

The **strayman*** document class

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The **strayman** document class

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The **strayman** document class

2 About the **strayman** document class

The standard L^AT_EX document classes are all very well for simple documents, but the style isn't appropriate for works like manuals. The **strayman** document class is an attempt to rectify this situation, providing an attractive and distinctive style for Straylight documents. The layout is based on an earlier style built for *Impression* documents, although many improvements have been made. This document was typeset using **strayman**, and it demonstrates the design far better than I can describe it.

2.1 Document class options

The document class provides many options, most of which are taken from the standard L^AT_EX classes.

a4paper | **a5paper** | **b5paper** | **letterpaper** | **legalpaper** | **executivepaper** Select the output paper size. Since **strayman** is intended to be used mainly for manuals, the default size is **a5paper**.

landscape Swaps the width and height of the paper. Probably not much use, to be honest.

9pt | **10pt** | **11pt** | **12pt** Selects the basic type size for the document. The **9pt** option is nonstandard, but it is the default, since larger sizes don't work well on A5 paper.

text Sets up the page layout and fonts so that the output can be converted fairly easily into a raw text file.

oneside | **twoside** Selects one- or two-sided page layouts. Note that one-sided output doesn't look too good.

draft | **final** Select various options for draft or final copy.

titlepage | **notitlepage** Selects whether the `\maketitle` displays its output on a separate title page.

openright | **openany** Select whether chapters start only on quarto pages, or any page. The default is **openright**.

onecolumn | **twocolumn** Choose whether the main body text is set in one or two columns. Note that this uses L^AT_EX's built-in column handling, not the **multicol** package.

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leqno Put the equation numbers on the left, not the right.

fleqn Typeset displayed equations left aligned.

openbib Use the ‘open’ style for the bibliography.

article Change the formatting slightly, in a way more suited to short documents.

square | **rounded** These options are passed directly to the **syntax** package, when it’s loaded.

2.2 The text option

In order to facilitate creation of attractively formatted text files from \LaTeX documents, **strayman** provides a **text** option. This will set up *all* the fonts to be monospaced, in the same size. The page size is set up to be a multiple of the character size. The command

```
dvi2tty -e-17 <filename>
```

appears to produce a reasonable output from a DVI file created in this way. The output will need to be formatted and corrected slightly by hand although there’s a good deal less work to do than might be required otherwise.

2.3 That’s it

That’s all I’m writing for now. It’s a document class. It defines the style. What more do you expect?

3 Implementation

3.1 Options handling

From here on, a lot of the code is shamelessly borrowed from *book.cls* and other places. This is what code re-use is for.

This bit handles all the options on the `\documentclass` command, either altering our own internal arguments, or loading other packages as appropriate.

3.1.1 Set up some defaults

We create some variables to hold the settings, and initialise them to sensible values.

```
1 \strayman
2 \newcommand\@ptsize{}
3 \newif\if@restonecol\@restonecolfalse
4 \newif\if@titlepage\@titlepagefalse
5 \newif\if@openright\@openrighttrue
6 \newif\if@openbib\@openbibfalse
7 \newif\if@appendix\@appendixfalse
8 \newif\if@article\@articletrue
9 \newif\if@offsetpages\@offsetpagetrue
10 \newif\if@numbering\@numberingtrue
11 \newif\if@herefloats\@herefloatsfalse
12 \newif\if@runinsubsubsec\@runinsubsubsectrue
13 \newif\if@hyperref\@hyperreftrue
14 \newif\if@indentpar
15 \newdimen\pagesurround
16 \let\headfam\rmfamily
17 \let\pad@margin\@empty
18 \def\@delayed{}
19 \def\@delaycode#1{%
20   \expandafter\def\expandafter\@delayed\expandafter{\@delayed#1}%
21 }
```

3.1.2 Declare the options we support

This is just a tedious list of all the options.

```
22 \DeclareOption{a4paper}{%
23   \paperheight297mm%
24   \paperwidth210mm%
25   \pagesurround1in%
```

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```
26 }
27 \DeclareOption{a5paper}{%
28   \paperheight210mm%
29   \paperwidth148mm%
30   \pagesurround12mm%
31 }
32 \DeclareOption{b5paper}{%
33   \paperheight250mm%
34   \paperwidth176mm%
35   \pagesurround1in%
36 }
37 \DeclareOption{letterpaper}{%
38   \paperheight11in%
39   \paperwidth8.5in%
40   \pagesurround1in%
41 }
42 \DeclareOption{legalpaper}{%
43   \paperheight14in%
44   \paperwidth8.5in%
45   \pagesurround1in%
46 }
47 \DeclareOption{executivepaper}{%
48   \paperheight10.5in%
49   \paperwidth7.25in%
50   \pagesurround1in%
51 }
52 \DeclareOption{landscape}{%
53   \@tempdima\paperheight%
54   \paperheight\paperwidth%
55   \paperwidth\@tempdima%
56 }
57 \DeclareOption{8pt}{\renewcommand\@ptsize{8pt}}
58 \DeclareOption{9pt}{\renewcommand\@ptsize{9pt}}
59 \DeclareOption{10pt}{\renewcommand\@ptsize{10pt}}
60 \DeclareOption{11pt}{\renewcommand\@ptsize{11pt}}
61 \DeclareOption{12pt}{\renewcommand\@ptsize{12pt}}
62 \DeclareOption{text}{%
63   \renewcommand\@ptsize{text}%
64   \setbox\z@\hbox{\texttt{M\strut}}%
65   \newdimen\tt@chw\tt@chw\wd\z@%
66   \newdimen\tt@chh\tt@chh\ht\z@\advance\tt@chh\dp\z@%
67   \paperwidth77\tt@chw%
68   \paperheight60\tt@chh%
69   \raggedright%
70   \def\pad@margin{.}
71 }
72 \DeclareOption{oneside}{\@twosidefalse \@mparswitchfalse}
73 \DeclareOption{twoside}{\@twosidetrue \@mparswitchfalse \reversemarginpar}
74 \DeclareOption{draft}{\overfullrule5\p@}
75 \DeclareOption{final}{\overfullrule\z@}
76 \DeclareOption{titlepage}{\@titlepagetrue}
77 \DeclareOption{notitlepage}{\@titlepagefalse}
78 \DeclareOption{openright}{\@openrighttrue}
79 \DeclareOption{openany}{\@openrightfalse}
80 \DeclareOption{onecolumn}{\@twocolumnfalse}
```



```

81 \DeclareOption{twocolumn}{\@twocolumntrue}
82 \DeclareOption{offsetpages}{\@offsetpagetrue}
83 \DeclareOption{nooffsetpages}{\@offsetpagesfalse}
84 \DeclareOption{herefloats}{\@herefloatstrue}
85 \DeclareOption{noherefloats}{\@herefloatsfalse}
86 \DeclareOption{leqno}{\input{leqno.clo}}
87 \DeclareOption{fleqn}{\input{fleqn.clo}}
88 \DeclareOption{openbib}{\@openbibtrue}
89 \DeclareOption{article}{\@articlettrue}
90 \DeclareOption{noarticle}{\@articlefalse}
91 \DeclareOption{numbering}{\@numberingtrue}
92 \DeclareOption{nonumbering}{\@numberingfalse}
93 \DeclareOption{runinsubsubsec}{\@runinsubsubsectrue}
94 \DeclareOption{noruninsubsubsec}{\@runinsubsubsecfalse}
95 \DeclareOption{indentpar}{\@indentpartrue}
96 \DeclareOption{noindentpar}{\@indentparfalse}
97 \DeclareOption{book}{\@titlepagetrue\@articlefalse}
98 \DeclareOption{hyperref}{\@hyperreftrue}
99 \DeclareOption{nohyperref}{\@hyperreffalse}

```

3.1.3 Set up the options

We set up some default options, and then read the user's.

```

100 \ExecuteOptions{a4paper,10pt,twoside,onecolumn,final}
101 \ProcessOptions

```

If this is PDFTEX then tell it the page bounds.

