A FANCY UNIVERSITY

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Sylvain Kern

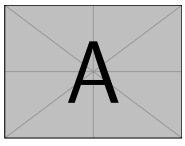
`tufte-style-thesis`, a Tufte-styled LaTeX class for theses

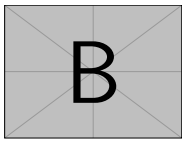
Actually more of a mix between Edward Tufte and Robert Bringhurst

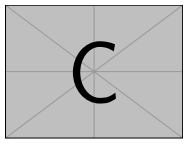
Doctoral thesis

November 21, 2022

Supervisor	name	position
Cosupervisor	name	position
Jury members	jury 1	positions
	jury 2	…







Sylvain Kern, *`tufte-style-thesis`, a Tufte-styled LaTeX class for theses*, november 21, 2022.

For my homies

stract

Basically a thesis (book?) class for Tufte lovers like myself. I am aware that `tufte-latex` already exists but I just wanted to create my own thing.

knowledgements

Gabriel for crash testing my works. Johan and Arthur too.

ntents

st of Figures

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Notes on the design

This class is my personal mix of different book design influences: mainly the works of Edward R. Tufte,**TufteTvdqTufteBETufteEITufteVE** known for the big margin and the plentiness of sidenotes and sidecaptions. The margins are however not as prominent as in Tufte's works, the main text takes a bit more space, more like in Robert Bringhurt's typographer's bible.**BringhurstEoTS** So it is a bit of a mix of Tufte and Bringhurst, with some of my own choices for other design features, as we will see through this chapter.

1.1 *Document layout*

While `tufte-style-thesis` is a class for typesetting theses, the general layout is pretty much the same as in a regular book. A book is traditionally divided into three major sections: the front matter, the main matter and the back matter.

The FRONT MATTER is for all the stuff that comes before the main content: the preface, the acknowledgements, table of contents (TOC) and list of various types. The pages are most widely printed in roman numerals for this part. However, I personally find it confusing and a bit useless so the page numbering system is simplified for the whole book: arabic numerals starting from the very first page of the document.† The frontmatter still remains relevant because chapters are unnumbered, and LaTeX conveniently places them in the TOC.

The MAIN MATTER is, as its name suggests, for the main content. Here everything is normal, arabic page numbering, normally numbered chapters. At the end of the mainmatter there are usually appendices, especially for scientific and technical textbooks ; for me, an appendix seems necessary in a thesis to put big figures, tables, and content that can be referred to in the main text but are too intrusive to put in the heart of the document. Chapters in the appendix are numbered with a letter to distinguish them from the main content. The main matter can also be cut in a couple of parts.‡

The BACK MATTER is the end of the book, usually for the references part and index or glossary. Chapter numbering is turned off. At the very end, a colophon**CarterABC** can be put to state information about the printer, publisher and stuff like that.

To sum this up, the structure of a document typeset with `tufte-style-thesis` is something like this:

† Tufte and Bringhurst do full arabic in their work too, so I consider it legit.

‡ I like, for instance, to put the appendix in a dedicated part.

- title page ;
- front matter (dedication, abstract, acknowledgements, table of contents, list of figures, *etc*) ;
- main matter (main content organized in numbered chapters, an appendix with letter chapters) ;
- back matter (references, index, glossary, colophon).

This is how LaTeX books work, and how I advise to structure a document using this class. All of this is under a single page numbering system, arabics starting right from the titlepage. Eventually, this is a really heavy layout, see how the first chapter of content starts at page 18. So do not use this class unless you have a hefty content to fit all these organizing features.

1.2 *Page layout*

Maybe the most distinctive aspect of this class is its page layout with its big margin to put sidenotes and captions. However this is not original at all: plenty[§] of other LaTeX classes for books and theses do it just like me, and almost always better[¶]. I just wanted to do my own thing here, mixing what I personally like the most in these layout types, to better learn LaTeX and to really internalize this kind of design. At the end of the day it may be a more Bringhursty than Tuftey kind of look, but hey, I won't change the name of this whole thing now.

So, as you might have started to notice, the main feature of this thing is the margin, with the sidenotes, side references, and as you will discover, side captions and everything. It has three main advantages for me:[‖]

- it makes the main text area narrower, therefore easier to read as the line changes become smoother, sidenotes are also friendlier than footnotes ;
- it makes the design breathe with plenty of potential white space (when the margins are not too crowded) ;
- it organizes the content: non-prosaic elements are on the side, separated from the main text area which becomes less cluttered.

