The **fbb** package—a Bembo–like font

Michael Sharpe

1 The Package

The `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 `lining, proportional [or p]`; [`lining` is the default figure style;]
- Tabular lining (TLF), selected by options `lining, tabular`; [`tabular` is the default figure alignment;]
- Proportional oldstyle (OsF), selected by option `oldstyle, proportional [or p]`;
- Tabular oldstyle (TOsF), selected by options `oldstyle, tabular`.

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

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

As of version 1.15 (mid-2020), there is a new macro `\textfrac` that may be used to construct simple fractions. For example, `\textfrac[2]{7}{8}` renders as 2⅞. (If the optional argument is not specified, you get just the fraction.) There are two options to `fbb.sty` that may be used to modify the space before and after the solidus: `foresolidus` and `aftsolidus`, which should be specified in `em` units. Their default values are `.04em` and `0em` respectively.

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

Option `altP` changes the form of the letter capital P from its default closed shape, as used in almost all modern digital renderings of Bembo, to the more historically accurate open shape, P. See, for example, the reproduction of Pietro Bembo's *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/wikipedia/commons/8/89/De_Aetna_1495.jpg`.) Unicode TEX users may load `fbb` with the equivalent to `altP` by the code block

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

(Capital P in italic and bold italic is already open—those faces have no `ss01` feature.)

Option sups changes the form of footnote markers to use fbb's superior figures, unless you have redefined the meaning of \thefootnote prior to loading fbb. For more control over size, spacing and position of footnote markers, use the superiors package: E.g.,

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

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

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

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 d, e and π. (The first two are entered as \mathrm{d} and \mathrm{e}, and in fonts derived from newtxmath or mtpro2, the latter is entered as \uppi.)

Simplest form of the *Central Limit Theorem*: *Let $X_1, X_2, \cdots$ be a sequence of iid random variables with mean* 0 *and variance* 1 *on a probability space* $(\Omega, \mathcal{F}, \mathbb{P})$. *Then*

$$\mathbb{P}\left(\frac{X_1 + \cdots + X_n}{\sqrt{n}} \le y\right) \to \mathfrak{N}(y) := \int_{-\infty}^{y} \frac{\mathrm{e}^{-t^2/2}}{\sqrt{2\pi}}\,\mathrm{d}t \quad \text{as } n \to \infty,$$

or, equivalently, letting $S_n := \sum_1^n X_k$,

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

2 Text effects under fontaxes

This package loads the fontaxes package in order to access italic small caps. You should pay attention to the fact that fontaxes modifies the behavior of some basic LaTeX text macros such as \textsc and \textup. Under normal LaTeX, some text effects are combined, so that, for example, \textbf{\textit{a}} produces bold italic a, while other effects are not, eg, \textsc{\textup{a}} has the same effect as \textup{a}, producing the letter a in upright, not small cap, style. With fontaxes, \textsc{\textup{a}} produces instead upright small cap a. It offers a macro \textulc that undoes small caps, so that, eg, \textsc{\textulc{a}} produces 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.

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	` 0	´ 1	^ 2	~ 3	¨ 4	˝ 5	° 6	ˇ 7	˝0x
´01x	˘ 8	¯ 9	˙ 10	¸ 11	˛ 12	, 13	14	15	
´02x	16	17	„ 18	19	20	— 21	— 22	23	˝1x
´03x	← 24	→ 25	‿ 26	‿ 27	‿ 28	‿ 29	30	31	
´04x	ƀ 32	33	34	35	$ 36	37	38	' 39	˝2x
´05x	40	41	* 42	43	, 44	= 45	. 46	/ 47	
´06x	0 48	1 49	2 50	3 51	4 52	5 53	6 54	7 55	˝3x
´07x	8 56	9 57	Q 58	Q 59	⟨ 60	− 61	⟩ 62	63	
´10x	64	65	66	67	68	69	70	71	˝4x
´11x	72	73	74	75	76	Ʊ 77	78	○ 79	
´12x	80	81	82	83	84	85	86	Ω 87	˝5x
´13x	88	89	90	⟦ 91	92	⟧ 93	↑ 94	↓ 95	
´14x	` 96	97	★ 98	o|o 99	† 100	101	102	103	˝6x
´15x	104	105	106	107	108	◌͡◌ 109	♪ 110	111	
´16x	112	113	114	115	116	117	118	119	˝7x
´17x	120	121	122	123	124	125	~ 126	○ 127	
´20x	˘ 128	ˇ 129	˝ 130	ˋ 131	† 132	‡ 133	‖ 134	‰ 135	˝8x
´21x	• 136	℃ 137	$ 138	139	ƒ 140	₡ 141	₩ 142	₦ 143	
´22x	₲ 144	₱ 145	£ 146	₨ 147	₽ 148	¡ 149	₫ 150	TM 151	˝9x
´23x	‰ 152	¶ 153	฿ 154	№ 155	⁒ 156	℮ 157	∘ 158	SM 159	
´24x	[160	] 161	¢ 162	£ 163	¤ 164	¥ 165	¦ 166	§ 167	˝Ax
´25x	¨ 168	© 169	a 170	◌ 171	¬ 172	Ⓟ 173	® 174	¯ 175	
´26x	° 176	± 177	2 178	3 179	´ 180	µ 181	¶ 182	· 183	˝Bx
´27x	※ 184	1 185	º 186	√ 187	¼ 188	½ 189	¾ 190	€ 191	
´32x	208	209	210	211	212	213	× 214	215	˝Dx
´33x	216	217	218	219	220	221	222	223	
´36x	240	241	242	243	244	245	÷ 246	247	˝Fx
´37x	248	249	250	251	252	253	254	255	
	˝8	˝9	˝A	˝B	˝C	˝D	˝E	˝F	