```

102 \newif\ifpdfing\pdfingfalse
103 \if1\ifx\pdfoutput\@undefined\@0\else\the\pdfoutput\fi
104   \pdfingtrue
105 \fi
106 \ifpdfing
107   \pdfpageheight\paperheight
108   \pdfpagewidth\paperwidth
109 \fi
110 \if@hyperref
111   \AtEndOfClass{%
112     \RequirePackage[%
113       bookmarks = true, bookmarksnumbered = true, bookmarksdepth = 3,
114       colorlinks = true, linkcolor = blue, citecolor = blue, urlcolor = blue,
115       breaklinks = true]{hyperref}
116   }
117 \ifpdfing
118   \PassOptionsToPackage{pdftex}{hyperref}
119 \else
120   \PassOptionsToPackage{dvips}{hyperref}
121 \fi
122 \fi

```

3.1.4 Read in the text size option

The text sizing is rather messy. We store this in a separate file. To keep this stuff away from other classes, we use the file *extension* as the size specifier, rather than the filename, which is the normal L^AT_EX way of doing this. This is a RISC OS thing mainly: I don't like loads of directories cluttering up my disk, and it means that I can move the whole of the **strayman** stuff around as one directory.

```
123 \input{strayman.\@ptsize}
124 \</strayman>
```

3.2 Package loading

```
125 <*strayman>
126 \RequirePackage{fancyhdr}
127 \RequirePackage{multicol}
128 \@delayed
129 \</strayman>
```

3.3 Page layout

This is largely the domain of the size option files.

```
130 <*8pt | 9pt | 10pt | 11pt | 12pt | text>
131 (+8pt)\ProvidesFile{strayman.8pt}
132 (+9pt)\ProvidesFile{strayman.9pt}
133 (+10pt)\ProvidesFile{strayman.10pt}
134 (+11pt)\ProvidesFile{strayman.11pt}
135 (+12pt)\ProvidesFile{strayman.12pt}
136 (+text)\ProvidesFile{strayman.text}
```

3.3.1 Font sizes

These are fairly standard, and mainly copied from the original size options.

\@setparskip Because we separate paragraphs by vertical space, we need to vary this gap when we change font size. This macro does the job.

```
137 \newskip\@parskip
138 \newdimen\@parshortfall
139 \def\@setparskip{%
140   \@parskip.67\baselineskip\@plus\p@\relax%
141   \ifdim\parskip=\z@\else\parskip\@parskip\relax\fi%
142   \@parshortfall\@parskip\advance\@parshortfall-\parskip%
143 }
144 \def\set@vsep#1{#1\@parshortfall\advance#1}
```

\normalsize Defines the standard size of text in the document.

```
145 \renewcommand\normalsize{%
146 <*8pt>
```

3. Implementation

```

147 \setfontsize\normalsize\@viipt{9.6\p@}%
148 \abovedisplayskip8\p@\@plus2\p@\@minus4\p@%
149 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
150 \set@vsep\belowdisplayshortskip6\p@\@plus3\p@\@minus3\p@%
151 </8pt>
152 (*9pt)
153 \setfontsize\normalsize\@ixpt\@xipt%
154 \abovedisplayskip9\p@\@plus2\p@\@minus5\p@%
155 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
156 \set@vsep\belowdisplayshortskip6\p@\@plus3\p@\@minus3\p@%
157 </9pt>
158 (*10pt)
159 \setfontsize\normalsize\@xpt\@xipt%
160 \abovedisplayskip10\p@\@plus2\p@\@minus5\p@%
161 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
162 \set@vsep\belowdisplayshortskip6\p@\@plus3\p@\@minus3\p@%
163 </10pt>
164 (*11pt)
165 \setfontsize\normalsize\@xipt{13.6}%
166 \abovedisplayskip11\p@\@plus3\p@\@minus6\p@%
167 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
168 \set@vsep\belowdisplayshortskip6.5\p@ \@plus3.5\p@\@minus3\p@%
169 </11pt>
170 (*12pt)
171 \setfontsize\normalsize\@xipt{14.5}%
172 \abovedisplayskip12\p@\@plus3\p@\@minus7\p@%
173 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
174 \set@vsep\belowdisplayshortskip6.5\p@ \@plus3.5\p@\@minus3\p@%
175 </12pt>
176 (*text)
177 \setfontsize\normalsize\@xpt\@xipt%
178 \abovedisplayskip10\p@\@plus2\p@\@minus5\p@%
179 \set@vsep\abovedisplayshortskip\z@\@plus3\p@%
180 \set@vsep\belowdisplayshortskip6\p@\@plus3\p@\@minus3\p@%
181 </text>
182 \belowdisplayskip\abovedisplayskip%
183 \let\@listi\@listI%
184 \setparskip%
185 }
186 \normalsize
187 \if@indentpar
188 \parskip0pt\@plus\p@
189 \else
190 \parskip2ex\@plus\p@
191 \fi

```

`\small` The `\small` size is defined with similar care to `\normalsize`. The list defaults are altered to cope with our different value for `\parskip`. We can then separate this out independently from the typesize.

```

192 <+text>\let\small\normalsize
193 (*8pt | 9pt | 10pt | 11pt | 12pt)
194 \newcommand\small{%
195 (*8pt)

```

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```

196 \setfontsize\small\@viipt{8.4}%
197 \abovedisplayskip8\p@\@plus2\p@\@minus4\p@%
198 \set@vsep\abovedisplayskip\z@\@plus2\p@%
199 \set@vsep\belowdisplayskip4\p@\@plus2\p@\@minus2\p@%
200 /8pt)
201 (*9pt)
202 \setfontsize\small\@viipt{9.5}%
203 \abovedisplayskip8\p@\@plus2\p@\@minus4\p@%
204 \set@vsep\abovedisplayskip\z@\@plus2\p@%
205 \set@vsep\belowdisplayskip4\p@\@plus2\p@\@minus2\p@%
206 /9pt)
207 (*10pt)
208 \setfontsize\small\@ixpt{11}%
209 \abovedisplayskip8.5\p@\@plus3\p@\@minus4\p@%
210 \set@vsep\abovedisplayskip\z@\@plus2\p@%
211 \set@vsep\belowdisplayskip4\p@\@plus2\p@\@minus2\p@%
212 /10pt)
213 (*11pt)
214 \setfontsize\small\@xpt\@xipt%
215 \abovedisplayskip10\p@\@plus2\p@\@minus5\p@%
216 \set@vsep\abovedisplayskip\z@\@plus3\p@%
217 \set@vsep\belowdisplayskip6\p@\@plus3\p@\@minus3\p@%
218 /11pt)
219 (*12pt)
220 \setfontsize\small\@xipt{13.6}%
221 \abovedisplayskip11\p@\@plus3\p@\@minus6\p@%
222 \set@vsep\abovedisplayskip\z@\@plus3\p@%
223 \set@vsep\belowdisplayskip6.5\p@\@plus3.5\p@\@minus3\p@%
224 /12pt)
225 \def\@listi{%
226   \leftmargin\leftmargin%
227   \topsep\@parshortfall%
228   \parsep\@parskip%
229   \itemsep\z@%
230 }%
231 \belowdisplayskip\abovedisplayskip%
232 \setparskip%
233 }
234 /8pt | 9pt | 10pt | 11pt | 12pt)

```

`\footnotesize` This is also defined with the meticulous care of `\normalsize`, and altered in the same way as for `\small`.

```

235 (+text)\let\footnotesize\normalsize
236 (*8pt | 9pt | 10pt | 11pt | 12pt)
237 \newcommand\footnotesize{%
238 (*8pt)
239 \setfontsize\footnotesize\@viipt\@viipt%
240 \set@vsep\abovedisplayskip6\p@\@plus2\p@\@minus4\p@%
241 \set@vsep\abovedisplayskip\z@\@plus\p@%
242 \set@vsep\belowdisplayskip3\p@\@plus\p@\@minus2\p@%
243 /8pt)
244 (*9pt)
245 \setfontsize\footnotesize\@viipt{8.4}%

