Glisterings

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This simple bug is tied from black Glister which is a synthetic material with iridescence and peacock like colouration.

Black Glister Bug, Hartley Fly Fishing

The aim of this column is to provide odd hints or small pieces of code that might help in solving a problem or two while hopefully not making things worse through any errors of mine. This installment presents fonts in some of their aspects.

> Ornament is but the guilèd shore
> To a most dangerous sea; the beauteous scarf
> Veiling an Indian beauty; in a word,
> The seeming truth which cunning times put on
> To entrap the wisest.

The Merchant of Venice, William Shakespeare

1 A font of fleurons

In an earlier column [8] I showed how printers' ornaments and flowers could be combined to make interesting patterns. A while later I obtained John Ryder's book on flowers, flourishes, and fleurons [5] in which he discussed a rather fine set of fleurons that are thought to have been cut by Robert Granjon around 1565. These are known collectively as *Granjon's Arabesque* or *Granjon's Fleurons*. I found a commercial font of these, the Lanston Type Company's *LTC Fleurons Granjon*, for Mac or Windows and I purchased the Windows version which came as both TrueType and Type1 fonts. The Type1 files were `LTCFleurGranj.afm` and `LTCFleurGranj.pfb`. The question then was: How do I use these in LaTeX?

I read Philipp Lehman's wonderful guide to installing Type1 fonts for LaTeX and it seemed pretty simple [3]. First, decide on a name for the font using the Karl Berry naming scheme. But Lanston Type Company was not a 'known' supplier and other aspects of the naming convention didn't really seem to apply, so I ignored the Berry scheme and made up a name; the `zlgf` font with family name `lgf`.

Next, copy the original `afm` and `pfb` font files to our newly named font (thus preserving the original files in case of disaster, which did happen — several times). So, we now have `zlgf.afm` and `zlgf.pfb`.

I then blindly used `fontinst` with the 'default' `latinfamily` which produced various files which I then installed in their proper locations, and ran a test file meant to show all the glyphs. It didn't.

After much huffing and puffing, trying to read encrypted binary files, looking at the font in George Williams' amazing FontForge [6], and other possibly useful things I eventually managed to install the font on, I think, the 5th attempt (I had paid money for the font and I wasn't going to give up).

FontForge revealed that the actual font name was `LTCFleuronsGranjon` and the font's family name was `LTC Fleurons Granjon`. It also turned out from using FontForge to check the font that some of the glyphs were in LaTeX's normal range of 0–255 while others were above that, and LaTeX couldn't deal with the higher-numbered ones. I read the *Font Installation Guide* several more times and with its help eventually came up with the following:

- Opened `zlgf.pfb` in FontForge and reencoded it in *Glyph Order*, which just numbers the glyphs continuously in the order they appear in the file, then used *Generate Fonts* to keep the new encoding and regenerate `zlgf.afm` to match.
- Followed Lehman's example of installing symbol fonts. That is, I created two files; the first, based on [3, p.46], I called `makelgf.tex`:

```
% makelgf.tex fontinst file
%              for Granjon's Fleurons
\input fontinst.sty
\recordtransforms{lgf-rec.tex}
\installfonts
\installfamily{U}{lgf}{}
\installrawfont{zlgf}{zlgf}%
  {txtfdmns,zlgf mtxasetx}{U}{lgf}{m}{n}{}
\endinstallfonts
\endrecordtransforms \bye
```

And the second, based on [3, p.17], I called `maplgf.tex`:

```
% maplgf.tex fontinst file to
%              generate map for lgf font
\input finstmsc.sty
\resetstr{PSfontsuffix}{.pfb}
\adddriver{dvips}{lgf.map}
\input lgf-rec.tex
\donedrivers \bye
```

Then I ran TeX on them, in that order. The result was two files, the first `ulgf.fd`:

```
%Filename: ulgf.fd [...]
\ProvidesFile{ulgf.fd}
  [2009/10/10 Fontinst v1.929
   font definitions for U/lgf.]
\DeclareFontFamily{U}{lgf}{}
\DeclareFontShape{U}{lgf}{m}{n}{<-> zlgf}{}
\endinput
```

and the second `lgf.map` (one line):

```
zlgf  LTCFleuronsGranjon  <zlgf.pfb
```

Then I ran the program `afm2tfm` on `zlgf.afm` to create `zlgf.tfm`.

