

T_EX in the eBook era: a simple –yet fully working– approach

Luca Merciadri

Email Luca.Merciadri@student.ulg.ac.be

Website <http://www.student.montefiore.ulg.ac.be/~merciadri/>

Abstract There are many advantages to reading eBooks, and their usage is ever increasing. There are those who prefer traditional printed books, but there is also a growing audience whose lifestyle and taste is suited to eBooks. We discuss some advantages of using eBooks, and creating them with L^AT_EX. We continue by explaining technical aspects that might improve and help you with your L^AT_EX eBook. We end with a short discussion about the PDF file format and its use with eBook documents.

1 eBooks: Why?

We are concerned here with L^AT_EX eBooks. Some (traditional) books are written using L^AT_EX, and then printed. In some situations, reading an eBook is more effective than reading hard copy.

Most L^AT_EX books are scientific or technical texts. As a result, many L^AT_EX documents are long, and thus

- heavy (to carry with you),
- bad for the environment if you print them,
- difficult to handle.

Moreover, you do not necessarily need to read an entire book in many cases.

Using eBooks gives you numerous advantages. For example, with an eBook you can

1. quickly search and find some keywords in a text;
2. close and open it again easily;

3. do many other well-known things.

Our aim here is not to discuss the interests of using eBooks, which are already well-known, but to explain why eBook versions could be useful for L^AT_EX documents, and how they could be created.

2 L^AT_EX and eBooks

L^AT_EX offers many advantages over traditional typesetting, and its merits do not need to be explained again.

2.1 Why?

Many scientific books, proceedings, papers, and some novels are already printed as ‘hard copy’ but composed using L^AT_EX. As a result, electronic versions of the documents are generally available.

However, these documents are rarely adapted to eBook readers. Why wouldn’t we try to write L^AT_EX eBooks, or at least eBook versions of our L^AT_EX documents?

1. L^AT_EX provides the reader with many useful features: hyperlinks, glossaries, indexes, etc., that are easier to use with an electronic version of a document. Consider, for example, going to page x . Is it not simpler to click on the page number than to move a pack of sheets until you find the correct number?
2. You will see in this article that writing an eBook using L^AT_EX is an easy task for a person who is familiar with L^AT_EX;
3. There is no reason to make L^AT_EX-composed documents unavailable to eBook readers, especially since these readers are quickly becoming more widespread.

It is useful to know how to write L^AT_EX documents that can be read on eBooks.

2.2 How?

However, making an eBook-compatible L^AT_EX document is not easy, especially if you have never tried it. We all know that, at the beginning, L^AT_EX was not designed with eBooks in mind! That does not mean that making L^AT_EX documents

available to eBook readers is an impossible task, but that it will not be straightforward if you are not accustomed to it (just as with many other things in L^AT_EX, but we all appreciate it when the excellent results appear in our documents.)

To get an idea of the possibilities, I used a web engine and typed related keywords. Needless to say I did not encounter many related results. But on-topic results were interesting. Among them, I found three topics on a forum: [4, 5, 6].

What are the biggest problems one needs to solve when considering an eBook audience, where formerly there was a hard-copy audience only?

1. Dimensions of eBooks are smaller;
2. eBooks are electronic.

The biggest difference is that the dimensions of an eBook are smaller. An eBook reader does not scale down your document proportionally. *You* need to scale your document to the appropriate size. The dimensions 90 mm × 120 mm are generally used, because the majority of eBook readers have a 6'' diagonal, with 3 : 4 aspect ratio.

Now, what might improve the document's readability and effectiveness? You want

1. to put 'as much text as possible' on each page of the document. However, 'as much text as possible' needs to be understood clearly: that does not mean you can forget every typographic rule! Use different margins if you feel the need to do it;
2. characters to be easy to read. This means that you might choose a new font;
3. text to be easy to read. Do not use long sentences: break them up into bulleted lists or divide separate thoughts into different paragraphs. Large blocks of text are difficult to read and do not have enough white space to give the reader's eye a break [3];
4. things to be clickable: glossary entries, indexes, and any other hyperref-linked element.

A first minimal example was submitted at [6] by 'frabjous':

```

\documentclass[12pt,oneside]{book}

\usepackage[papersize={90mm,120mm},%
margin=2mm]{geometry}

\usepackage[T1]{fontenc}
\usepackage[charter]{mathdesign}

\usepackage[normalmargins]{savetrees}
\sloppy
\pagestyle{empty}

\usepackage{titling}
\title{The title}
\author{The author}
\date{\today}

\usepackage{hyperref}
\hypersetup{pdftitle={\thetitle},%
pdfauthor={\theauthor}}

% ...

\begin{document}
\maketitle
\tableofcontents

% ...

\end{document}

```

The important thing to notice is that this minimal example is extremely straightforward, and it produces a simple yet functional output.