```

```

246 \set@vsep\abovedisplayskip6\p@\@plus2\p@\@minus4\p@%
247 \set@vsep\abovedisplayskip\z@\@plus\p@%
248 \set@vsep\belowdisplayskip3\p@\@plus\p@\@minus2\p@%
249 /9pt)
250 (*10pt)
251 \@setfontsize\footnotesize\@viipt{9.5}%
252 \set@vsep\abovedisplayskip6\p@\@plus2\p@\@minus4\p@%
253 \set@vsep\abovedisplayskip\z@\@plus\p@%
254 \set@vsep\belowdisplayskip3\p@\@plus\p@\@minus2\p@%
255 /10pt)
256 (*11pt)
257 \@setfontsize\footnotesize\@ixpt{11}%
258 \set@vsep\abovedisplayskip8\p@\@plus2\p@\@minus4\p@%
259 \set@vsep\abovedisplayskip\z@\@plus\p@%
260 \set@vsep\belowdisplayskip4\p@\@plus2\p@\@minus2\p@%
261 /11pt)
262 (*12pt)
263 \@setfontsize\footnotesize\@xpt\@xipt
264 \set@vsep\abovedisplayskip10\p@\@plus2\p@\@minus5\p@%
265 \set@vsep\abovedisplayskip\z@\@plus3\p@%
266 \set@vsep\belowdisplayskip6\p@\@plus3\p@\@minus3\p@%
267 /12pt)
268 \def\@listi{%
269   \leftmargin\leftmargin%
270   \topsep\@parshortfall%
271   \parsep\@parskip%
272   \itemsep\z@%
273 }%
274 \belowdisplayskip\abovedisplayskip%
275 \setparskip%
276 }
277 /8pt | 9pt | 10pt | 11pt | 12pt)

```

The other sizes are all much simpler. We introduce a new size, `\listingsize`, which is used for the listing environment, to ensure that 77 columns of text fit across an A5 sheet.

```

278 (*8pt)
279 \newcommand\scriptsize{\@setfontsize\scriptsize\@vpt\@vipt\@setparskip}
280 \newcommand\tiny{\@setfontsize\tiny{4}\@vpt\@setparskip}
281 \newcommand\large{\@setfontsize\large\@xpt\@xipt\@setparskip}
282 \newcommand\Large{\@setfontsize\Large\@xipt{13}\@setparskip}
283 \newcommand\LARGE{\@setfontsize\LARGE\@xipt\@xivpt\@setparskip}
284 \newcommand\huge{\@setfontsize\huge\@xvipt{20}\@setparskip}
285 \newcommand\Huge{\@setfontsize\Huge\@xxpt{26}\@setparskip}
286 /8pt)
287 (*9pt)
288 \newcommand\scriptsize{\@setfontsize\scriptsize\@vipt\@viipt\@setparskip}
289 \newcommand\tiny{\@setfontsize\tiny\@vpt\@vipt\@setparskip}
290 \newcommand\large{\@setfontsize\large\@xipt{13}\@setparskip}
291 \newcommand\Large{\@setfontsize\Large\@xipt{14.4}\@setparskip}
292 \newcommand\LARGE{\@setfontsize\LARGE\@xivpt{17}\@setparskip}
293 \newcommand\huge{\@setfontsize\huge\@xvipt{20}\@setparskip}
294 \newcommand\Huge{\@setfontsize\Huge\@xxpt{26}\@setparskip}

```

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```
295 </9pt>
296 *10pt>
297 \newcommand\scriptsize{\@setfontsize\scriptsize\@viipt\@setparskip}
298 \newcommand\tiny{\@setfontsize\tiny\@vpt\@vpt\@setparskip}
299 \newcommand\large{\@setfontsize\large\@xiipt{14}\@setparskip}
300 \newcommand\Large{\@setfontsize\Large\@xivpt{18}\@setparskip}
301 \newcommand\LARGE{\@setfontsize\LARGE\@xxviipt{22}\@setparskip}
302 \newcommand\huge{\@setfontsize\huge\@xxpt{25}\@setparskip}
303 \newcommand\Huge{\@setfontsize\Huge\@xxvpt{30}\@setparskip}
304 </10pt>
305 *11pt>
306 \newcommand\scriptsize{\@setfontsize\scriptsize\@viiipt{9.5}\@setparskip}
307 \newcommand\tiny{\@setfontsize\tiny\@vipt\@vipt\@setparskip}
308 \newcommand\large{\@setfontsize\large\@xiipt{14}\@setparskip}
309 \newcommand\Large{\@setfontsize\Large\@xivpt{18}\@setparskip}
310 \newcommand\LARGE{\@setfontsize\LARGE\@xxviipt{22}\@setparskip}
311 \newcommand\huge{\@setfontsize\huge\@xxpt{25}\@setparskip}
312 \newcommand\Huge{\@setfontsize\Huge\@xxvpt{30}\@setparskip}
313 </11pt>
314 *12pt>
315 \newcommand\scriptsize{\@setfontsize\scriptsize\@viiipt{9.5}\@setparskip}
316 \newcommand\tiny{\@setfontsize\tiny\@vipt\@vipt\@setparskip}
317 \newcommand\large{\@setfontsize\large\@xivpt{18}\@setparskip}
318 \newcommand\Large{\@setfontsize\Large\@xxviipt{22}\@setparskip}
319 \newcommand\LARGE{\@setfontsize\LARGE\@xxpt{25}\@setparskip}
320 \newcommand\huge{\@setfontsize\huge\@xxvpt{30}\@setparskip}
321 \let\Huge\huge
322 </12pt>
323 <+8pt | 9pt | 10pt | 11pt | 12pt>\let\listingsize\footnotesize
324 *text>
325 \def\scriptsize{\@setfontsize\scriptsize\@xpt\@xiipt\@setparskip}
326 \let\tiny\scriptsize
327 \let\large\scriptsize
328 \let\Large\scriptsize
329 \let\LARGE\scriptsize
330 \let\huge\scriptsize
331 \let\Huge\scriptsize
332 \let\listingsize\scriptsize
333 %
334 \let\txt@selectfont\selectfont
335 \def\selectfont{%
336   \fontfamily\ttdefault%
337   \fontseries{m}%
338   \fontshape{n}%
339   \txt@selectfont%
340 }
341 </text>
342 </8pt | 9pt | 10pt | 11pt | 12pt | text>
```

3.3.2 Paragraph layout

Here we define various paragraph layout parameters.

First, set up the line separation parameters. `\baselineskip` is set up by the individual

size commands.

```
343 ⟨*strayman⟩
344 \lineskip\p@
345 \normallineskip\p@
```

We don't try to stretch the baselines apart:

```
346 \renewcommand\baselinestretch{}
```

Paragraph indentation is set up later.

Set up some standard penalty values.

```
347 \@lowpenalty 51
348 \@medpenalty 151
349 \@highpenalty 301
350 ⟨/strayman⟩
```

3.3.3 Page layout

Our layout is a bit different to the standard L^AT_EX ones: we leave a lot of space down the left hand side: this is reserved for headings and marginal notes.

Calculating the size of the space on the left, which we call `\leftindent`, is complicated. We want to use as much of the width of the page as possible, unlike the L^AT_EX defaults, making sure that we can fit on 77 columns of `\listingsize\texttt` text. We also try to make space for a reasonable amount of marginal text, although we don't worry too much if that suffers.

The calculation is done as follows. More than about 40mm of margin will look very strange. We must have at least 104mm of main text, which leaves 20mm for the notes on A5 paper (actually, 17mm, since we leave 3mm gap between the notes and the main text). We divide the page horizontally into s mm of left border, m mm of marginal notes, t mm of body text, and another s mm of right border, giving a total of w mm. The value s is given to us by the parameter `\pagesurround`.

Articles look odd with a big gap down the side, so this is reduced when necessary.

We calculate the quantity m as $\min(40, 17(w - 2s - 3)/121 + 3)$. Then we calculate $t = w - m - 24 - 3$.

```
351 ⟨*8pt | 9pt | 10pt | 11pt | 12pt | text⟩
352 \newdimen\leftindent
353 ⟨*8pt | 9pt | 10pt | 11pt | 12pt⟩
354 \leftindent\paperwidth
355 \if@offsetpages
356   \advance\leftindent-2\pagesurround
357   \advance\leftindent-3mm
358   \leftindent0.1405\leftindent
359   \advance\leftindent3mm
360   \ifdim\leftindent>40mm\relax
361     \leftindent40mm
362   \fi
```

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```
363 \if@article\divide\leftindent\tw@\fi
364 \ifdim\leftindent<15mm\leftindent15mm\fi
365 \else
366 \leftindent\z@
367 \fi
368 /8pt|9pt|10pt|11pt|12pt)
369 (+text)\leftindent8\tt@chw
```

In two-column layouts, we prevent headings from being outdented, by zeroing `\sectindent`. Chapter headings and suchlike are still outdented as before. We do not support margin paragraphs in two-column layouts.

```
370 \newdimen\sectindent
371 \if@twocolumn
372 \sectindent\z@
373 \else
374 \sectindent\if@numbering\z@\else\if@article\else\tw@\fi\leftindent\fi
375 \fi
```

Having set up the size of the margin, we can get on with the rest of the setting up.