- Move the various files to their proper places in the TDS tree. I made a `lanston` directory in each place to hold the files in case I ever wanted to install another Lanston Type Company font. The several files ended up in the `texmf-local` tree as:

```
.../fonts/map/dvips/lanston/lgf.map
.../fonts/afm/lanston/zlgf.afm
.../fonts/tfm/lanston/zlgf.tfm
.../fonts/type1/lanston/zlgf.pfb
.../tex/latex/lanston/ulgf.fd
```

  and then *refresh the database*, in my case by running `texhash`.

- Ensure the new `.map` file can be found by running `updmap[-sys]`. (Make sure that you either always run `updmap` and never `updmap-sys`, or you always run `updmap-sys` and never run `updmap`. If you should ever alternate these then access to your fonts is likely to be all messed up.) In my case, as administrator/root I ran:

```
updmap-sys --enable Map=lgf.map
```

- The fonts should now be available for use. I wrote a little test file to see if all the glyphs were available by generating a font table, using the fonttable package [7], and a macro to print a glyph by giving its number in the font table:

```
% testlgf.tex Test the lgf font family
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{fonttable}
% typeset a character by number
\newcommand*{\F}[1]{{%
    \usefont{U}{lgf}{m}{n}\char#1}}
% zero extra line spacing
\newcommand*{\zeroxls}{%
    \lineskip=0pt\lineskiplimit=0pt}

\begin{table*}
\centering
\caption{The Granjon Fleurons glyphs}
    \label{tab:lgf}
\nohexoct
\fontsize{12}{12}
\xfonttable{U}{lgf}{m}{n}
\end{table*}

% usage examples
\begin{center}\zeroxls
\fontsize{24}{24}\F{11}\F{12}\\
                 \F{13}\F{14}
\end{center}
\begin{center}\zeroxls
\fontsize{24}{24}\F{14}\F{13}\\
                 \F{12}\F{11}
\end{center}
```

```
\begin{center}\zeroxls
\fontsize{24}{24}%
  \F{26}\F{47}\F{75}\F{54}\\
  \F{27}\F{46}\F{74}\F{55}
\end{center}
\end{document}
```
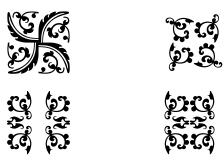
The results from the test file are in Table 1 and the three arabesques below.

Many other arabesques may be created, like those below and the 'moustachios' used in a previous column as anonymous divisions setting off the TEXMAG articles [9].

All was well with using my fleurons font until I came to install the next version of TEX Live, when the fleurons suddenly became unfindable. Apparently new fonts installed as I had done had to be reinstalled whenever TEX Live was (re)installed. Norbert Preining advised me on how to go about avoiding this problem.

The best solution, at least at the time of writing, is to add the `Map` line(s) (the contents of the file `lgf.map`, in my case) to the file (creating it if necessary) `.../web2c/updmap.cfg` in the tree where the fonts are installed — `texmf-local` in my case.

After updating `updmap.cfg`, it's then necessary to run

```
updmap-sys
```

which completes the operation. The idea is that each `texmf` tree in use has its own `updmap.cfg`, and `updmap[-sys]` reads them all to generate the final files used by `pdftex`, `dvips`, et al.

Slow, slow, fresh fount, keep time with my salt tears.

Cynthia's Revels, BEN JONSON

2 Fonts, GNU/Linux and X∃TEX

Having gone to the trouble to get LATEX to use my new fleurons font I thought that it might have been

Table 1: The Granjon Fleurons glyphs

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71
72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87
88	89	90	91	92	93	94	95
96	97	98	99	100	101	102	103
104	105	106	107	108	109	110	111

easier to use X\TeX as I understood that it could handle any system font without the contortions involved in setting one up for LaTeX. It seems that if you are on a Mac or Windows machine installing a new system font is trivial. However, I work on a Linux box and my first difficulty was in finding out how to install a new system font. All articles on the subject that I googled had different ideas on the subject, some very complicated. I eventually, with much trepidation, tried what appeared to be the simplest method which was to:

- Copy the font `afm` and `pfb` files into a directory under `/usr/share/fonts`, which I created and called `Lanston`.[1]

- As root, run `fc-cache -f -v` so that it will cache the new font for use.

- Run `fc-list`, which returns a list of the system fonts, to check that the new font is now among them.

Now for the test. A simple X\LaTeX file:

```
\documentclass{article}
\usepackage{fontspec}
\fontspec{LTCFleuronsGranjon}
\begin{document}
  ABCDEFGHI
\end{document}
```

which produced:
ABCDEFGHI

---

[1] I tend to uppercase the first letter of directory names, but not necessarily consistently.

... an abject failure! It should have typeset the corresponding fleurons.