It uses minimal margins and displays no page numbering, thus allowing each page to contain as much material as possible.

Some examples to consider: an online contributor named ‘ahi’ posted at [6] a

translation of ‘The Art of War,’ a book originally written by Sun Tzŭ. The same person posted at [5] ‘The Complete Memoirs of Casanova,’ which I personally find L^AT_EX-ly readable.

Let us consider the code of ‘The Art of War,’ that was provided with the output. The document body is simple. As is typical, though, the preamble is somewhat tricky, and some of its aspects need to be discussed:

- The class of the document is memoir, with 10pt and openany options. The openany option allows chapters to begin on the next page available, and not just on odd-numbered pages.

This helps create a short document containing as much material as possible on the fewest number of pages.

The advantage of the memoir class is that it automatically writes the name of the current chapter on each page, separated from the text by a rule. This helps the reader to remember the subject of what (s)he is currently reading (in case (s)he would have forgotten it!). As we will see on the next page, the memoir class also lets you use different styles for titles.

- Fonts are also different:

```
\usepackage{kerkis}
\usepackage{yfonts}
```

- The microtype package is used.
- Margins are different too:

```
hmargin={0.17in, 0.17in}
```

and

```
vmargin={0.50in, 0.17in}
```

are used in the geometry package’s parameters, with the same papersize as in the minimal example provided above.

- The following penalties are imposed:

```
\widowpenalty 3999
\clubpenalty 3999
```

I find that these settings make a pleasant page appearance. Note that `\clubpenalty` is the penalty for a broken page, with a single line of a paragraph remaining on the bottom of the preceding page.

- The title of the book is written on each page:

```
\makeevenhead{ruled}{\small%
\emph{\rightmark}}{\small%
\scshape The Art of War, Sun Tz\u{u}}
\makeatletter
\makeoddhead{ruled}{\small%
\emph{\rightmark}}{\small%
\scshape The Art of War, Sun Tz\u{u}}
```

- The following lengths are redefined:

```
\setlength\beforechapskip{0pt}
\setlength\midchapskip{5pt}
\setlength\afterchapskip{30pt}
```

- A chapter style is defined:

```
\makechapterstyle{plroman}{
\renewcommand\chaptername{}

\renewcommand\printchaptername{}

\renewcommand\printchapternum{%
\color{gray}\centering\MakeUppercase%
{\fontsize{1in}{2in}\selectfont%
\romannumeral\thechapter}}

\renewcommand\chapnumfont{\HUGE%
\rmfamily\centering\romannumeral}

\renewcommand\chaptitelfont{\Huge%
\centering\color{black}\vskip%
\midchapskip\vskip\midchapskip}
```

```

\renewcommand\afterchapternum{%
\par\nobreak\vskip\midchapskip%
\vskip%\midchapskip}

\renewcommand\printchapternonum{%
\vphantom{\chapnumfont \thechapter}
\par\nobreak\vskip\midchapskip%
\hrule\vskip\midchapskip}
}

```

This style is not necessary: the document stills looks great without it. This simply adds a personal touch to it, which does no harm. Another advantage of the `memoir` class is that you can use many different styles; see e.g. [2].

The document can be compiled using PDFLaTeX only.

Note that there are different ways to specify the global dimensions and the margins. The advantage of using the `geometry` package is that it automatically deals with your input in relation to the PDF output. That is, if you had specified

```

\textheight=120mm
\textwidth=90mm

```

at the place of using

```
papersize={90mm,120mm}
```

in `geometry`'s arguments, you would have ended up with a PDF document with large margins and standard dimensions, but with a printed area of 120 mm × 90 mm.

Some authors use the `\sloppy` command, pretending this is the miracle solution for preventing overfull boxes (because of overfull lines). (You might have noticed that `\sloppy` was used in the minimal example given at the beginning of this article.)

Without it, L^AT_EX will truncate words that it cannot fit in a line due to its standards. [4] As said in [4], 'it is certainly less annoying to have extra whitespace in lines than having parts of words missing due to not fitting on the page.'