First, we fix `\hoffset` and `\voffset` so we can work on the whole size of the paper.

```
376 \advance\hoffset-1in
377 \advance\voffset-1in
```

Now we can design the page layout in earnest. We begin with the vertical layout.

```
378 (+8pt)\topskip8\p@
379 (+9pt)\topskip9\p@
380 (+10pt)\topskip10\p@
381 (+11pt)\topskip11\p@
382 (+12pt)\topskip12\p@
383 (+text)\topskip\tt@chh
384 (-text)\topmargin\pagesurround
385 (+text)\topmargin\z@
386 (-text)\headheight12\p@
387 (+text)\headheight12\p@
388 (-text)\headsep.5\pagesurround
389 (+text)\headsep2\tt@chh
390 (+text)\advance\headsep-12\p@
391 (-text)\footskip12\p@
392 (-text)\advance\footskip.5\pagesurround
393 (+text)\footskip2\tt@chh
394 \textheight\paperheight
395 (-text)\advance\textheight-24\p@
396 (-text)\advance\textheight-3\pagesurround
397 (+text)\advance\textheight-4\tt@chh
```

Now we define the horizontal layout.

```
398 \oddsidemargin\leftindent
399 (-text)\advance\oddsidemargin\pagesurround
400 \evensidemargin\oddsidemargin
401 \textwidth\paperwidth
```



```

402 \advance\textwidth-\oddsidemargin
403 (-text) \advance\textwidth-\pagesurround
404 (-text) \marginparsep3mm
405 (+text) \marginparsep\tt@chw
406 \marginparwidth\leftindent
407 \advance\marginparwidth-\marginparsep

```

Setting `\maxdepth` is fairly simple. This looks odd, because normally there's some messing for compatibility with L^AT_EX 2.09.

```

408 \maxdepth.5\topskip
409 \@maxdepth\maxdepth

```

Marginal notes need some setting up.

```

410 \marginparpush5\p@

```

Footnotes need some setting up now.

```

411 (+8pt) \footnotesep5.8\p@
412 (+9pt) \footnotesep6.2\p@
413 (+10pt) \footnotesep6.65\p@
414 (+11pt) \footnotesep7.7\p@
415 (+12pt) \footnotesep8.4\p@
416 (+8pt) \setlength{\skip\footins}{7\p@\@plus4\p@\@minus2\p@}
417 (+9pt) \setlength{\skip\footins}{8\p@\@plus4\p@\@minus2\p@}
418 (+10pt) \setlength{\skip\footins}{9\p@\@plus4\p@\@minus2\p@}
419 (+11pt) \setlength{\skip\footins}{10\p@\@plus4\p@\@minus2\p@}
420 (+12pt) \setlength{\skip\footins}{10.8\p@\@plus4\p@\@minus2\p@}
421 /8pt | 9pt | 10pt | 11pt | 12pt | text)

```

3.3.4 Float placement

First, we determine how we position the floats on the page.

```

422 (*strayman)
423 \setcounter{topnumber}{2}
424 \renewcommand\topfraction{.7}
425 \setcounter{bottomnumber}{1}
426 \renewcommand\bottomfraction{.3}
427 \setcounter{totalnumber}{3}
428 \renewcommand\textfraction{.1}
429 \renewcommand\floatpagefraction{.8}
430 \setcounter{dbltopnumber}{2}
431 \renewcommand\dbltopfraction{.7}
432 \renewcommand\dblfloatpagefraction{.5}
433 (/strayman)

```

Now we define the glue which surrounds floats.

```

434 (*8pt | 9pt | 10pt | 11pt | 12pt)
435 \floatsep12\p@\@plus2\p@\@minus2\p@
436 \textfloatsep20\p@\@plus2\p@\@minus4\p@
437 \dbltextfloatsep20\p@\@plus2\p@\@minus4\p@

```

The strayman document class

```
438 (+8pt | 9pt | 10pt | 11pt)\intextsep12\p@ \@plus2\p@ \@minus 2\p@
439 (+8pt | 9pt | 10pt | 11pt)\dblfloatsep12\p@ \@plus2\p@ \@minus 2\p@
440 (+12pt)\intextsep14\p@ \@plus4\p@ \@minus 4\p@
441 (+12pt)\dblfloatsep14\p@ \@plus2\p@ \@minus 4\p@
```

We must now define the parameters for float pages and columns.

```
442 \@fptop0\p@ \@plus 1fil
443 (+8pt | 9pt | 10pt | 11pt)\@fpsep8\p@ \@plus2fil
444 (+12pt)\@fpsep10\p@ \@plus2fil
445 \@fpbot0\p@ \@plus 1fil
446 %
447 \@dblftop0\p@ \@plus 1fil
448 (+8pt | 9pt | 10pt | 11pt)\@dblpsep8\p@ \@plus 2fil
449 (+12pt)\@dblpsep10\p@ \@plus2fil
450 \@dblpbot0\p@ \@plus 1fil
451 (/8pt | 9pt | 10pt | 11pt | 12pt)
```

3.4 Headers and footers

This part defines the standard page styles. By default, `strayman` imports `fancyheadings` and uses them, although this section is retained in case anything actually needs the original L^AT_EX-style headings.

```
452 (*strayman)
453 \def\ps@headings{%
454 \let\@oddfoot\@empty\let\@evenfoot\@empty
455 \def\@evenhead{\thepage\hfil\slshape\leftmark}%
456 \def\@oddhead{\slshape\rightmark\hfil\thepage}%
457 \let\@mkboth\markboth
458 \def\chaptermark##1{\markboth {\thechapter. ##1}{}}%
459 \def\sectionmark##1{\markright {\thesection. ##1}}%
460 }
461 %
462 \def\ps@myheadings{%
463 \let\@oddfoot\@empty\let\@evenfoot\@empty
464 \def\@evenhead{\thepage\hfil\slshape\leftmark}%
465 \def\@oddhead{\slshape\rightmark\hfil\thepage}%
466 \let\@mkboth\@gobbletwo
467 \let\chaptermark\@gobble
468 \let\sectionmark\@gobble
469 }
```

3.5 Titles

`\maketitle` This is a bit of a thorny issue at the moment. Really, these titles need a complete rewrite. The `\maketitle` command will only be used for inside front covers anyway. I'm wondering if it wouldn't be better just to use special case code for each individual manual. Until a decision is made, I'll leave this as it was in `book`.

Note This code is largely uncommented. It seems to be fairly straightforward, and if I do need to change it, I'll probably start again from scratch anyway.

3. Implementation

```

470 \if@titlepage
471 %
472 \newcommand\maketitle{%
473 \begin{titlepage}%
474 \let\footnotesize\small%
475 \let\footnoterule\relax%
476 \null\vfil%
477 \vskip 60\p@%
478 \begin{center}%
479 {\LARGE\@title\par}%
480 \vskip3em%
481 {%
482 \large%
483 \lineskip.75em%
484 \begin{tabular}[t]{c}%
485 \@author%
486 \end{tabular}%
487 \par%
488 }%
489 \vskip1.5em%
490 {\large \@date \par}% % Set date in \large size.
491 \end{center}%
492 \par%
493 \@thanks%
494 \vfil\null%
495 \end{titlepage}%
496 \setcounter{footnote}{0}%
497 \let\thanks\relax%
498 \let\maketitle\relax%
499 \gdef\@thanks{}%
500 \gdef\@author{}%
501 \gdef\@title{}%
502 }
503 %
504 \else
505 %
506 \newcommand\maketitle{%
507 \par%
508 \begin{group}%
509 \renewcommand\thefootnote{\fnsymbol{footnote}}%
510 \def\@makefnmark{\hb@xt@\z@{\$ \m@th^{\@thefnmark}$ \hss}}%
511 \long\def\@makefntext##1{%
512 \parindent1em\noindent%
513 \hb@xt@1.8em{\hss\$ \m@th^{\@thefnmark}$}##1%
514 }%
515 \if@twocolumn%
516 \ifnum\col@number=\@ne%
517 \@maketitle%
518 \else%
519 \twocolumn[\@maketitle]%
520 \fi%
521 \else%
522 \newpage%
523 \global\@topnum\z@ % Prevents figures from going at top of page.
524 \@maketitle%