§ `tufte-latex`: `https://www.ctan.org/pkg/tufte-latex`, `classicthesis`: `https://www.ctan.org/pkg/classicthesis`, …

¶ Or in a way cleaner LaTeX.

‖ These advantages can be seen as drawbacks for others: less space for the actually important content, irregular and somewhat unconventional design which can be harder to handle.

So this is more intended for people who like "flavoured" text: people who likes notes, parentheses, asides, *etc*. It is also more suited for topics needing lots of pictures, tables, and diagrams: a novel would look terrible with this kind of layout.

Another small detail on the sidenotes, the flag of a note is in superscript in the text, but the note itself is introduced by a number in full size: this is in superscript …[**] This is again one of Bringhurst's advices.

1.3 *Headers, lists, and other content-organizing features*

The principle here is to give structuring elements which are as unobtrusive as possible, while remaining clear and easy to follow. For example, the bold headers of vanilla LaTeX have been changed for more subtle italic ones. Chapters titles have been simplified to their essential parts –a number and a title– and put as high as possible: it is completely useless to me to start a new chapter at the middle of a page.[††] Though, some of space is left after the title to let it breathe a little bit ; this is a feature of Tufte's books.

The TOC, and the other lists as well as the index and references section are thought to be that way: friendly and unobtrusive. For example, in the TOC, the traditional dotted lines between a heading and its corresponding folio[‡‡] is useless and unfriendly: why have the reader to follow a line with their eyes instead of just placing the page number next to the heading? So I adapted the TOC to make it both expressive and light/minimalistic.[§§] It does not support deeper headings than the section, because I think nobody looks for such detail in the table of contents.

1.4 *Fonts and paragraph typography*

This class has three fonts.

Libertinus (Linux Libertine)

The main text is typeset with a version of Linux Libertine,**Libertine** with enhanced math support. Here it is in **bold** and *italic*.

** …whereas this is in normal size.

†† Bringhurst roasts this kind of chapters in his *Elements*: *"In modern books, where the titles are shorter and the margins have been eaten by inflationary pressure, a third of the page somewhat lies vacant just to celebrate the fact that the chapter begins"*.

‡‡ Just flexin, folio is a fancy term for saying "page number".

§§ I find Tufte- and Bringhurst-style TOCs too empty, at least for a thesis.

Source Sans Pro

Sans serif text, like in the titlepage, part titles and page headers (not chapter/section titles, but small reminders at the very top of the pages) are in sans serif Gill Sans, actually Gillius, a version of Gill Sans for LaTeX. Here it is in **bold** and *italics*. Gill Sans is a humanist sans-serif typeface, which I find both elegant and minimalistic. It is less harsh than grotesk fonts like Helvetica or Arial.

Source Code Pro

Mono text, for code listings, is `Droid Sans Mono`. It is smoother to my taste than the default courier-like font. Here it is in *`italics`* (unfortunately it does not support bold –yet).

The prose is organized in paragraphs indented at the first line, as it is classically seen. The first paragraph that comes after a heading, however, is not indented.[¶¶] The text is by default not justified on the right like in Tufte's books. Apparently it makes the lines easier to recognize and follow with the eyes ; I do not find this irregularity unpleasing. But *do not worry*, it can be fully justfied really easily.[***]

For true microtypography, when the text is fully justified (like this one), the dashes, commas, points and other stuff slightly protrude in the margin to make it seem more justified than it really is.[†††] For flush left text, the typesetting algorithm has also been upgraded from standard LaTeX, reducing the line length and space width variance, and hyphenating as less as possible. Also, the spaces between small caps increase a little bit, as well as they can be increased for full caps text.

1.5 *Ideas behind the design*

These are just some thoughts I gathered that I find interesting to consider when making designs, closely or remotely.

As Antoine de Saint-Exupéry once wrote:**StExupery** *"Perfection has been reached not when there is nothing left to add, but when there is nothing left to take away"*. To me, this means that minimalism is a key aspect of document design. The features and the layout must let the true content express itself: a good typography is completely transparent.

[¶¶] It is again an advice from Bringhurst: *"The simplest way to start any block of prose is to start from the margin, flush left […]."*

[***] I hope people have not been bummed out at by not seeing the right-justfication.

[†††] Paradoxically, it seems more justified than when it is truly justified. See by yourself: put a ruler (or the side of the window on the right side of the text and see how the comma slightly protrudes).

That is why the design is dependent of the content: a novel and a math textbook will have completely different designs.

