BaskervilleF

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Abstract

BaskervilleF, where *F* may stand ambiguously for either Free or Fry's, is derived from *Libre Baskerville*, and attempts to move away from its web font design toward a font of more traditional Baskervillian appearance. Its model is the *Baskerville* from the American Type Foundry (ATF) in the early twentieth century, which in turn was loosely based on *Fry's Baskerville*, and had a new italic designed afresh by Morris Fuller Benton.

1   Baskerville's life and work

John Baskerville (1706–1775) was born to a poor family in Birmingham but his talents became apparent early. He received basic schooling and worked for a period as a writing master before turning to what made him quite wealthy, creating and operating a business that japanned furniture. (Japanning involved multiple layers of heat treated, highly polished lacquer. The process was developed as a European response to a similar Japanese metal lacquering process which had become very popular. Birmingham was the center of the industry in England. Success in the business at the upper end required meticulous attention to be paid to the fine detail of every aspect of the manufacturing process. We see remnants of the japanning method in older electrical transformers, whose windings bear layers of insulating shellac built up in a similar manner.)

In his mid-forties, Baskerville moved away from the japanning business back to his roots and started a firm devoted to high-quality printing. He was wealthy enough to not have to be concerned about making money from bread-and-butter jobs and could focus on high-end projects. At that time William Caslon was the dominant figure in English typography. His eponymous font was wildly popular both in England and America (U.S. Constitution!) but derivative, being based on other old-style fonts that had been available for many years, carried to some calligraphic extremes.

Baskerville's idea for a typeface that would reflect his ideals of stately, sober perfection was released in 1757. In contrast to the playfulness and asymmetries of old-style fonts, his designs relied on simplicity of form and a strict attention to detail. The characteristics, new to that era, were:

- very regular glyphs, with few embellishments;
- curved strokes that are close to circular, at least in the roman and bold;
- sharply cut serifs;
- the axis of rounded forms became almost vertical;
- high contrast (ratio of thickest to thinnest strokes).

To bring his ideas to fruition required making his own printing machinery, his own ultra-smooth, pressed paper and his own high quality ink. It is understandable that his business was not greatly successful as a commercial enterprise, and he stands as an exemplar of the aphorism about making a small fortune as a printer and type founder.[1] Following his first production of an edition of a work of Virgil, he was appointed (1758) as printer to the Cambridge University Press and in the course of the next fifteen years published about fifty classic volumes. His greatest publication is thought to be his folio Bible (1763), made according to his highest standards.

Baskerville seems to have been unusually progressive for his time, a free thinker though much of his work involved religious texts, and did not marry his housekeeper, and, finally, mistress and business partner, Sarah Eaves, until very late in life. (Zuzana Licko's font *Mrs. Eaves* is based on *Baskerville* but with softer features.)

At the time, the English printing community did not give Baskerville much credit for his innovations. His rivals spread stories about the sharpness of his serifs and the excessive contrast being a danger to the eyes and even with the then-primitive state of fake news and social networking, these views took a firm hold. Foreign printers, however, such as Benjamin Franklin, Giambattista Bodoni and Pierre Simon Fournier were highly impressed by his designs, which led to the development of the "modern" style, for which *Baskerville* is labelled a "transitional" font. Following Baskerville's death in 1775, his wife sold all his machinery, punches and matrices to Beaumarchais in Paris for £3700, having found no one in Britain willing to make an offer, such was the popularity of *Caslon*. These were used by Beaumarchais in his massive effort, requiring the purchase of three paper mills, to print in Germany the complete works of Voltaire, then banned from publication in France. The surviving punches and matrices were eventually donated back to Cambridge University in the early twentieth century. *Baskerville* has continued to be a French favorite, being used as the text font in many of their mainstream mathematical publications.

By 1765, Baskerville appears to have tired of the printing business and later abandoned it entirely. In 1768, a punch-cutter named Isaac Moore, who worked for a Bristol print foundry owned by Joseph Fry, cut an imitation of *Baskerville* that did not require the highest level of equipment, paper and ink. It is now considered that *Fry's Baskerville*, as it is now called, has more in common with later fonts such as *Bell*, *Bulmer* and *Scotch Roman*. In 1923, Morris Fuller Benton designed for

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[1] It being essential to first possess a large fortune.

