he did include it in some other packages.

Partially installing Mrs. Eaves

For the installation of Emigre's Mrs. Eaves we did not have the luxury of a ready-made package. Up to now we only have a very basic set of these fonts installed. The entire package consists of nine fonts, three of which contain only a large set of ligatures. The fonts in the base package are:

```
MrsEavesRoman      MrsEavesItalic
MrsEavesBold       MrsEavesSmallCaps
MrsEavesPetiteCaps MrsEavesFractions
```

The special fonts with ligatures are called:

```
MrsEavesJustLigRoman MrsEavesJustLigItalic
MrsEavesJustLigBold
```

The only fonts we have installed for use under TeX and LaTeX up to now are the first four. The *petite caps* font is a special variant of the *small caps* font, with even smaller capitals. The *fractions* font and the ligatures we have not yet looked at in detail.

We will provide you with the steps we needed for using

Table 2. Renaming of Mrs. Eaves files

Font name	Original file name	New <i>Fontname</i> file name
MrsEavesRoman	MEAVROMA.AFM	fevr8a.afm
MrsEavesRoman	MEAVROMA.PFB	fevr8a.pfb
MrsEavesItalic	MEAVITAL.AFM	fevri8a.afm
MrsEavesItalic	MEAVITAL.PFB	fevri8a.pfb
MrsEavesBold	MEAVBOLD.AFM	fevb8a.afm
MrsEavesBold	MEAVBOLD.PFB	fevb8a.pfb
MrsEavesSmallCaps	MEAVSMCA.AFM	fevrc8a.afm
MrsEavesSmallCaps	MEAVSMCA.PFB	fevrc8a.pfb

the first four within TeX, and we simply followed the first tutorial of Philipp Lehman's installation guide [7], which is suitable for installing simple fonts with a Latin alphabet. The first problem was that Mrs. Eaves is not mentioned in Karl Berry's *Fontname* scheme, so we had to come up with a new font name. We selected *fev*. The letter *f* stands for small, public foundries. The Emigre foundry seems to fit the bill here. The two-letter combination *ev* is unused up to now, and seems fitting for the name Mrs. Eaves. With the other guidelines for font naming we came up with the precise naming as seen in table 2. Note that the files with both extension *afm* and extension *pfb* need to be renamed. Renaming them in this way greatly simplifies the use of `fontinst` later.

We need to create a temporary directory with all renamed files in them. We also need a special driver file for `fontinst`. It has to look exactly like the one shown in figure 2 and it could be named `drv-fev.tex`. We then run `fontinst` in the temporary directory with the command `tex drv-fev`. This creates a lot of files.

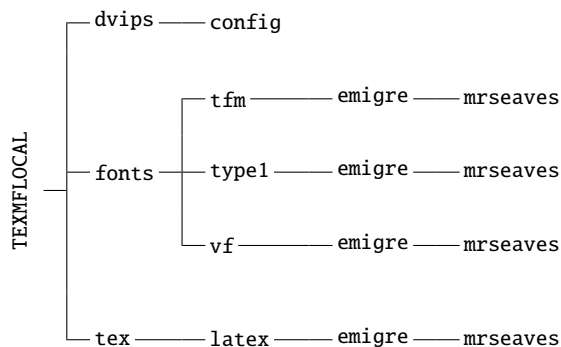
We now need to compile the metric and virtual fonts. This is done by running the programme `pltotf` on all files with extension *pl* and by running the programme `vptovf` on all files with extension *vp1*. This step creates even more files.

We now have almost all files needed to use Mrs. Eaves within TeX. Analogous to the Adobe Garamond fonts, we now need a directory structure to place our files. The necessary tree is shown in figure 3. Then we need to copy all files with extension *tfm* into the directory `fonts/tfm/emigre/`

```

\input fontinst.sty
\latinfamily{fev}{}
\bye

```

Figure 2. Driver file for Mrs. Eaves**Figure 3.** Directory tree for Mrs. Eaves

`mrseaves`, all files with extension *pfb* into the directory `fonts/type1/emigre/mrseaves`, and all files with extension *vf* into the directory `fonts/vf/emigre/mrseaves`. All files with extension *fd* should be copied to the directory `tex/latex/emigre/mrseaves`.

