The fonts we choose

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One of the most important choices a book designer makes is the selection of the font for the body text. This decision defines the general "look and feel" of the future book and influences all other decisions.

How should a designer select the font? There is considerable lore about the suitability of certain fonts for certain kinds of books. Often the choice is based on "physiological" considerations: it used to be commonly held that serifed fonts are better for continuous reading, or that fonts with high contrast are suitable for textbooks, etc. However, recent studies (Morris, Aquilante, Yager, and Bigelow, 2002; Legge and Bigelow, 2011; Akhmadeeva, Tukhvatullin, and Veytsman, 2012) show that human brains are very good in accommodating to the differences in font sizes and shapes, and the ease of reading is more or less the same across the wide variety of fonts as long as the font is reasonable.[1] Thus the choice of body font might be less determined by the physiology of reading than used to be thought.

Does this mean that the choice is unimportant? In my opinion, not at all. Indeed, there are no "physiological reasons" to choose a formal suit over sweatpants (actually sweatpants might be more comfortable). Nevertheless a person coming to a fine dinner in sweatpants (or, for that matter, to a gym in white tie) is wrong: the costume sends a wrong *message.*

What kind of message does a font send? Eva Brumberger (2003a, 2003b) made a series of interesting studies on this subject. She asked participants to look at several typefaces[2] and estimate on a scale from 1 to 7 the applicability of such characteristics as "Cheap", "Cold", "Confident", "Sloppy", etc.[3] She found that the fonts have stable "personae": for example Black Chancery is "elegant", Arial is "direct" and Comic Sans is "friendly".

Even more interesting was another experiment: Brumberger gave the participants texts typeset with different typefaces and asked them to comment about the appropriateness of the chosen font for the given text and score the texts against the same character-

istics. The participants were "clear and consistent" about the proper or improper choice of the body font. Did the properties of the typefaces color the readers' impression about the *text?* The answer is complicated. There was no statistically significant dependence of the reported text properties on the font, with one important exception. Namely, the perceived "seriousness" of the text strongly ($p < 0.004$) depended on the typeface chosen, with Times New Roman giving the text the strongest aura of seriousness and Counselor Script, a calligraphy font, having the strongest opposite effect. The effect depended on the texts themselves as well as on the gender and demography of the participants.

These results mean that a font does send a message to a reader, and on at least one scale (seriousness) it influences the message of the text.

Recently Errol Morris (2012a, 2012b) published a two-part series in a *New York Times* blog following an unusual experiment designed by Benjamin Berman. Morris asked his readers to tell whether they agree or disagree with a certain paragraph about the danger of Earth colliding with a kilometer-sized asteroid. Unbeknownst to them, the paragraph was presented to each viewer in one of five different fonts, chosen randomly: Baskerville, Computer Modern, Georgia, Helvetica, Comic Sans and Trebuchet. The answers were recorded with the font chosen.

While this experiment, as Morris himself readily recognizes, lacks the controlled environment of a true scientific study (the participants are self-selected, we do not know their demographics, etc.), the sheer number of answers (45 thousand!) makes the result very interesting.

Berman classified the positive responses with five points for "strongly agree", three points for "moderately agree" and one point for "slightly agree", and similarly for the negative responses. In Figure 1 we show the difference between the agreement and disagreement levels as defined by Berman's scores. This quantity can be interpreted as the overall measure of the readers' attitude toward the statement.

As seen from the figure, the reader's attitude depends on the font chosen. The most persuasive typeface turned out to be Baskerville, with Computer Modern being a close second, while the least persuasive one was, as expected, Comic Sans. Due to the large number of participants the confidence in the result is high ($p < 0.0068$). This result makes the CERN decision to announce the discovery of the Higgs boson using, of all fonts, Comic Sans, even more mysterious (Morris, 2012a).

One can argue that "trustworthiness" of the text is directly related to its perceived "seriousness", so

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[1] Some typefaces and font sizes *are* difficult to read, but those were never intended for continuous reading.

[2] Adler, Arial, Bauhaus MD BT, Black Chancery, Casablanca Antique Italics, Comic Sans MS, Counselor Script, Courier New, Garamond, Harrington, Lucida Sans Italic, Lydian BT, Square 721 BT, Times New Roman, Van Dijk.

[3] The full list: Cheap, Cold, Confident, Dignified, Elegant, Feminine, Formal, Friendly, Inviting, Loud, Masculine, Playful, Pretentious, Professional, Relaxed, Scholarly, Serious, Sloppy, Straightforward, Warm.
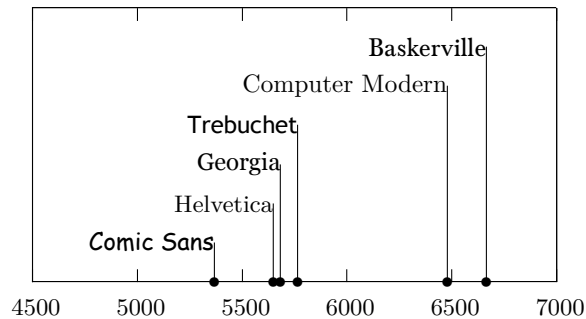
Figure 1: Level of trust in a statement presented in the given typeface (from the data in Morris, 2012a).

the results of experiments by Brumberger and Morris corroborate each other.

Another important conclusion is that fonts affect the reader's attitude towards the text. This is noteworthy for students who want better grades for their homework, and for their professors who want positive reviews of their scientific papers and research proposals. Errol Morris mentions a blog entry by Phil Renaud who noted a marked difference between his grades depending on the font of the essay. Since Computer Modern, the default typeface of TeX, scored high in this test, TeX users should probably rejoice: we made a good choice of the typesetting system and might expect to reap some benefits from it. By the way, neither study looked into the effects of such typographic features as good justification, hyphenation, line and page breaking. It is not too far fetched to suggest that these niceties might also add a point or two to the final grade or to the probability that a proposal gets a good review.

What causes this effect of a typeface on the reader's trust? I can only offer my own guess. Since this paper is typeset in Computer Modern, I hope you can believe it.

I do not think there is an inherent property of a typeface to be "trustworthy". Rather, our attitude towards it is determined by our background and previous experiences. The same is true for other cultural artifacts, such as clothes. Today we consider tuxedo to be formal dress (Errol Morris compares the formality of Baskerville to that of a tuxedo). However, it was originally (in the first half of the 19th century) casual dress, as opposed to the formal tailcoat. A smoking jacket was intended for smoking cigars in a relaxed manner, as different from a strict and scripted dinner. Thus the messages of a tuxedo then and now are completely different. Therefore there is nothing "inherently formal" in a tuxedo. We perceive it as formal today because we are accustomed for

it to be worn on formal occasions. Its message is conditioned by our experiences.

I think the same is true for typography. We trust a text set in a certain typeface because we have read other trustworthy texts typeset in it. Baskerville has been used for good books for many years, which might explain its effect on the reader. The trust in Computer Modern might be caused by the fact that many well-educated readers of *New York Times* have read mathematics textbooks typeset in TeX and this typeface — and mathematics usually does not lie.

If this is true, then we as TeX users not only benefit from our software, but also have a certain responsibility towards the community. People give us a little bit of extra trust because other authors, who wrote in TeX with Computer Modern in the past, did a good job. I think we owe it to them to continue this tradition.

The TeXbook (Knuth, 1994) ends with the famous exhortation, "Go forth now and create *masterpieces of the publishing art!*" It seems that we ought to add to it the qualifier, which DEK probably considered self-evident, "And let the contents of these masterpieces be honest and true!"

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