The \texttt{fbb} package—a Bembo–like font

Michael Sharpe

1 The Package

The \texttt{fbb} package offers a family of Bembo–like fonts derived from Cardo in the usual four styles. Text figures may be selected from four types:

- Proportional lining (LF), selected by options \texttt{lining, proportional \{or p\}}; [lining is the default figure style;]
- Tabular lining (TLF), selected by options \texttt{lining, tabular}; [tabular is the default figure alignment;]
- Proportional oldstyle (OsF), selected by option \texttt{oldstyle, proportional \{or p\}};
- Tabular oldstyle (ToSF), selected by options \texttt{oldstyle, tabular}.

The package also defines six macros that allow you to use alternate figure styles locally:

\begin{verbatim}
\texttt{textlf(97)} % print 97 in proportional lining figures \\
\texttt{textlf(97)} % print 97 in tabular lining figures \\
\texttt{textosf(97)} % print 97 in proportional oldstyle figures \\
\texttt{textosf(97)} % print 97 in tabular oldstyle figures \\
\texttt{textsu(97)} % print 97 in superior figures \\
\texttt{textin(97)} % print 97 in inferior figures \\
\texttt{textde(97)} % print 97 in denominator figures (same as inferior, but raised to baseline.)
\end{verbatim}

As of version 1.15 (mid–2020), there is a new macro \texttt{textfrac} that may be used to construct simple fractions. For example, \texttt{textfrac[2/7]} renders as 2/7. (If the optional argument is not specified, you get just the fraction.) There are two options to \texttt{fbb.sty} that may be used to modify the space before and after the solidus: \texttt{foresolidus} and \texttt{aftsolidus}, which should be specified in \textit{em} units. Their default values are .04em and 0em respectively.

\textbf{New in version} 1.16: A swash version of Q has been added to all faces. You may enable it globally using option \texttt{swashQ} to ET\texttt{bb}, or specify it locally with the macro \texttt{Qswash}, which renders as \textit{Q}. If you had enabled it globally, you have access to the ordinary \textit{Q} with the macro \texttt{Qnoswash}.

Option \texttt{altP} changes the form of the letter capital \textit{P} from its default closed shape, as used in almost all modern digital renderings of Bembo, to the more historically accurate open shape, \textit{P}. See, for example, the reproduction of Pietro Bembo’s \textit{De Aetna} at https://ia601405.us.archive.org/34/items/ita-bnc-ald-00000673-001/ita-bnc-ald-00000673-001.pdf (A higher resolution rendering of a two–page sample is available from https://upload.wikimedia.org/wiki/pedia/commons/8/89/De_Aetna_1495.jpg.) Unicode \texttt{T\textsc{p}X} users may load \texttt{fbb} with the equivalent to \texttt{altP} by the code block

\begin{verbatim}
usepackage{fontspec}
\setmainfont{fbb}[%
UprightFeatures = {StylisticSet=01},
BoldFeatures = {StylisticSet=01}
]
\end{verbatim}

(Capital \textit{P} in italic and bold italic is already open—those faces have no \texttt{ss01} feature.)
Option \texttt{supers} changes the form of footnote markers to use \texttt{fbb}'s superior figures, unless you have redefined the meaning of \textbackslash thefootnote prior to loading \texttt{fbb}. For more control over size, spacing and position of footnote markers, use the \texttt{superior} package: E.g.,

\texttt{\usepackage[supstfm=fbb-Regular-sup-t1]{superiors}}

There is a scaled option (e.g., \texttt{scaled=.97}) that allow you to adjust the text size against, say, a math package. This text package works well with newtxmath with the \texttt{libertine} option, because the latter has italics of the same italic angle as \texttt{fbb} and of very similar xheight and weight. The suggested invocation is:

\% load babel package and options here
\texttt{\usepackage[full]{textcomp}} \% to get the right copyright, etc.
\texttt{\usepackage[p,osf]{fbb}} \% osf in text, tabular lining figures in math
\texttt{\usepackage[scaled=.95,type1]{cabin}} \% sans serif in style of Gill Sans
\texttt{\usepackage[varqu,va\texttt{r}l\texttt{e}]{zi4}} \% inconsolata typewriter
\texttt{\usepackage[T1]{fontenc}} \% LY1 works
\texttt{\usepackage{newtxmath}}
\texttt{\usepackage[ca\texttt{r}=boondoxo,bb=boondox,frak=boondox]{matha\texttt{r}fa}}

Here is a short sample based on this preamble:

The typeset math below follows the ISO recommendations that only variables be set in italic. Note the use of upright shapes for \texttt{d}, \texttt{e} and \texttt{π}. (The first two are entered as \texttt{\textbf{\textsc{d}}} and \texttt{\textbf{\textsc{e}}}, and in fonts derived from newtxmath or \texttt{mtpro2}, the latter is entered as \texttt{\textbackslash uppi}.)