The problem with this command is that you get ugly justification and instead of using hyphenation, it will add white spaces most of the time. The best solution here is to make small changes to the advanced settings for hyphenation. [4]

But how can you change these settings, and which settings would you change? We saw above that penalties could be adapted to your needs. With larger values for these penalties \LaTeX will work harder to avoid widows and orphans. However,

1. setting them to the maximum value of 10000 is evidently not the solution;
2. keep in mind that mid-range values do not have a large influence on the result.

The role of the `microtype` package is to deal with these problems too. (But either modify the penalties manually or let it try.)

Sample output of ‘The Art of War’ is given at p. 11 and 12.

2.3 Is PDF the right format?

Many eBook readers are not capable of reflowing text, hyphenating, or allowing for font size changes. Either they do not support this, or the PDF file they are dealing with might not be ‘reflowable.’ The reflowable attribute is a recent PDF capability, and is not supported in some PDF creators.

For this reason, PDF is sometimes considered a poor choice of format for eBooks, because its purpose is to give a static representation of a document in a dimensional point of view. That is, the PDF specification was built with the ‘reproducing image’ capability in mind. For some [7], it is inherently not suited to eBooks, and thus not an eBook format.

One of the problems is that the screen dimensions of the readers are not standard. As a result, if you provide an eBook whose size does not match the reader’s size, the reader will need to adapt the PDF output to its screen. If the eBook reader and the PDF file are compatible, there should be no problem, but having a compatible (i.e. reflowable) PDF file is not typical. By default, neither the `ps2pdf` nor the `pdfLaTeX` routes give a reflowable PDF.

Ideally, one would need a reader with a \TeX engine that re-typesets the document every time the user changes the font size or orientation, which has obviously not been implemented. [1]

Many people find that ‘EPubs’ are better than PDFs on eBook readers, both in appearance and also in efficiency. With EPubs, if you have a separate html file for each chapter, only the current chapter needs to be loaded rather than the entire book. This provides many advantages. The EPub format is actually XHTML and the `tex4ht` package can generate XHTML. With a little post-processing, the output from `tex4ht` can be made into a `.epub` file. Since an EPub is XHTML, it is not bound to ‘pages’ at all and is implicitly reflowed, depending on the e-reader screen size. EPubs can be generated using `latex + tex4ht`. [1]

3 Conclusion

Despite shortcomings of the PDF format, producing a PDF file for a predefined screen dimension is sufficient to give a correct eBook composed using \LaTeX .

Several other solutions do exist, and can be implemented if necessary. Meanwhile, it is possible to produce an eBook using \LaTeX by writing a simple \LaTeX document as was shown above. \LaTeX can thus be used to produce eBooks, but with some restrictions. These restrictions might be overcome, if needed, by implementing other solutions such as the `.epub` format.

References

- [1] Robert Heller, Nicola Talbot, and Luca Merciadri. \LaTeX , eBooks and reflowable PDFs questions, 2011. http://groups.google.com/group/comp.text.tex/browse_thread/thread/45757e8435f04f2d#.
- [2] Lars Madsen. Various chapter styles for the memoir class, 2010. <http://ftp.ktug.or.kr/tex-archive/info/latex-samples/MemoirChapStyles/MemoirChapStyles.pdf>.
- [3] MakeMoneyLog. Creating Your Own eBook - The Two Golden Rules When Writing eBooks For Profit, 2010. <http://www.makemoneylog.com/creating-your-own-ebook-the-two-golden-rules-when-writing-ebooks-for-profit.html>.

- [4] MobileRead. \LaTeX template for Sony reader (PDF), 2007. <http://www.mobileread.com/forums/showthread.php?t=12872>.
- [5] MobileRead. Casanova, The Complete Memoirs – Comments, please!, 2009. <http://www.mobileread.com/forums/showthread.php?t=54190>.
- [6] MobileRead. \LaTeX eBook Templates, 2009. <http://www.mobileread.com/forums/showthread.php?t=57861>.
- [7] MobileRead. PDF is not an eBook format, 2009. <http://www.mobileread.com/forums/showthread.php?t=22858>.

Sun Tzū's
The Art of War

translated by Lionel Giles, M.A.

PAX LIBRORUM
PUBLISHING HOUSE
2009

Contents

INTRODUCTION	6
I. LAYING PLANS	10
II. WAGING WAR	15
III. ATTACK BY STRATAGEM	20
IV. TACTICAL DISPOSITIONS	25
V. ENERGY	29
VI. WEAK POINTS AND STRONG	34
VII. MANŒUVRING	41
VIII. VARIATION IN TACTICS	48
IX. THE ARMY ON THE MARCH	52
X. TERRAIN	61
XI. THE NINE SITUATIONS	68
XII. THE ATTACK BY FIRE	81
XIII. THE USE OF SPIES	85

Introduction

SUN TZŪ WU was a native of the CH'í State. His *Art of War* brought him to the notice of HO LU, King of WU. HO LU said to him: "I have carefully perused your 13 chapters. May I submit your theory of managing soldiers to a slight test?"