List of macros to access the TS1 symbols in text mode:
(Note that slots 0–12 and 26–29 are accents, used like `\t{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.)

```
0 \capitalgrave
1 \capitalacute
2 \capitalcircumflex
3 \capitaltilde
4 \capitaldieresis
5 \capitalhungarumlaut
6 \capitalring
7 \capitalcaron
8 \capitalbreve
9 \capitalmacron
```

```
 10 \capitaldotaccent
 11 \capitalcedilla
 12 \capitalogonek
 13 \textquotestraightbase
 18 \textquotestraightdblbase
 21 \texttwelveudash
 22 \textthreequartersemdash
 23 \textcapitalcompwordmark
 24 \textleftarrow
 25 \textrightarrow
 26 \t % tie accent, skewed right
 27 \capitaltie % skewed right
 28 \newtie % tie accent centered
 29 \capitalnewtie % ditto
 31 \textascendercompwordmark
 32 \textblank
 36 \textdollar
 39 \textquotesingle
 42 \textasteriskcentered
 45 \textdblhyphen
 47 \textfractionsolidus
 48 \textzerooldstyle
 49 \textoneoldstyle
 50 \texttwooldstyle
 49 \textthreeoldstyle
 50 \textfouroldstyle
 51 \textfiveoldstyle
 52 \textsixoldstyle
 53 \textsevenoldstyle
 54 \texteightoldstyle
 55 \textnineoldstyle
 60 \textlangle
 61 \textminus
 62 \textrangle
 77 \textmho
 79 \textbigcircle
 87 \textohm
 91 \textlbrackdbl
 93 \textrbrackdbl
 94 \textuparrow
 95 \textdownarrow
 96 \textasciigrave
 98 \textborn
 99 \textdivorced
100 \textdied
108 \textleaf
109 \textmarried
110 \textmusicalnote
126 \texttildelow
127 \textdblhyphenchar
128 \textasciibreve
129 \textasciicaron
130 \textacutedbl
131 \textgravedbl
```

```
\textdagger
\textdaggerdbl
\textbardbl
\textperthousand
\textbullet
\textcelsius
\textdollaroldstyle
\textcentoldstyle
\textflorin
\textcolonmonetary
\textwon
\textnaira
\textguarani
\textpeso
\textlira
\textrecipe
\textinterrobang
\textinterrobangdown
\textdong
\texttrademark
\textpertenthousand
\textpilcrow
\textbaht
\textnumero
\textdiscount
\textestimated
\textopenbullet
\textservicemark
\textlquill
\textrquill
\textcent
\textsterling
\textcurrency
\textyen
\textbrokenbar
\textsection
\textasciidieresis
\textcopyright
\textordfeminine
\textcopyleft
\textlnot
\textcircledP
\textregistered
\textasciimacron
\textdegree
\textpm
\texttwosuperior
\textthreesuperior
\textasciiacute
\textmu
\textparagraph
\textperiodcentered
\textreferencemark
\textonesuperior
```

```
186 \textordmasculine
187 \textsurd
188 \textonequarter
189 \textonehalf
190 \textthreequarters
191 \texteuro
214 \texttimes
246 \textdiv
```

There is a macro `\textcircled` that may be used to construct a circled version of a single letter using `\textbigcircle`. 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 Griffo 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 EBGaramond:

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.