Recent Additions to TeX's Font Repertoire

Michael Sharpe

TUG Portland, July 2014

Font samples may be viewed at `http://math.ucsd.edu/~msharpe/RecentTexFonts.pdf`

Outline:

- Major font families now available for use in X⫯LATEX/LuaLATEX (OpenType, TrueType) and [pdf]LATEX (PostScript, TrueType.)
- Looking backwards. What did we have earlier?
- Modern revivals of old-style font families, especially Bembo and Garamond.
- Other new or recently renovated Roman fonts.
- Recent Typewriter fonts.
- Dealing with fonts offering several weights.
- Some newish Sans Serif fonts.

X_ƎLATEX/LuaLATEX(OpenType/TT)

- ► Computer Modern (TeX Gyre Latin Modern)
- ► Times (STIX, XITS, TeX Gyre Termes)
- ► Palatino (TeX Gyre Pagella)
- ► Libertine
- ► Bembo (Cardo, fbb—"Free Bembo")
- ► Charter (XCharter or Charis SIL)
- ► Gentium-tug (TUG version of SIL's gentium)
- ► Garamond (NewGaramondNo8, EBGaramond)
- ► Heuristica (Extension of Utopia)
- ► Baskervaldx (Baskerville-like, based on BaskervaldADF with added smc and OsF)
- ► Lucida (commercial, text and math)

LATEX SERIFED FONT FAMILIES

All the above also have pfb versions and LATEX support files.

- ▸ **garamondx** (NewG8) is URW Garamond No 8, enhanced with full f-ligatures, Small Caps and oldstyle figures in all weights/shapes.
- ▸ **XCharter** is Charter, similarly enhanced.
- ▸ **Baskervaldx** is BaskervaldADF, likewise.
- ▸ **fbb** (Free Bembo) is derived from Cardo, with many modifications and the addition of a Bold Italic variant.
- ▸ **newtx** is Times (enhanced txfonts.)
- ▸ **newpx** is Palatino (enhanced pxfonts, text from TeX Gyre Pagella.)

PRINTER FONTS VS. WEB FONTS

Some fonts included in TeX distributions were based on designs for metal, later digitized. (Some exceptions: CM, Utopia and Charter were never metal; Charter, an "Egyptian slab serif", the main font for this document, was designed explicitly for printer output at medium resolutions.)

More and more, new fonts are designed for Web use (resolutions ≈ 100dpi) with larger xheight, larger "counters" (interior spaces), simpler shapes, lower contrast and wider spacing. Typically, good Web fonts (Georgia, Verdana) don't look elegant in print and good printer fonts (Garamond, Bembo, Palatino) don't render very well at small sizes on lower-resolution screens.

Recall: Free Fonts in 2004

- URW versions of the PostScript 35 fonts—Times, Palatino, Helvetica, etc, but without features like Small Caps or oldstyle figures, except for Palatino via mathpazo.
- URW Garamond No 8, without Small Caps or oldstyle figures or a full set of f-ligatures.
- Utopia and Charter, in basic versions
- Mathpazo, mathptmx, fourier (Utopia)
- Mathdesign (Garamond, Charter, Utopia)
- txfonts and pxfonts, neither usable for quality work because of spacing problems.
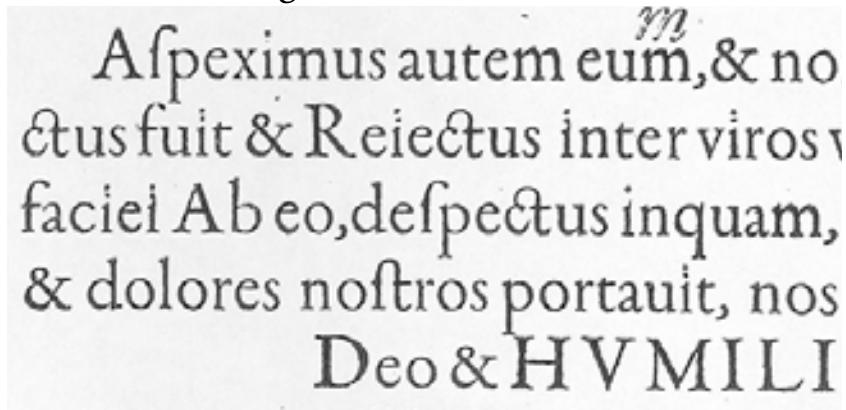- Early versions of Latin Modern, successor to Computer Modern.