SUN TZŪ replied: "You may."

HO LU asked: "May the test be applied to women?"

The answer was again in the affirmative, so arrangements were made to bring 180 ladies out of the Palace. SUN TZŪ divided them into two companies, and placed one of the King's favourite concubines at the head of each. He then bade them all take spears in their hands, and addressed them thus: "I presume you know the difference between front and back, right hand and left hand?"

The girls replied: "Yes."

SUN TZŪ went on: "When I say 'Eyes front,' you

must look straight ahead. When I say 'Left turn,' you must face towards your left hand. When I say 'Right turn,' you must face towards your right hand. When I say 'About turn,' you must face right round towards your back."

Again the girls assented. The words of command having been thus explained, he set up the halberds and battle-axes in order to begin the drill. Then, to the sound of drums, he gave the order "Right turn." But the girls only burst out laughing. SUN TZŪ said: "If words of command are not clear and distinct, if orders are not thoroughly understood, then the general is to blame."

So he started drilling them again, and this time gave the order "Left turn," whereupon the girls once more burst into fits of laughter. SUN TZŪ: "If words of command are not clear and distinct, if orders are not thoroughly understood, the general is to blame. But if his orders *are* clear, and the soldiers nevertheless disobey, then it is the fault of their officers."

So saying, he ordered the leaders of the two companies to be beheaded. Now the King of WU was watching the scene from the top of a raised pavilion; and when he saw that his favourite concubines were

about to be executed, he was greatly alarmed and hurriedly sent down the following message: "We are now quite satisfied as to our general's ability to handle troops. If We are bereft of these two concubines, our meat and drink will lose their savour. It is our wish that they shall not be beheaded."

SUN TZŪ replied: "Having once received His Majesty's commission to be the general of his forces, there are certain commands of His Majesty which, acting in that capacity, I am unable to accept."

Accordingly, he had the two leaders beheaded, and straightway installed the pair next in order as leaders in their place. When this had been done, the drum was sounded for the drill once more; and the girls went through all the evolutions, turning to the right or to the left, marching ahead or wheeling back, kneeling or standing, with perfect accuracy and precision, not venturing to utter a sound. Then SUN TZŪ sent a messenger to the King saying: "Your soldiers, Sire, are now properly drilled and disciplined, and ready for your majesty's inspection. They can be put to any use that their sovereign may desire; bid them go through fire and water, and they will not disobey."

But the King replied: "Let our general cease drilling

and return to camp. As for us, We have no wish to come down and inspect the troops."

Thereupon SUN TZŪ said: "The King is only fond of words, and cannot translate them into deeds."

After that, HO LU saw that SUN TZŪ was one who knew how to handle an army, and finally appointed him general. In the west, he defeated the CH'U State and forced his way into YING, the capital; to the north he put fear into the States of CH'í and CHIN, and spread his fame abroad amongst the feudal princes. And SUN TZŪ shared in the might of the King.

— SSŪ-MA CH'ÏEN (c. 145 BC - 86 BC)

I

Laying Plans

1. SUN TZŪ said: The art of war is of vital importance to the State.
2. It is a matter of life and death, a road either to safety or to ruin. Hence it is a subject of inquiry which can on no account be neglected.
3. The art of war, then, is governed by five constant factors, to be taken into account in one's deliberations, when seeking to determine the conditions obtaining in the field.
4. These are: (1) the Moral Law; (2) Heaven; (3) Earth; (4) the Commander; (5) method and discipline.

- 5, 6. *The Moral Law* causes the people to be in complete accord with their ruler, so that they will follow him regardless of their lives, undismayed by any danger.
7. *Heaven* signifies night and day, cold and heat, times and seasons.
8. *Earth* comprises distances, great and small; danger and security; open ground and narrow passes; the chances of life and death.
9. *The Commander* stands for the virtues of wisdom, sincerity, benevolence, courage and strictness.
10. By *method and discipline* are to be understood the marshaling of the army in its proper subdivisions, the graduations of rank among the officers, the maintenance of roads by which supplies may reach the army, and the control of military expenditure.
11. These five heads should be familiar to every general: he who knows them will be victorious; he who knows them not will fail.