```

The strayman document class

```

525     \fi%
526     \thispagestyle{plain}%
527     \@thanks%
528   \endgroup%
529   \setcounter{footnote}{0}%
530   \let\thanks\relax%
531   \let\maketitle\relax%
532   \let\@maketitle\relax%
533   \gdef\@thanks{}%
534   \gdef\@author{}%
535   \gdef\@title{}%
536 }
537 %
538 \fi
539 %
540 \def\@maketitle{%
541   \newpage%
542   \null%
543   \vskip2em%
544   \begin{center}%
545     {\LARGE\@title\par}%
546     \vskip1.5em%
547     {%
548       \large%
549       \lineskip.5em%
550       \begin{tabular}[t]{c}%
551         \@author%
552       \end{tabular}%
553       \par%
554     }%
555     \vskip 1em%
556     {\large\@date}%
557   \end{center}%
558   \par%
559   \vskip1.5em%
560 }
```

titlepage The `titlepage` environment typesets its contents on a title page. The implementation is fairly straightforward: we just need to do some fiddling with two-column layouts. We also add in some hacking to make title pages centred properly, a bit like the `central` environment.

```

561 \newenvironment{titlepage}{%
562   \cleardoublepage%
563   \if@twocolumn%
564     \@restonecoltrue\onecolumn%
565   \else%
566     \@restonecolfalse\newpage%
567   \fi%
568   \centrepaper%
569   \if@compatibility%
570     \setcounter{page}{0}%
571   \fi%
572 }{%
```

```

573 \thispagestyle{empty}%
574 \if@restonecol%
575     \twocolumn%
576 \else%
577     \newpage%
578 \fi%
579 }

```

`\centrepager` Change the page layout to centre everything properly. We guard against this sort of thing happening again by clearing `\leftindent` and `\sectindent`. This should only be cleared after the page has been finished, for obvious reasons.

```

580 \def\centrepager{%
581     \advance\oddsidemargin-\leftindent%
582     \advance\evensidemargin-\leftindent%
583     \advance\textwidth\leftindent%
584     \advance\linewidth\leftindent%
585     \advance\leftmargini0.5\leftindent%
586     \leftindent\z@%
587     \sectindent\z@%
588     \hsize\textwidth%
589 }

```

3.6 Sectioning commands

In *strayman*, quite a lot of the sectioning is different. We don't tend to number sections much. Also, the chapter heading style has been completely rewritten (several times).

3.6.1 Setting up the counters

This is pretty simple stuff.

```

590 \newcommand\chaptermark[1]{}
591 \setcounter{secnumdepth}{\if@numbering\if@runinsubsubsec2\else3\fi\else0\fi}
592 \newcounter{part}
593 \newcounter{chapter}
594 \newcounter{section}[chapter]
595 \newcounter{subsection}[section]
596 \newcounter{subsubsection}[subsection]
597 \newcounter{paragraph}[subsubsection]
598 \newcounter{subparagraph}[paragraph]
599 \renewcommand\thepart        {\Roman{part}}
600 \renewcommand\thechapter    {\arabic{chapter}}
601 \if@article
602     \renewcommand\thesection {\arabic{section}}
603 \else
604     \renewcommand\thesection {\thechapter.\arabic{section}}
605 \fi
606 \renewcommand\thesubsection {\thesection.\arabic{subsection}}
607 \renewcommand\thesubsubsection {\thesubsection.\arabic{subsubsection}}
608 \renewcommand\theparagraph  {\thesubsubsection.\arabic{paragraph}}
609 \renewcommand\thesubparagraph {\theparagraph.\arabic{subparagraph}}

```

3.6.2 Frontmatter, mainmatter and backmatter

We start off thinking we're in the main matter. The user ought to put a `\frontmatter` command at the beginning of the document if this is not correct, as it usually won't be.

```

610 \newif\if@mainmatter
611 \@mainmattertrue
612 \newcommand\frontmatter{%
613   \cleardoublepage%
614   \@mainmatterfalse%
615   \pagenumbering{roman}%
616 }
617 \newcommand\mainmatter{%
618   \cleardoublepage%
619   \@mainmattertrue%
620   \pagenumbering{arabic}%
621 }
622 \newcommand\backmatter{%
623   \if@openright%
624     \cleardoublepage%
625   \else%
626     \clearpage%
627   \fi%
628   \@mainmatterfalse%
629 }

```

3.6.3 Abstracts

abstract The abstract environment reduces the type size and margins slightly. Abstracts are placed on their own pages when the `titlepage` option is enabled. The code is filched from the LaTeX article class.

```

630 \if@titlepage
631   \newenvironment{abstract}{%
632     \titlepage
633     \null\vfil
634     \@beginparpenalty\@lowpenalty
635     \begin{center}%
636       \bfseries \abstractname
637       \@endparpenalty\@M
638     \end{center}}%
639   {\par\vfil\null\endtitlepage}
640 \else
641   \newenvironment{abstract}{%
642     \if@twocolumn
643       \section*{\abstractname}%
644     \else
645       \small
646       \list{}{%
647         \def\makelabel##1{%
648           \normalfont%
649           \fontseries{b}\fontfamily\headdefault\selectfont%
650           ##1%
651         }%

```

```

652         \labelsep1em\labelwidth\z@\itemindent\labelsep%
653         \rightmargin\leftmargin%
654     }
655     \item[\abstractname]%
656 \fi}
657 {\if@twocolumn\else\endlist\fi}
658 \fi

```

3.6.4 Appendices

`\appendix` This command sets everything up to typeset the appendix.

```

659 \newcommand\appendix{%
660   \par%
661   \setcounter{chapter}{0}%
662   \setcounter{section}{0}%
663   \renewcommand\@chapapp{\appendixname}%
664   \if@article%
665     \renewcommand\thesection{\Alph{section}}%
666   \else%
667     \renewcommand\thechapter{\Alph{chapter}}%
668   \fi%
669   \@appendixtrue%
670 }

```

3.6.5 Parts

Part headings are typeset on completely unadorned sheets, devoid of page numbers and suchlike. Because of the strange page layout, we have to put the part heading into a `central` environment. to stop the page looking horribly lopsided.

`\part` The `\part` macro moves to an appropriate page, changes the pagestyle to empty to switch off page numbering, and then calls `\@part` or `\@spart` as appropriate, according to whether a was supplied. We put some `\vfil` glue in, to vertically centre anything that these commands typeset, and ensure printing in a single column.

```

671 \newcommand\part{%
672   \cleardoublepage%
673   \thispagestyle{empty}%
674   \if@twocolumn%
675     \onecolumn%
676     \@tempwattrue%
677   \else%
678     \@tempwafalse%
679   \fi%
680   \hbox{}\vfil%
681   \secdef\@part\@spart%
682 }

```

`\@part` This is where most of the part heading typesetting is done. We stick a line in the contents file, clear the heading markers, and typeset the heading in the biggest letters we can find. When we're done, we call `\@endpart` to do some common cleaning up.

