Classes Writing for Wizard Apprentices

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1. Introduction

Categories of \TeX{}nicians:

**Wizards:** They know everything. No lectures needed for them.

**Beginners:** They’ve just started. Lots of great literature for them\(^1\).

**Wizard Apprentices:** People who know Class Guide\(^2\) by heart and have The Companion\(^3\) on the shelf. This lecture is for them!


\(^3\)Frank Mittelbach et al., *The \LaTeX{} Companion* (Boston: Addison-Wesley Professional, 2004), series Addison-Wesley Series on Tools and Techniques for Computer Typesetting.
2. Interfaces

2.1. You May Be Tempted To Change \LaTeX Interfaces . . .

Example: Problems with sectioning.

\section[Short Title]{Full Title} is overloaded. Why Short Title both for headers and TOC?
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section* is overloaded. Why both no numbers and no TOC?
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Your users know standard interface. Do you want to confuse them? Your users may want to add packages. If you change interface, you ask for trouble.
2.3. Example: Chapters In Nostarch Package

1

MORBI AC ORCI ET NISL HENDRERIT MOLLIS

Fusce adipiscing justo nec ante. Nullam in enim. Pellentesque felis orci, sagittis ac, malesuada et, facilisis in, ligula. Nunc non magna sit amet mi aliquam dictum.

Quisque aliquam ipsum sed turpis


First idea:

\chapter[Short Title]{Long Title}{Artwork}
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It broke everything...

Hyperref needed to be patched. TOC needed to be tuned. The first user\textsuperscript{4} sometimes forgot the third argument...

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Current implementation\textsuperscript{5}:

\chapter[Short Title]{Long Title}
\chapterart{Artwork}

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3. Compatibility

3.1. Compilation Paths

Will your users produce DVI, PDF or both? Using pdftex or distillers? Adobe distiller of Ghostscript? Will they use Xe\TeX? Lua\TeX? Which distribution?
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Sometimes you can answer these questions with packages like ifpdf$^6$:

\begin{verbatim}
\ifpdf\relax
  \pdfpageheight=\paperheight
  \pdfpagewidth=\paperwidth
  \pdfvorigin=1in
  \pdfhorigin=1in
\fi
\end{verbatim}

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\begin{verbatim}
\ifpdf\relax
  \pdfpageheight=\paperheight
  \pdfpagewidth=\paperwidth
  \pdfvorigin=1in
  \pdfhorigin=1in
\fi
\end{verbatim}

And test, test, test!

\textsuperscript{6}Heiko Oberdiek, \textit{The ifpdf Package}, 2006.
3.2. Hyperref

Your users are going to use hyperref\textsuperscript{7}.

\textsuperscript{7}Sebastian Rahtz and Heiko Oberdiek, Hypertext Marks in \LaTeX: a Manual for Hyperref, 2006.
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**Problem:** hyperref must be loaded last. You cannot load it in your class! How can you customize it?

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**Solution 1:** Add

\AtBeginDocument{\ifpackageloaded{hyperref}{%
\hypersetup{Your customization}{}}}}

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Solution 2: Write you own wrapper and instruct the users to call it through \usepackage.

3.3. Amsmath, Listings And Others. . .

Mathematicians use amsmath\textsuperscript{8}, programmers use listings\textsuperscript{9} . . .

You need to \textit{know} your users!

Be prepared to patch your class when the packages change!

\textsuperscript{8}Michael Downes and Barbara Beeton, User’s Guide for the amsmath Package (Version 2.0), 2002.
4. Some Tools

Man must shape his tools lest they shape him.

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Arthur R. Miller

Packages that make your life easier:

**geometry**: Quick setup of page dimensions\(^\text{10}\).

**caption**: Tuning of captions\(^\text{11}\).

**fancyhdr**: Setting headers and footers\(^\text{12}\).

**ifpdf**: Conditional code for DVI and PDF routes\(^\text{13}\).

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\(^\text{10}\)Hideo Umeki, The geometry Package, 2008.

\(^\text{11}\)Axel Sommerfeldt, Typesetting Captions with the caption Package, 2007.


\(^\text{13}\)Oberdiek, *op. cit.*
5. From Scratch Or Not From Scratch?

Two approaches:

1. Start from scratch, using snippets of code from article or book.

2. Use LoadClass as the base and redefine everything.

I use the latter one, but it is the matter of taste.
Frontmatter And Title Pages

I always turn to the sports pages first, which record people’s accomplishments. The front page has nothing but man’s failures.

______________________________
Chief Justice Earl Warren

Front matter takes 60% of your time for articles and 80% for books....
6.1. Simple Commands

Define internal macro to use later:

\def\author#1{\gdef\@author{#1}}
6.2.   Commands With Optional Arguments

Two internal macros, @title and @shorttitle. With commands like \title{On Mice and Men} or

\title[Robinson Crusoe]{% 
The Life and strange Surprizing Adventures of Robinson Crusoe of York, Mariner: Who lived Eight and Twenty Years, all alone in an un-inhabited Island on the coast of America, near the Mouth of the Great River of Oroonoque; Having been cast on Shore by Shipwreck, where-in all the Men perished but himself. With An Account how he was at last as strangely deliver’d by Pyrates. Written by Himself}

Here we use @ifnextchar[ construction:

\def\title{\@ifnextchar[{{\title@i}{\title@ii}} \\
def\title@i[#1]#2{{\gdef\@shorttitle{#1}{\gdef\@title{#2}}} \\
def\title@ii#1{{\title@i[\#1]{\#1}}
6.3. **Cumulative Macros**

What if we want to repeat commands?

\author{A.U.~Thor \and C.O.R.~Respondent \and C.O.~Author}
\affiliation{Construction Engineering Research Laboratory\
  U.S. Army Engineer Research and Development Center\
  2902 Newmark Drive\
  Champaign, IL 61826-9005}

\author{John~M.~Smith}
\affiliation{Coastal and Hydraulics Laboratory\
  U.S. Army Engineer Research and Development Center\
  3909 Halls Ferry Road\
  Vicksburg, MS 39180-6199}
Use \g@addto@macro.

This follows the ideas of\textsuperscript{14}:

\def\author#1{\% 
  \ifx\@empty\authors\gdef\authors{#1}\else 
    \g@addto@macro{\authors}{\and#1}\fi 
  \ifx\@empty\addresses\gdef\addresses{\author{#1}}\else 
    \g@addto@macro{\addresses}{\par\author{#1}}\fi}

\def\affiliation#1{\% 
  \ifx\@empty\addresses\gdef\addresses{#1\par}\else 
    \g@addto@macro{\addresses}{#1\par\vspace{\baselineskip}}\fi}

The command \texttt{\andify}\textsuperscript{15} helps to typeset this.

\textsuperscript{14}Michael Downes and Barbara Beeton, The amsart, amsproc, and amsbook document classes, 2004.

\textsuperscript{15}Idem
7. Conclusions

1. Writing classes is not hard.

2. You write for users: try to think like a one.

3. Test, test, test.
References