I had come across a method for displaying a table of all the glyphs in a font by Guido Herzog in a posting to the X\TeX mailing list [2]. I used X\TeX on this for my fleurons font:

```
% glyphs.tex -- find glyphs and their index
\parindent 0pt
%% the font to test
\font\test="LTC Fleurons Granjon" at 14pt
% this next one also works
%\font\test="LTCFleuronsGranjon" at 14pt

\newcount\charcountA \charcountA 0
\newcount\charcountB
  \charcountB \XeTeXcountglyphs\test
  \advance\charcountB -1\relax
\newcount\charcountC \charcountC 0

\def\ystrut{%
  \vrule height 15pt depth 5.5pt width 0pt}
\advance\vsize 4\baselineskip

\loop
  \advance\charcountC 1\relax
  \leavevmode
  \hbox{\hbox to 10mm{%
    \hss\number\charcountA\quad}%
   \hbox to 10mm{%
    \test\XeTeXglyph\charcountA\ystrut\hss}}%
  \ifnum\charcountC = 8
      \endgraf \charcountC 0\fi
  \ifnum\charcountA < \charcountB
```

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```
        \advance\charcountA 1\relax
\repeat
\bye
```

The result was a table similar to Table 1 displaying all the fleuron glyphs. This meant that X_HL_TEX found my new font but for some reason my use of the fontspec package [4] might have been at fault. I eventually discovered that I should have called \fontspec in the body of the document:

```
\documentclass{article}
\usepackage{fontspec}
\begin{document}
  \fontspec{LTCFleuronsGranjon}
  ABCDEFGHI
\end{document}
```

which made the fleurons the current font, or alternatively use \setmainfont in the preamble:

```
\documentclass{article}
\usepackage{fontspec}
\setmainfont{LTCFleuronsGranjon}
\begin{document}
  ABCDEFGHI
\end{document}
```

to make the fleurons the main (default) font.

Now, it seems simple enough to typeset with new fonts on a Linux box.

> We started off trying to set up a small anarchist community, but people wouldn't obey the rules.
>
> *Getting On*, ALAN BENNETT

3 Mixing traditional and system fonts

A little while ago I was extending an older document where I had been using several fonts set up for the traditional LaTeX methods — Type 1 fonts with `tfm` and `map` files. For swapping from one font to another I used a macro

```
\newcommand*{\FSfont}[1]{%
  \fontfamily{#1}\selectfont}
```

where the argument is the font's family name. This worked well.

I then wanted to use a new font, `IM_FELL_ Double_Pica_PRO_Roman`, which didn't come with LaTeX support files. So I added it to the system fonts directory, added it to the document with my \FSfont macro, and used `xelatex`, together with fontspec, instead of `pdflatex` for processing. The new font displayed well but all the others reverted to the default Latin Modern fonts.

I eventually had to ask on `ctt` and Ulrike Fischer responded [1] that with `xetex`/`fontspec` the default encoding is set to EU1 but with `pdflatex` it is set to T1. Therefore I had to take account of encodings when moving from `pdflatex` to `xelatex`.

In my case I was only using the normal alphanumeric and punctuation characters which are in the same slots in the EU1 and T1 encodings. Thus, changing my \FSfont macro to:

```
\newcommand*{\FSfont}[1]{%
  \fontencoding{T1}\fontfamily{#1}\selectfont}
```

fixed the problem for me.

References

[1] Ulrike Fischer. Re: XeLaTeX, fontspec and fontfamily. Post to `comp.text.tex` newsgroup, 12 July 2010.

[2] Guido Herzog. Re: [XeTeX] Trouble with displaying word containing 3 conjunct consonants in Devanagari. Post to `xetex` mailing list, 24 September 2009.

[3] Philipp Lehman. The font installation guide, December 2004. (Available on CTAN at `/info/Type1fonts/fontinstallationguide`).

[4] Will Robertson and Khaled Hosny. The fontspec package, 2010. Available on CTAN in `macros/latex/contrib/fontspec`.

[5] John Ryder. *Flowers & Flourishes including a newly annotated edition of A Suite of Fleurons.* The Bodley Head for Mackays, 1976. ISBN 0370 11308 X.

[6] George Williams. FontForge: An outline font editor, 2009. Available at `http://fontforge.sourceforge.net/`.

[7] Peter Wilson. The fonttable package, 2009. Available on CTAN in `macros/latex/contrib/ fonttable`.

[8] Peter Wilson. Glisterings: Ornaments. *TUGboat*, 32(2):202–205, 2011.

[9] Peter Wilson. Glisterings: Timelines, parsing a filename. *TUGboat*, 33(1):39–42, 2012.

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