The strayman document class

```
683 \def\@part[#1]#2{%
684   \ifnum\c@secnumdepth>-2\relax%
685     \refstepcounter{part}%
686     \addcontentsline{toc}{part}{\thepart\hspace{1em}#1}%
687   \else%
688     \addcontentsline{toc}{part}{#1}%
689   \fi%
690   \markboth{}{}%
691   \begin{centrepage}%
692   \centering%
693   \interlinepenalty\@M%
694   \reset@font%
695   \ifnum\c@secnumdepth>-2\relax%
696     \huge\bfseries\headfam\partname~\thepart%
697     \par%
698     \vskip20\p@
699   \fi%
700   \normalfont\Huge\bfseries\headfam#2\par%
701   \@endpart%
702 }
```

\@spart Here we typeset just the part heading: numbers have been suppressed. Also we don't put things into the contents file. Otherwise, this is similar to **\@part**.

```
703 \def\@spart#1{%
704   \begin{centrepage}%
705   \centering%
706   \interlinepenalty\@M%
707   \reset@font%
708   \normalfont\Huge\bfseries\headfam#1\par%
709   \@endpart%
710 }
```

\@endpart This does the clearing up operation after a part has been typeset. We insert the other **\vfil** glue to centre the heading, clear the other side of the page, if printing two-sided, and return if necessary to two-column printing.

```
711 \def\@endpart{%
712   \vfil\newpage%
713   \end{centrepage}%
714   \if@twoside%
715     \hbox{}%
716     \thispagestyle{empty}%
717     \newpage%
718   \fi%
719   \if@tempswa%
720     \twocolumn%
721   \fi%
722 }
```

3.6.6 Chapters

The chapter typesetting has been more-or-less rewritten. We'll follow this in a reasonable amount of detail.

`\@chapapp` Because `\appendix` needs to change what chapters are called, we add a level of indirection through `\@chapapp`:

```
723 \newcommand\@chapapp{\chaptername}
```

`\chapter` The `\chapter` command is the main dispatcher for chapters. We move to an appropriate page, depending on the `openright` setting, suppress headers, and then call `\@chapter` or `\@schapter` as appropriate.

```
724 \newcommand\chapter{%
725   \if@openright%
726     \cleardoublepage%
727   \else%
728     \clearpage%
729   \fi%
730   \thispagestyle{plain}%
731   \global\@topnum\z@%
732   \@afterindentfalse%
733   \secdef\@chapter\@schapter%
734 }
```

`\@chapter` There's a lot of messing about to do, depending on whether we're in the main matter and so on. We'll take this carefully.

```
735 \def\@chapter[#1]#2{%
```

The first thing to do is put a line in the contents table. We need to check `secnumdepth` and the `mainmatter` flag for this: we should only include a number if both these tests pass. In this case, we also type a message on the terminal.

```
736   \ifnum\c@secnumdepth>\m@ne%
737     \if@mainmatter%
738       \refstepcounter{chapter}%
739       \typeout{\@chapapp\space\thechapter.}%
740       \addcontentsline{toc}{chapter}{\protect\numberline{\thechapter}#1}%
741     \else
742       \addcontentsline{toc}{chapter}{#1}%
743     \fi
744   \else
745     \addcontentsline{toc}{chapter}{#1}
746   \fi
```

Now we put a bit of space in the lists of figures and tables, and set up the mark to put the chapter heading in the running header.

```
747   \chaptermark{#1}%
748   \addtocontents{lof}{\protect\addvspace{10\p@}}%
749   \addtocontents{lot}{\protect\addvspace{10\p@}}%
```

Finally, we need to decide how to typeset the chapter heading. On single-column chapters, this is easy. On double-column formats, we need to do horrid things with `\@topnewpage`.

The strayman document class

```

750 \if@twocolumn%
751   \topnewpage[\@makechapterhead{%
752     \hb@xt@.5\leftindent{\thechapter\hfil}%
753     }{#2}]]%
754 \else%
755   \@makechapterhead{%
756     \hb@xt@.5\leftindent{\thechapter\hfil}%
757     }{#2}%
758   \@afterheading%
759 \fi%
760 }

```

`\@makechapterhead` This macro actually does the job of typesetting a chapter heading. Call this routine as `\@makechapterhead{<number>}{<title>}`. Here, `<number>` is how to typeset the chapter number, and `<title>` is the rest of the title. To suppress the number, just leave `<number>` empty. The number is only typeset when it is correct to do so anyway.

The spacing is rather awkward. We have to cope with two-column layouts, which seem to require different spacing. In a double-column layout, the title is normally one `\baselineskip` too high. Also, the space I add at the bottom of the heading gets eaten in double-column chapters, because I'm actually typesetting into a vbox which is floated to the top by L^AT_EX in a fairly horrid way. This can't really be worked around, so we just make the space beneath the heading equal to `\dbltextfloatsep`, which is what gets added anyway.

The other snags are to do with the rule after the chapter heading. Firstly, this is meant to be typeset into the left margin, like the heading itself, which is a bit messy. More awkwardly, we have to be careful not to let the depth of the line vary when the chapter heading has descenders, although obviously we must lower the rule if the heading really is very deep indeed.

We'll approach this a bit at a time.

```

761 \def\@makechapterhead#1#2{%
762   \begingroup%                               % Stop my hacking messing things up

```

First, the top spacing. This is divided into two parts, by an invisible rule: the `\vskip` above the rule is eaten by T_EX if this is a genuine new page, but put into the floating vbox if this is a two-column affair. The second bit is added in both cases.

```

763   \vskip\baselineskip%                       % This is gobbled in single column
764   \hrule\@height\z@%                         % Stops TeX from binning my vskips
765   \vskip32\p@%                               % Start chapters in a funny place

```

Now we actually typeset the heading. This is fairly simple: we must just check that we need to typeset the number.

```

766   \normalfont\Huge\bfseries\headfam%        % Choose a nice font for it
767   \raggedright % Don't justify -- it looks nasty
768   \@hangfrom{\hskip-\leftindent}%           % Start text at 'real left margin'
769   \ifnum\c@secnumdepth>\m@ne%               % Do we typeset chapter numbers?
770     \if@mainmatter%                         % Are we past the front matter?
771       #1%                                   % Yes -- then typeset the number

```

```

772    \fi\fi%                                % Now back to normality
773    {#2}%                                  % Typeset the actual chapter head
774    \par\nobreak%                          % Back to vmode again, please

```

The next tricky bit is the space before the ruleoff. We must be careful here:

- We want the rule to be the right depth below the heading baseline, regardless of whether the heading contains descenders: helpfully, \TeX omits `\baselineskip` glue before and after rules.
- We want the rule to always be below any oddly deep descenders that a strange user might throw at us (e.g., horrid fractions or weird `\vrules`).

We accomplish this by scrutinising `\prevdepth` carefully.

```

775    \@tempdima14\p@%                      % Be this low below the baseline
776    \advance\@tempdima-\prevdepth%         % This is the actual skip then
777    \ifdim\@tempdima<8\p@%                 % Is this not enough skippage?
778        \@tempdima8\p@%                   % No: then skip some more
779    \fi%
780    \vskip\@tempdima%                      % Skip a bit below the title

```

Now we can set the rule. This needs a little care.

```

781    \@tempskipa\textwidth%                % Find the width of the column
782    \advance\@tempskipa\leftindent%        % Add on the big lefthand gap
783    \nointerlineskip%                     % Don't add any more space please
784    \moveleft\leftindent\ vbox{%          % Shift something left by an amount
785        \hrule\@width\@tempskipa%         % Typeset the rule nicely
786    }%
787    \nointerlineskip%                     % Don't leave a gap beneath it

```

Finally, we leave a gap. In two-column layouts this is done for us, and \LaTeX gobbles this glue and replaces it with `\dbltextfloatsep`. To make things consistent, this is the glue we use anyway.

```

788    \nobreak%                             % This would be a bad place to break
789    \vspace{\dbltextfloatsep}%             % Add in some extra glue beneath
790    \endgroup%
791 }

```

`\@makeschapterhead` This is now just a veneer onto `\@makechapterhead`. It's needed, because other bits of \LaTeX call it.

```

792 \def\@makeschapterhead{%
793     \@makechapterhead{}
794 }

```

`\@schapter` This macro typesets a starred chapter heading. This is terribly simple, compared to the sort of things we've been doing so far.

```

795 \def\@schapter#1{%
796     \if@twocolumn%
797         \topnewpage[\@makeschapterhead{#1}]%

```

```

798 \else%
799 \makeschapterhead{#1}%
800 \afterheading%
801 \fi%
802 }