However, this whole Tufte-style design is far from transparent. It is easily recognizable, and people will notice the somewhat unusual design statements. Paul Rand said,‡‡‡ *"The public is more familiar with bad design than good design. It is in effect, conditioned to prefer bad design, because that is what it lives with. The new becomes threatening, the old reassuring"*. Edgar Tufte completely re-thought the way to display scatterplots, curves and axes, boxplots and histograms, but most people are not used to see this optimized representation, so is it a better design if most people have to give some extra effort to adapt to it ?

Then, good design must be a cultural thing. To aim perfection, one must make a blend between innovation and tradition, to be percieved as smooth as possible for the majority of people.

So, yeah, I really don't know what to think. I find –actually I hope that sidenotes and margins benefit to the reading comfort instead of ruinig it. It makes more sense when there are figures, tables and heavier stuff, but hopefully it remains relevant for prose with notes.

‡‡‡ Yeah, I lazily picked the two citations on the first page of the tufte-style book class showcase. Though, I find Paul Rand's a bit condescending, like, *"people know nothing about good design"*.

PART I

THIS IS A PART

Using this class

2.1 *Dependencies*

Here are the packages already loaded, so there is no need to re-include them in your document:

- `geometry`
- `emptypage`
- `fullwidth`
- `sidenotes`
- `caption`
- `fontenc`
- `libertinus`
- `libertinust1math`
- `gillius`
- ◇ `droidsansmono`
- ◇ `ragged2e`
- ◇ `titlesec`
- ◇ `titletoc`
- ◇ `tocloft`
- ◇ `fancyhdr`
- ◇ `graphicx`
- ◇ `microtype`
- ◇ `amsfonts`
- ◇ `amsmath`
- ◇ `mathtools`
- ◇ `physics`
- ◇ `xcolor`
- ◇ `mdframed`
- ◇ `tabularx`
- ◇ `booktabs`
- ◇ `enumitem`
- ◇ `hyperref`
- ◇ `etoolbox`
- ◇ `changepage`
- ◇ `placeins`
- ◇ `xparse`
- ◇ `xpatch`
- ◇ `biblatex`
- ◇ `listings`

2.2 *The big margin*

There is a big margin, so feel free to use it as much as possible![†] This chapter will cover the usage of sidenotes, side references, and other ways to use the margin.[‡]

The general layout is done using the `geometry`**pkgGeometry** package, and all the margin stuff relies on the `sidenotes`**pkgSidenotes** package, so check its documentation: `http://www.ctan.org/pkg/sidenotes`for more in-depth information.

Sidenotes

To put a sidenote in the margin, use tex <number>

◇ tex<number> is an optional parameter for the sidenote number. For example, tex29100 *doesthis.*29100 *tex<offset>isanoffsetlength(inpt,px,en,em...)*

LaTeX natively allows to put unformatted content in the margin with the command

tex *, butIadvisenottouseit,asitputsrawfullsizetextinthemargin,anddoesnotblendwellwiththeoveralldesign.Instead,usetexThiswillformatthemargintexttomatchthesidenotesstyle*

† Actually to your needs, if you do not have a natural usage of notes, maybe do not use this class. By the way, see how sidenote numbers reset on new chapters: we're back on number 1!

‡ For float captions, see chapter **??**.

Side references

The margin is also handy to put bibliographic references:**einstein1915allgemeinen** the reader can read them directly instead of going all through the document to find the right entry in the references section. But don't worry, each reference displayed in the margin is labelled with a number and appears in a dedicated bibliography section. All in all, a side reference is displayed in the margin in a shortened form, and then again in the bibliography in the full form.

To cite a paper, use tex <**reference label**>

2.3 *Full width text*

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, tex
and tex
is not supported in the texwide environment.

Also, for floating environments, full width figures and tables will be covered in the chapter **??**, so do not use the texwide environments with figures or tables (actually tables are fine, but there are specific environments for them to be in full width).

2.4 *The skeleton*

The structure of a LaTeX book is as follows: tex

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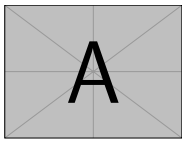

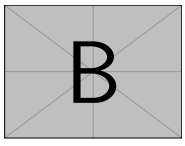

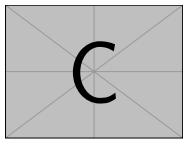

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For my homies

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PART II

PART

content

content

appendix 1

appendix 2

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This document was typeset using LaTeX and the `tufte-style-thesis` class.
The style is heavily inspired by the works of Edward R. Tufte and Robert Bringhurst.
This is available on `https://github.com/sylvain-kern/tufte-style-thesis/`.
Feel free to contribute!