The **fbb** package—a Bembo–like font

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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
```

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*

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

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	ˏ 13	14	15	
´02x	16	17	„ 18	19	20	— 21	— 22	23	˝1x
´03x	← 24	→ 25	⌢ 26	⌢ 27	⌢ 28	⌢ 29	30	31	

	"8	"9	"A	"B	"C	"D	"E	"F	
'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	58	59	⟨ 60	– 61	⟩ 62	63	
'10x	64	65	66	67	68	69	70	71	"4x
'11x	72	73	74	75	76	℧ 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	ʺ 130	ˋ 131	† 132	‡ 133	‖ 134	‰ 135	"8x
'21x	• 136	°C 137	$ 138	¢ 139	ƒ 140	₡ 141	W 142	N 143	
'22x	₲ 144	P 145	₤ 146	℞ 147	? 148	i̧ 149	d̲ 150	TM 151	"9x
'23x	‰₀ 152	¶ 153	฿ 154	№ 155	⁒ 156	℮ 157	o 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	ffl 248	ffi 249	ff 250	fl 251	l 252	fi 253	i 254	f 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
132 \textdagger
133 \textdaggerdbl
134 \textbardbl
135 \textperthousand
136 \textbullet
137 \textcelsius
138 \textdollaroldstyle
139 \textcentoldstyle
140 \textflorin
```

```
141 \textcolonmonetary
142 \textwon
143 \textnaira
144 \textguarani
145 \textpeso
146 \textlira
147 \textrecipe
148 \textinterrobang
149 \textinterrobangdown
150 \textdong
151 \texttrademark
152 \textpertenthousand
153 \textpilcrow
154 \textbaht
155 \textnumero
156 \textdiscount
157 \textestimated
158 \textopenbullet
159 \textservicemark
160 \textlquill
161 \textrquill
162 \textcent
163 \textsterling
164 \textcurrency
165 \textyen
166 \textbrokenbar
167 \textsection
168 \textasciidieresis
169 \textcopyright
170 \textordfeminine
171 \textcopyleft
172 \textlnot
173 \textcircledP
174 \textregistered
175 \textasciimacron
176 \textdegree
177 \textpm
178 \texttwosuperior
179 \textthreesuperior
180 \textasciiacute
181 \textmu
182 \textparagraph
183 \textperiodcentered
184 \textreferencemark
185 \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 garamondx, whose natural xheight is comparable to Libertine, but which should normally be scaled down to resemble more familiar Garamonds. 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.

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SAME SENTENCE IN GARAMONDX:

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