```

3.6.7 The other sectioning commands

These are all defined through `\@startsection`. They've been modified to typeset sections and subsections hanging into the left margin, and to moderate the amount of following space, due to the extra `\parskip` already introduced.

```

803 \def\@defsection#1#2#3#4#5#6{%
804 \expandafter\newcommand\csname#1\endcsname{%
805 \skip@#4\advance\skip@\ifdim\skip@<\z@-\fi\@parshortfall%
806 \skip\tw@#5\relax\ifdim\skip\tw@>\z@\advance\skip\tw@\@parshortfall\fi%
807 \@startsection%
808 {#1}%
809 {#2}%
810 {#3}%
811 \skip@
812 {\skip\tw@}%
813 {\reset@font#6\bfseries\headfam}%
814 }%
815 }
816 \@defsection
817 {section}% % Section name (for contents)
818 {1}% % Level number (for numbering)
819 {- .5\sectindent}% % Indentation of title
820 {-1.5ex\@plus-1ex\@minus-.2ex}% % Space after title (vert/horiz)
821 {.3ex\@plus.2ex}% % Space before title
822 {\reset@font\Large\bfseries\headfam}% How to typeset the title
823 \@defsection
824 {subsection}%
825 {2}%
826 {- .25\sectindent}%
827 {-1.25ex\@plus-1ex\@minus-.2ex}%
828 {\p@\@plus.2ex}%
829 {\reset@font\large\bfseries\headfam}%
830 \if@runinssubsubsec
831 \@defsection
832 {subsubsection}%
833 {3}%
834 {\z@}%
835 {0pt\@plus1ex\@minus.2ex}%
836 {-1em}%
837 {\reset@font\normalsize\bfseries\headfam}%
838 \@defsection
839 {paragraph}%
840 {4}%
841 {\z@}%
842 {0pt\@plus.5ex\@minus.1ex}%
843 {-1em}%
844 {\reset@font\normalsize\bfseries\headfam}%

```

```

845 \@defsection
846     {subparagraph}%
847     {5}%
848     {\parindent}%
849     {0pt\@plus.5ex\@minus.1ex}%
850     {-1em}%
851     {\reset@font\normalsize\bfseries\headfam}%
852 \else
853 \@defsection
854     {subsubsection}%
855     {3}%
856     {\z@}%
857     {-1.25ex\@plus-1ex\@minus-.2ex}%
858     {\p@\@plus.2ex}%
859     {\reset@font\normalsize\bfseries\headfam}%
860 \@defsection
861     {paragraph}%
862     {4}%
863     {\z@}%
864     {0pt\@plus1ex\@minus.2ex}%
865     {-1em}%
866     {\reset@font\normalsize\bfseries\headfam}%
867 \@defsection
868     {subparagraph}%
869     {5}%
870     {\parindent}%
871     {0pt\@plus.5ex\@minus.1ex}%
872     {-1em}%
873     {\reset@font\normalsize\bfseries\headfam}%
874 \fi

```

3.6.8 Section number formatting

`\@secntformat` The macro is given a section counter and must format it in some nice way.

```

875 \def\@secntformat#1{%
876     \llap{\csname the#1\endcsname\@normalsize\quad}\hfil}%
877 }
878 %
879 % \subsection{Top level sectioning}
880 %
881 % \begin{macro}{\@topsect}
882 %
883 % Articles are divided into sections; other documents are divided into
884 % chapters. Things like the table of contents need to know which.
885 %
886 % \begin{macrocode}
887 \if@article
888     \def\@topsect@star{\section*}
889     \let\@topsect\section
890 \else
891     \let\@topsect@star\chapter
892     \let\@topsect\chapter
893 \fi

```

3.7 List handling

A surprising number of L^AT_EX's environments are defined in terms of lists, many of which hide the fact by putting the entire text in one big item.

This part of the document class has to set up lots of list parameters. This is largely the same as the standard classes, altered slightly to cope with the different paragraph spacing.

3.7.1 General list parameters

Default left margins for lists:

```
894 \if@twocolumn
895   \leftmargini2em
896 \else
897   \leftmargini2.2em
898 \fi
899 \leftmarginii2em
900 \leftmarginiii1.87em
901 \leftmarginiv1.7em
902 \if@twocolumn
903   \leftmarginv.5em
904   \leftmarginvi.5em
905 \else
906   \leftmarginv1em
907   \leftmarginvi1em
908 \fi
```

And now we can set the paragraph indent.

```
909 \if@indentpar
910   \parindent1.2em
911 \else
912   \parindent\z@
913 \fi
```

Other spacing defaults:

```
914 \leftmargin\leftmargini
915 \labelsep.5em
916 \labelwidth\leftmargini
917 \advance\labelwidth-\labelsep
918 \partopsep\z@\@plus1\p@\@minus1\p@
```

Interline penalties:

```
919 \@beginparpenalty -\@lowpenalty
920 \@endparpenalty -\@lowpenalty
921 \@itempenalty -\@lowpenalty
```

Now we define the defaults for the list environments. These have managed to migrate from the size options into the main document class.

```

922 \def\@listI{%
923   \ifvmode\else\@beginparpenalty\@M\fi%
924   \leftmargin\leftmarginI%
925   \parsep\@parskip%
926   \topsep\@parshortfall%
927   \itemsep\z@%
928 }
929 \let\@listi\@listI
930 \@listi%
931 \def\@listii{%
932   \ifvmode\else\@beginparpenalty\@M\fi%
933   \topsep\z@\@plus\p@%
934   \leftmargin\leftmarginii%
935   \labelwidth\leftmarginii%
936   \advance\labelwidth-\labelsep%
937 }
938 \def\@listiii{%
939   \ifvmode\else\@beginparpenalty\@M\fi%
940   \leftmargin\leftmarginiii%
941   \labelwidth\leftmarginiii%
942   \advance\labelwidth-\labelsep%
943 % \partopsep\p@\@plus\z@\@minus\p@%
944 }
945 \def\@listiv{%
946   \ifvmode\else\@beginparpenalty\@M\fi%
947   \leftmargin\leftmarginiv%
948   \labelwidth\leftmarginiv%
949   \advance\labelwidth-\labelsep%
950 }
951 \def\@listv{%
952   \ifvmode\else\@beginparpenalty\@M\fi%
953   \leftmargin\leftmarginv%
954   \labelwidth\leftmarginv%
955   \advance\labelwidth-\labelsep%
956 }
957 \def\@listvi{%
958   \ifvmode\else\@beginparpenalty\@M\fi%
959   \leftmargin\leftmarginvi%
960   \labelwidth\leftmarginvi%
961   \advance\labelwidth-\labelsep%
962 }

```

3.7.2 Numbering things

`\numberwithin` Does the obvious thing. Optional argument gives numbering style.

```

963 \def\numberwithin{\@testopt\nw@i\arabic}
964 \def\nw@i[#1]#2#3{%
965   \@addtoreset{#2}{#3}%
966   \expandafter\xdef\csname the#2\endcsname{%
967     \expandafter\noexpand\csname the#3\endcsname.%
968     \noexpand#1{#2}}}%
969 }

```

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`\removefromreset` Does the obvious thing.

```
970 \def\removefromreset#1#2{%
971   \begingroup%
972   \def\@tempa{#1}%
973   \toks@{}%
974   \def\@elt##1{%
975     \def\@tempb{##1}%
976     \ifx\@tempa\@tempb%
977       \else\toks@\expandafter{\the\toks@\@elt{##1}}%
978     \fi%
979   }
980   \csname cl@#2\endcsname%
981   \expandafter\xdef\csname cl@#2\endcsname{\the\toks@}%
982   \endgroup%
983 }
```

3.7.3 Enumerated lists

We busily redefine all the counters for enumerated lists, and how to typeset them.