American Type Foundry (ATF) a revival of *Fry's Baskerville* with a new italic to replace the original poorly thought-of version in *Fry's Baskerville*. This version appears in several of their catalogs, which have been scanned at high resolution by Raph Levien and are available from TUG to interested parties.

In 2012, Pablo Impallari and Rodrigo Fuenzalida created a new web font, *Libre Baskerville*, that seems to be based on tracing the scans of the images above, as described in [KB01]. The x-height was increased, the ascenders were shortened, and the contrast was lowered substantially, while the serifs and tails were thickened considerably. Their font was well done technically (very good spacing and kerning) but did not look especially close to Baskerville, in my opinion.

2 BaskervilleF

In discussions with Karl Berry at the TUG meeting in Toronto, 2016, I expressed my interest in making a version of *Baskerville* more attuned to the interests of traditional TEX users, and Karl later supplied me with a wealth of information about doing this starting from Raph Levien's scans.[2] Remaking the fonts from scratch lacked appeal, and once I examined *Libre Baskerville* closely, I saw that much could be achieved by undoing their transformations to web fonts—reducing the x-heights, increasing the ascender heights, sharpening the serifs and hollowing out the glyphs to raise the contrast and reduce the heaviness. Wherever possible, I kept the side-bearings the same so that the new spacings and kernings were as similar as possible to those of *Libre Baskerville*.

2.1 Additions

In reworking *Libre Baskerville*, abbreviated below to *LB*, to *BaskervilleF*, abbreviated below to *B*, there were some major additions, listed here.

- *LB* provides no bold italic style—*B* adds one. Although most users most likely make little use of bold italic in text, apart perhaps from titles in some packages, it is essential for producing a proper bold math italic alphabet.

- *LB* had only one normal sized figure style, proportional lining.[3] *B* contains four such styles, adding tabular lining, tabular oldstyle and proportional lining, the default being tabular lining, which is needed for proper mathematical figure spacing.

- *LB* has superior and inferior figures at just 40% of the size of its lining figures. *B* contains a re-

worked set of inferior and superior figures at approximately 60% of the size of its lining figures. (The pre-built fractions, like ¾, were remade to use the larger figures, and the `\textfrac` macro attempts to provide other fractions with attention paid to appropriate spacing.)

- *LB* has only figures in its superiors. *B* adds superior upper and lower case letters, with `eacute` and `egrave` the only accented superior letters.

- *LB* has no small caps. All four styles of *B* contain a SMALL CAP alphabet containing all characters in the T1 encoding.

- An LY1 encoding is provided. This may be of interest principally to Scandinavian users who wish to have access to the `fj` and `ffj` ligatures, for example, in typesetting fjord. (There is no room left in the T1 encoding for these ligatures.) The other unusual ligatures available in LY1 are `fb` (fb), `fh` (fh) and `fk` (fk).

As `otf` versions of the fonts are provided, they may be used directly in Unicode TEX by means of the `fontspec` package. The `baskervillef` package provides `baskervillef.fontspec`, a file specifying the names of the relevant `otf` files. It is loaded automatically by `fontspec`, so it suffices to include in your preamble:

```
\usepackage{fontspec}
\setmainfont[Ligatures=TeX]%
 {baskervillef}
```

Usage under LaTeX has several options that are spelled out in detail in the package documentation.

For math typesetting to accompany BaskervilleF, one may use the package `newtxmath` with the option `baskerville`. For instance:

```
\usepackage{baskervillef}
\usepackage[baskerville,vvarbb]{newtxmath}
\usepackage[cal=boondoxo,frak=boondox]{mathalfa}
```

Some sample output:

A Simple *Central Limit Theorem*:

Let $X_1, X_2, \cdots$ *be a sequence of* i.i.d. *random variables with mean* 0 *and variance* 1 *on a probability space* $(\Omega, \mathscr{F}, \Pr)$. *Let*

$$\mathfrak{N}(y) := \int_{-\infty}^{y} \frac{e^{-t^2/2}}{\sqrt{2\pi}}\, dt,$$

$$S_n := \sum_{1}^{n} X_k.$$

Then

$$\Pr\left(\frac{S_n}{\sqrt{n}} \le y\right) \xrightarrow[n\to\infty]{} \mathfrak{N}(y)$$

or, equivalently, for $f \in \mathscr{C}_b(\mathbb{R})$,

$$\mathbb{E}f\left(S_n/\sqrt{n}\right) \xrightarrow[n\to\infty]{} \int_{-\infty}^{\infty} f(t)\frac{e^{-t^2/2}}{\sqrt{2\pi}}\, dt.$$

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[2] It is a pleasure to acknowledge Karl's encouragement and very useful technical feedback throughout this project.

[3] In the original *Baskerville*, all figures were oldstyle, a.k.a. lowercase figures. Lining figures, the much more common form now, were not introduced until several years after Baskerville's death.

BaskervilleF is provided with a theorem font, a version of italic having upright punctuation and lining figures, which is, in my opinion, more suitable than ordinary italic for theorem statements and the like. I have abused the NFSS standards by setting `\textsl` to point to the theorem font rather than a real slanted variant. This is rather handy because we are then not limited to using the theorem font only in those theorems where the styles using appropriate declarations are in force.

3   Comparison to other Baskerville fonts

3.1   Other free Baskerville fonts

The following illustrates some of the differences between *BaskervilleF* on the left and its parent, *Libre Baskerville* on the right. (*BaskervilleF* has been rendered at four times natural size and *Libre Baskerville* at 3.6 times natural size, so as to match cap-heights.)

Bask:Bask
BaskervilleF   Libre Baskerville

The sharper serifs, higher contrast and shorter x-height of *BaskervilleF* is quite apparent.

Had we instead matched x-heights, the comparison would be:

Bask:Bask
BaskervilleF   Libre Baskerville

This time, the cap-height and ascender height of *Libre Baskerville* are clearly much less those of *BaskervilleF*.

If we compare *BaskervilleF* against *Baskervaldx* with matched x-heights we get:

Bask:Bask
BaskervilleF   Baskervaldx

As is apparent, *Baskervaldx* is heavier, lower contrast, and more spread out horizontally.

3.2   Commercial Baskerville fonts

The next two comparisons involve the commercial font *Monotype Baskerville*, available on the Mac as a system font.

Bask:Bask
BaskervilleF   Monotype Baskerville

The Monotype roman has different glyph widths (note in particular the lower bowl of its B, which is less prominent than in other *Baskervilles*), but is otherwise a fairly good match to *BaskervilleF* in terms of weight, contrast and spacing when magnified by 106.5%.

Bask:Bask
BaskervilleF   Monotype Baskerville

The Monotype italic is substantially more delicate than *BaskervilleF*'s italic.

Bask:Bask
BaskervilleF   ITC NewBaskerville

The *ITC NewBaskerville* italic, on the other hand, shown with matching x-height, is heavier, has lower cap-height and ascender height, and its lower-case letters are a bit wider, but the family resemblance to *BaskervilleF* is apparent.

Finally, here is *Storm Baskerville*, the most authentic revival of the original *Baskerville*, at the same x-height. Though it's not obvious at even the moderate magnifications displayed below, the design details in these fonts are truly remarkable.

Bask, *Bask*
Baskerville120   Baskerville120-Italic

In metal type, the *Baskerville* of Deberny & Peignot was from matrices made using Baskerville's original punches, while that of Stephenson Blake (1913) is said [SB88] to be a reproduction of Fry's Baskerville. The samples below were scanned from 30pt sources and so have thinner strokes than normal body text.

ABCDEFGHIJKLM
abcdefghijklmnopqrstuv
Deberny & Peignot Baskerville

ABCDEFGHIJKLM
abcdefghijklmnopqrst
Stephenson Blake Fry's Baskerville

4   Bibliography

[KB01] Karl Berry, Making outline fonts from bitmap images. *TUGboat*, 22:4 (2001), 281–285. http://tug.org/TUGboat/tb22-4/tb72berry.pdf

[SB88] James Sutton and Alan Bartram, *An Atlas of Typeforms*. Wordsworth Editions, Ware (1988).

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   http://ctan.org/author/id/sharpe