We also need a map file, so programmes like `xdvi` and `dvips` know what to look for. It can be tricky to write such a file, but using Philipp Lehman's tutorial it turns out to be not very hard to do. The map file we created can be seen in figure 4. We actually do not know if the value 0.167 as parameter to create a slanted font provides an aesthetically pleasing typeface. The designer obviously never intended such a font to exist. The map file should be named `fev.map` and placed in the `dvips/config` directory.

A simple package file, like the one shown in figure 5, makes using the font in LaTeX very easy. Note that we use the T1 font encoding. We simply follow Philipp Lehman's advice in this. Those encodings are not yet clear to us. This LaTeX package is called `mrseaves.sty` and placed in the directory `tex/latex/emigre/mrseaves`.

All that is needed to make the new font work now is running the command `mktexlsr` or `texhash`, followed by enabling the map file with the command `updmap -enable Map fev.map`. It must be said that it was a pleasant surprise to see it actually work after this.

```

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{mrseaves}
    [2003/09/03 v0.1 Emigre MrsEaves]
\RequirePackage[T1]{fontenc}
\RequirePackage{textcomp}
\renewcommand*{\rmdefault}{fev}
\endinput

```

Figure 5. Simple package for Mrs. Eaves

```
fevb8r MrsEavesBold "TeXBase1Encoding ReEncodeFont" <8r.enc <fevb8a.pfb
fevbo8r MrsEavesBold "0.167 SlantFont TeXBase1Encoding ReEncodeFont" <8r.enc <fevb8a.pfb
fevr8r MrsEavesRoman "TeXBase1Encoding ReEncodeFont" <8r.enc <fevr8a.pfb
fevrc8r MrsEavesSmallCaps "TeXBase1Encoding ReEncodeFont" <8r.enc <fevrc8a.pfb
fevri8r MrsEavesItalic "TeXBase1Encoding ReEncodeFont" <8r.enc <fevri8a.pfb
fevro8r MrsEavesRoman "0.167 SlantFont TeXBase1Encoding ReEncodeFont" <8r.enc <fevro8a.pfb
```

Figure 4. Map file for Mrs. Eaves

Conclusions

This paper describes our experience with installing two font families for use with \TeX Live. It is a lot easier than we thought at first. We owe, of course, many thanks to all the people who wrote the wonderful software, manuals and tutorials to make it so practical.

We only installed part of the Mrs. Eaves family. The intention is to make the others work within \TeX as well. As time permits we will look into this, partly as a learning experience, partly to be able to actually use that font within \TeX , and partly to share the resulting files and experience with you.

References

- [1] LaTeX3 Project Team. *LaTeX2e font selection*, Sept. 2000. Latest edition available on-line at <http://www.ctan.org/tex-archive/macros/latex/doc/fntguide.pdf>.
- [2] K. Berry. Fontname—filenames for \TeX fonts, May 2003. Latest edition available on-line at <http://www.ctan.org/tex-archive/info/fontname/fontname.pdf>.
- [3] Comprehensive \TeX Archive Network web site. <http://www.ctan.org/>.
- [4] Emigre web site. <http://www.emigre.com/>.
- [5] A. Hoenig. *TeX unbound: LaTeX & TeX Strategies for Fonts, Graphics, & More*. Oxford University Press, 1998. ISBN 0-19-509685-1.
- [6] A. Jeffrey and R. McDonnell. fontinst—font installation software for \TeX , June 1998. Latest edition available on-line at <http://www.ctan.org/tex-archive/fonts/utilities/fontinst/doc/manual/fontinst.ps>.
- [7] P. Lehman. The font installation guide, Aug. 2003. Latest edition available on-line at <http://www.ctan.org/tex-archive/info/Type1fonts/fontinstallationguide.pdf>.