PETRI BEMBI DE AETNA AD ANGELVM CHABRIELEM LIBER .

Factum a nobis pueris est , et quidem sedulo Angele; quod meminisse te certo scio;ut fructus studiorum nostrorum, quos ferebat illa aetas nõ tam maturos , q̃ uberes,semper tibi aliquos promeremus: nam siue dolebas aliquid, siue gaudebas;

Egenolff-Berner fragment

A fragment of the Egenolff-Berner specimen from 1592, thought to represent Garamont's final Roman font design.

Fonts based on Griffo's De Aetna

- ▸ Stanley Morison's Monotype Bembo (metal)
- ▸ Adobe Bembo
- ▸ Bitstream Aldine 401 (Matthew Carter)
- ▸ Cardo, the starting point for fbb ("Free Bembo")
- ▸ Monotype Bembo Book (2005)
- ▸ Monotype Poliphilus
- ▸ Matthew Carter's Yale Bembo (Yale exclusive)
- ▸ Edward Tufte's ET Bembo (for his private use)

Fonts based on Garamond, not Jannon: "True Garamond"

- Stempel Garamond (metal, then digital)
- Adobe Garamond Premier Pro
- URW++ Garamond No 8, the basis for garamondx
- EBGaramond (EB stands for Egenolff–Berner. No bold weights yet.)

Bembo-fbb [B] vs. Garamondx [G]

Factum a nobis pueris est, et quidem [B]

Factum a nobis pueris est, et quidem [G]

   sedulo Angele; quod meminisse te certo [B]

   sedulo Angele; quod meminisse te certo [G]

   scio; ut fructus studiorum nostrorum, [B]

   scio; ut fructus studiorum nostrorum, [G]

   quos ferebat illa aetas nó tam maturos, q̈ [B]

   quos ferebat illa aetas nó tam maturos, q̈ [G]

   uberes, semper tibi aliquos promeremus: [B]

   uberes, semper tibi aliquos promeremus: [G]

Four+ Versions of Bembo

Bembo's older digital forms have drawn criticism.
More recent versions (B, C, Y) look sturdier.

A: sedulo Angele; quod meminisse te certo

B: sedulo Angele; quod meminisse te certo

C: sedulo Angele; quod meminisse te certo

Y: sedulo Angele; quod meminisse te certo

A: scio; ut fructus studiorum nostrorum

B: scio; ut fructus studiorum nostrorum

C: scio; ut fructus studiorum nostrorum

Y: scio; ut fructus studiorum nostrorum

S: scio; ut fructus studiorum nostrorum

(A=Adb, B=B-Bk, C=Crdo, S= BitStrm, Y=Yale)

FOUR VERSIONS OF GARAMOND

A: sedulo Angele; quod meminisse te certo

E: sedulo Angele; quod meminisse te certo

S: sedulo Angele; quod meminisse te certo

U: sedulo Angele; quod meminisse te certo

A: scio; ut fructus studiorum nostrorum

E: scio; ut fructus studiorum nostrorum

S: scio; ut fructus studiorum nostrorum

U: scio; ut fructus studiorum nostrorum

(A=Adobe, E=EBGaramond, S=Stempel, U=URW)

PALATINO

Style inspired by Italian Renaissance fonts, but with increased xheight. One of best-represented fonts for TeX.

- ▸ OpenType: TeX Gyre Pagella. Math available through Asana Math or TeX Gyre Pagella Math.
- ▸ PostScript: `newpxtext` + `newpxmath`, TeX Gyre Pagella + `newpxmath`, or `mathpazo` (text and math.) Can also use `eulervm` math for a more informal look.
- ▸ `Kpfonts` (complete text and math) are based on URW++ Palatino clone, but have their own distinctive, light appearance.

TIMES

Many choices now available.

- ▸ OpenType: STIX (text + math), or TeX Gyre Termes + STIX math/TeX Gyre Termes Math, or XITS.
- ▸ PostScript: newtxtext + newtxmath/STIX, TeX Gyre Termes + newtxmath/STIX, or STIX (text and math.)
- ▸ Mathtime (commercial but reasonably priced) is still a worthwhile Times-based math package, symbols lighter than STIX.
- ▸ Older choices such as mathptmx have now outlived their usefulness.