**Simplest form of the Central Limit Theorem:** Let \( X_1, X_2, \ldots \) be a sequence of iid random variables with mean \( 0 \) and variance \( 1 \) on a probability space \((Ω, F, P)\). Then

\[
P \left( \frac{X_1 + \cdots + X_n}{\sqrt{n}} \leq y \right) \to \mathcal{N}(y) := \int_{-\infty}^{y} \frac{e^{-t^2/2}}{\sqrt{2\pi}} \, dt \quad \text{as } n \to \infty,
\]

or, equivalently, letting \( S_n := \sum_{1}^{n} X_k \),

\[
\mathbb{E} f(S_n/\sqrt{n}) \to \int_{-\infty}^{\infty} f(t) \frac{e^{-t^2/2}}{\sqrt{2\pi}} \, dt \quad \text{as } n \to \infty, \text{ for every } f \in \mathbb{B}C(\mathbb{R}).
\]

## 2 Text effects under fontaxes

This package loads the \texttt{fontaxes} package in order to access italic small caps. You should pay attention to the fact that \texttt{fontaxes} modifies the behavior of some basic \LaTeX{} text macros such as \texttt{\textsc{t}} and \texttt{\textsc{e}}. Under normal \LaTeX{}, some text effects are combined, so that, for example, \texttt{\textbf{\textsc{t}}} produces bold italic \texttt{a}, while other effects are not, e.g., \texttt{\textsc{t}\textsc{e}} produces the same effect as \texttt{\textsc{t}}, producing the letter \texttt{a} in upright, not small cap, style. With \texttt{fontaxes}, \texttt{\textsc{t}\textsc{e}} produces instead upright small cap \texttt{a}. It offers a macro \texttt{\texttt{\textsc{t}}\textsc{u}\texttt{c}} that undoes small caps, so that, e.g., \texttt{\textsc{t}\textsc{e}} produces \texttt{a} in non-small cap mode, with whatever other style choices were in force, such as bold or italics.

## 3 Glyphs in TS1 encoding

The layout of the TS1 encoded Text Companion font, which is fully rendered in regular style only, is as follows. See below for the macros that invoke these glyphs. Though shown in regular weight, upright shape only, a reduced set of glyphs are available in all other weights and shapes.
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>00x</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>01x</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>02x</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>03x</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>04x</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>05x</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>06x</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>07x</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>08x</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

**List of macros to access the TS1 symbols in text mode:**
(Note that slots 0–12 and 26–29 are accents, used like \{a} for a tie accent over the letter a. Slots 23 and 31 do not contain visible glyphs, but have heights indicated by their names.)

- \capitalgrave
- \capitalacute
- \capitalcircumflex
- \capitaltilde
- \capitaldieresis
- \capitalhungarumlaut
- \capitalring
- \capitalcaron
- \capitalbreve
- \capitalmacron
There is a macro \textcircled{} that may be used to construct a circled version of a single letter using \textcircled{circle}. The letter is always constructed from the small cap version, so, in effect, you can only construct circled uppercase letters: \textcircled{M} and \textcircled{m} have the same effect, namely ®.

4 Historical Background

Humanist scholar Pietro Bembo, a seminal figure in literature and music of the Italian Renaissance, who later became Cardinal Bembo, wrote an essay in the last decade of the 15th century about his travels to Mt. Aetna, which work was published by the Venetian printer Aldus Manutius (whose name gave us Aldine) using a new Roman font designed by his punch-cutter, Francesco Grillo that improved on the earlier efforts of Jenson, another printer in Venice. That font seems to have played a similarly seminal rôle in typography. It was the direct progenitor of the many Garamond fonts, and has seen numerous modern revivals whose names make use of every known historical connection to the figures named above, such as Lucrezia Borgia who was for several years Bembo’s lover.

The metal form of the Bembo font developed by Stanley Morison for English Monotype in the 1920’s was widely used in book printing due to its handsome appearance and readability. Commercial digital versions have not had much love from critics until recently. Adobe’s MinionPro and WarnockPro arguably deserve the prizes for the best modern revivals of oldstyle fonts not too distant from Bembo. (Both lack Bembo’s tall ascenders and its characteristic overarching f.)

To my knowledge, there is currently only one free source for a Bembo–like font family, that being David Perry’s Cardo (a contraction of Cardinal Bembo), which is not readily accessible to \LaTeX users and which lacks Bold Italic as well as a full range of Small Caps and figure styles.

This package is named for its Berry form fbb, with f denoting free (i.e., public) and bb the Berry abbreviation for Bembo. It is derived from Cardo, with significant modifications. Where Cardo is intended primarily for scholars of ancient languages, those features are removed from fbb and issues of more modern concern are added. The package contains the usual four styles (regular, italic, bold, bold italic), each with small caps and figures in tabular lining, proportional lining, tabular oldstyle and proportional oldstyle, as well as superior and inferior figures. The f-ligatures have been revised/added so as to function better with \LaTeX, and other glyphs have been changed as necessary to suit the demands of FontForge. A kerning table was added to Regular upright weight—a serious omission in the original. The Bold Italic weight was created algorithmically from italic, but the result required much intervention by human hand. Small Caps were created for all styles other than regular, which was already present in Cardo.

On screen and paper, fbb appears close in weight to Libertine, though of larger xheight and much larger ascender height, a bit softer and slightly less plain. The following two sentences are written in fbb and Libertine respectively. The third example sentence is written using \EBGaramond scaled up by 20%. Perhaps fbb will be prove to be more suitable for older eyes.

**Comparison between fbb and Libertine:**

Both fbb and Libertine are highly readable fonts in their standard Roman forms, each has a wide range of figures and small caps, but Libertine has the advantage in the number of supported scripts and the variety of weights.
Both fbb and Libertine are highly readable fonts in their standard Roman forms, each has a wide range of figures and small caps, but Libertine has the advantage in the number of supported scripts and the variety of weights.

SAME SENTENCE IN EB GARAMOND:

Both fbb and Libertine are highly readable fonts in their standard Roman forms, each has a wide range of figures and small caps, but Libertine has the advantage in the number of supported scripts and the variety of weights.