Baskerville

A "transitional" font (c 1760), as was the Times precursor. A favorite of Benjamin Franklin. Many commercial versions, most notably Storm Baskerville Pro. Free versions include:

- Baskervald (BaskervaldADF)—not designed for TeX (ligature spacing, math characters.)
- (OpenType) Baskervaldx, derived from BaskervaldADF, works well with TeX.
- Baskervaldx + [baskervaldx]newtxmath
- GFSBaskerville (for Greek, not Roman use)
- LibreBaskerville (lacks BI, web font)

Five versions of Baskerville

- (M) : Baskerville Sample
- (A) : Baskerville Sample
- (S) : Baskerville Sample
- (V) : Baskerville Sample
- (L) : Baskerville Sample

M=Monotype Baskerville
A=Adobe BaskervilleStd
S=Storm BaskervillePro
V=BaskervaldADF
L=LibreBaskerville

UTOPIA

Austere appearance. Early Adobe font.

- ▸ Fourier (Utopia text, fourier math) will make use of full (expert) Utopia, if available.
- ▸ MathDesign [utopia] (Utopia text, MathDesign math) can also use expert fonts.
- ▸ The ADF Venturis fonts are based on Utopia.
- ▸ An extension of the (free, basic part of) Utopia by Andrey Panov, dubbed Heuristica (Evristika), is available now from CTAN, TeXLive and MikTeX along with LaTeX support files. Has added ligatures, oldstyle and superior figures and Roman small caps. Matching math via [utopia]newtxmath.

Libertine

This is not a new font, but its implementations have changed fairly often. The glyphs are rather neutral, and lighter than Times. I find its italic glyphs work rather well as math letters, and often provide a good match for text fonts whose italic angles are substantially less than Times'. Here's a sample of XCharter using:

```
\usepackage[libertine,bigdelims,scaled=1.08]%
{newtxmath}
```

XCharter's italic angle is close to *Libertine*'s. The math italic letters below are from *Libertine*:

$$f(x) = \int_0^x e^{-\beta t} h(t) \, dt.$$

SERIFED TYPEWRITER FONTS

OT1 default is `cmtt`, a very well-done serifed monospace font, though not a good match for fonts heavier than Computer Modern.

- ▸ `Courier` is very light, very wide, unsuitable for most jobs.
- ▸ The `zlmtt` package provides access to all features of TeX Gyre Latin Modern Typewriter, a very substantial extension of `cmtt`. Best suited to lighter Roman fonts. Scale up for heavier Roman faces.
- ▸ The `newtxtt` package is built on an enhanced version of the typewriter fonts contained in the `txfonts` package, with choice of forms for 'zero'. Heavier and taller than `zlmtt`.

Sans Serif Typewriter Fonts

Two good packages now available:

- ▸ `Inconsolata--zi4` is an extension of Karl Berry's Inconsolata package, offering regular and bold weights, a choice of styles for 'zero', 'l' and quotes. Based on an extension of Raph Levien's fine *Inconsolata* fonts. Not dissimilar to Microsoft's *Consolas*.

- ▸ `Beramono` package is based on Bitstream's Vera Sans Mono. All glyphs are unmistakable. Available only in T1+TS1. The more recent `DejaVu` package is a further extension with many more encodings and accented glyphs.

Dealing with Multiple Weights

Fonts are increasingly offered in several weights ranging from ultra-light to extra-black. (Sans serif fonts often have a multiplicity of weights.) Until last summer, if you wanted to pick two weights to serve as "regular" and "bold" in the eyes of LaTeX, you had to pick the same pair of weights in Roman, sans serif and typewriter. Now, the `mweights` package allows you to pick the pair independently for each of those families.

Newer Sans Serif

Cabin: Has multiple weights and Small Caps but no alternate figure styles. Like Gill Sans but less round. The output from `\textsf` will resemble: Sans Serif, Small Caps, idiosyncratic @ sign.

Source Sans Pro: Has small caps and a choice of figures styles, plus multiple weights. With the line

```
\usepackage[regular,semibold]{sourcesanspro}
```

the output from `\textsf` will resemble: Sans Serif regular, Small Caps.

Appendix

- ▸ Samples of most fonts mentioned above may be viewed at `http://math.ucsd.edu/~msharpe/RecentTexFonts.pdf`
- ▸ For an article of extraordinary interest on the origins and descent lines of the Garamond fonts, see `http://www.garamond.culture.fr/kcfinder/files/3_3_4_article_beatrice_warde.pdf`