How to typeset the numbers:

```
984 \renewcommand\theenumi{\arabic{enumi}}
985 \renewcommand\theenumii{\alph{enumii}}
986 \renewcommand\theenumiii{\roman{enumiii}}
987 \renewcommand\theenumiv{\Alph{enumiv}}
```

Typesetting the item labels:

```
988 \newcommand\labelenumi{\theenumi.}
989 \newcommand\labelenumii{(\theenumii)}
990 \newcommand\labelenumiii{\theenumiii.}
991 \newcommand\labelenumiv{\theenumiv.}
```

And finally how to typeset references to the items:

```
992 \renewcommand\p@enumii{\theenumi}
993 \renewcommand\p@enumiii{\theenumi(\theenumii)}
994 \renewcommand\p@enumiv{\p@enumiii\theenumiii}
```

3.7.4 Itemized lists

We set up the various bullet shapes for the itemized lists.

```
995 \newcommand\labelitemi{$\m@th\bullet$}
996 \newcommand\labelitemii{\normalfont\bfseries --}
997 \newcommand\labelitemiii{$\m@th\ast$}
998 \newcommand\labelitemiv{$\m@th\cdot$}
```


3.7.5 Description lists

This has been redefined a little to make it more sensible. The old version had a weird `\hspace\labelsep` in the labelling macro. This has now been added into the main list definition. You can now redefine `\descriptionlabel` without fear of messing up the spacing.

description Here we set up the main list parameters. The label width is zeroed to ensure that the text is always indented nicely.

```

999 \def\description{%
1000   \list{}{%
1001     \labelwidth\z@%
1002     \itemindent-\leftmargin%
1003     \advance\itemindent\labelsep%
1004     \def\makelabel{\descriptionlabel}%
1005   }%
1006 }
1007 \let\enddescription\endlist

```

`\descriptionlabel` This typesets a description label. Redefine it the obvious way for different exciting effects.

```

1008 \def\descriptionlabel#1{\normalfont\bfseries #1}

```

3.7.6 Other list-based environments

Several other standard environments are defined in terms of lists. These are all dealt with here.

verse The `verse` environment is specially fiddled so that `\\` works as it should. There's nothing else exciting about it.

```

1009 \newenvironment{verse}{%
1010   \let\\ \@centercr%
1011   \list{}{%
1012     \itemsep\z@%
1013     \itemindent-1.5em%
1014     \listparindent\itemindent%
1015     \rightmargin\leftmargin%
1016     \advance\leftmargin1.5em%
1017   }%
1018   \item[]%
1019 }{%
1020   \endlist%
1021 }

```

quotation The `quotation` environment is a pretty standard display, except that we kill off inter-paragraph space. The current definition means that `quotations` are typeset in normal indented-paragraph style, which is inconsistent with the rest of the document style.

```

1022 \newenvironment{quotation}{%

```

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```
1023 \list{}{%
1024     \listparindent\z@%
1025     \itemindent\listparindent%
1026     \rightmargin\leftmargin%
1027 }%
1028 \item[]%
1029 }{%
1030 \endlist%
1031 }
```

quote This is even simpler. We just pull in the right margin a bit.

```
1032 \newenvironment{quote}{%
1033     \list{}{%
1034         \rightmargin\leftmargin%
1035     }%
1036     \item[]%
1037 }{%
1038 \endlist%
1039 }
```

display The display environment is intended for any other displays which you need to typeset.
This is *not* a standard environment.

```
1040 \newenvironment{display}{%
1041     \list{}{%
1042         \leftmargin1em%
1043         \rightmargin\leftmargin%
1044         \labelsep\z@%
1045         \labelwidth\z@%
1046     }%
1047     \item[]\relax%
1048 }{%
1049 \endlist%
1050 }
```

And some quick hacking of the theorem environment.

3.8 Other parameters

We define some miscellaneous parameters for standard environments.

```
1051 \arraycolsep5\p@
1052 \tabcolsep6\p@
1053 \arrayrulewidth.4\p@
1054 \doublerulesep2\p@
1055 \tabbingsep\labelsep
1056 \skip\@mpfootins\skip\footins
1057 \fboxsep3\p@
1058 \fboxrule.4\p@
1059 %
1060 \if@article
```

```

1061 \renewcommand\theequation{\arabic{equation}}
1062 \else
1063 \addtoreset{equation}{chapter}
1064 \renewcommand\theequation{\thechapter.\arabic{equation}}
1065 \fi

```

3.9 Floats

Since raw L^AT_EX doesn't actually define any floating objects, we have to do some of the work here. This isn't actually terribly arduous. For a float called *float*, we have to define the following macros:

`\fps@float` is the default float positioning argument for the float type.

`\ftype@float` is a flag bit for the float type. This is used in L^AT_EX's `\output` routine to identify floats of this type.

`\ext@float` is the file extension for the list of these floats (e.g., 'lof' for figures).

`\fnum@float` is a macro which generates the caption number. For figures, this expands to 'Figure~\thefigure'.

We must also define `\makecaption`, which typesets a float caption in an appropriate way, and an environment for each type of float.

3.9.1 Figures

This is all fairly straightforward stuff. First, we create a counter for figures:

```

1066 \newcounter{figure}[chapter]
1067 \if@article
1068 \renewcommand\thefigure{\@arabic{c@figure}}
1069 \else
1070 \renewcommand\thefigure{\thechapter.\@arabic{c@figure}}
1071 \fi

```

Now we define all the macros L^AT_EX requires.

```

1072 \if@herefloats\def\fps@figure{htbp}\else\def\fps@figure{tbp}\fi
1073 \def\ftype@figure{1}
1074 \def\ext@figure{lof}
1075 \def\fnum@figure{figurename~\thefigure}

```

figure Finally, we create the figure and figure* environments.
figure*

```

1076 \newenvironment{figure}{\@float{figure}}{\end@float}
1077 \newenvironment{figure*}{\@dblfloat{figure}}{\end@dblfloat}

```

3.9.2 Tables

This is pretty similar to the figure handling.

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```
1078 \newcounter{table}[chapter]
1079 \if@article
1080   \renewcommand\thetable{\@arabic\c@table}
1081 \else
1082   \renewcommand\thetable{\thechapter.\@arabic\c@table}
1083 \fi
1084 %
1085 \if@herefloats\def\fps@table{htbp}\else\def\fps@table{tbp}\fi
1086 \def\ftype@table{2}
1087 \def\ext@table{lot}
1088 \def\fnm@table{\tablename~\thetable}
1089 %
1090 \newenvironment{table}{\@float{table}}{\end@float}
1091 \newenvironment{table*}{\@dblfloat{table}}{\end@dblfloat}
```

3.9.3 Other float parameters

`\@makecaption` The `\@makecaption` macro is called to display a float caption. It will typeset its argument either centred in a box, if it is short enough, or in a paragraph if it is longer than a line.

```
1092 \newlength\abovecaptionskip
1093 \newlength\belowcaptionskip
1094 \abovecaptionskip10\p@
1095 \belowcaptionskip0\p@
1096 %
1097 \long\def\captionstyle#1#2{\itshape #1: #2}
1098 \long\def\@makecaption#1#2{%
1099   \vskip\abovecaptionskip%
1100   \sbox\@tempboxa{\captionstyle{#1}{#2}}%
1101   \ifdim\wd\@tempboxa>\hsize%
1102     \unhbox\@tempboxa\par%
1103   \else%
1104     \hb@xt@\hsize{\hfil\unhbox\@tempboxa\hfil}%
1105   \fi%
1106   \vskip\belowcaptionskip%
1107 }
```

3.10 Font commands

We allow the ‘old’ font commands to do sensible NFSS things, since we don’t have any legacy documents. This means that we have proper abbreviations for font changes. We also add `\nm` to return to a normal font, whatever that may mean.

```
1108 \DeclareOldFontCommand{\rm}{\rmfamily}{\mathrm}
1109 \DeclareOldFontCommand{\sf}{\sffamily}{\mathsf}
1110 \DeclareOldFontCommand{\tt}{\ttfamily}{\mathtt}
1111 \DeclareOldFontCommand{\bf}{\bfseries}{\mathbf}
1112 \DeclareOldFontCommand{\md}{\mdseries}{\@nomath\md}
1113 \DeclareOldFontCommand{\it}{\itshape}{\mathit}
1114 \DeclareOldFontCommand{\up}{\upshape}{\@nomath\up}
1115 \DeclareOldFontCommand{\sl}{\slshape}{\@nomath\sl}
1116 \DeclareOldFontCommand{\sc}{\scshape}{\@nomath\sc}
```

```
1117 \DeclareOldFontCommand{\nm}{\normalfont}{\mathnormal}
```

Now we define some special commands which only work in maths mode. It seems that older versions of L^AT_EX (in particular, that at Warwick University) don't define these commands initially, so we'd better not use `\renewcommand` after all. We also dispose of lots of messing with `\protect` by using `\DeclareRobustCommand`.

```
1118 \DeclareRobustCommand\cal{\@fontswitch{\relax}{\mathcal}}
```

```
1119 \DeclareRobustCommand\pmit{\@fontswitch{\relax}{\mathnormal}}
```

3.11 Tables of contents

This section deals with tables of contents, and lists of figures.

3.11.1 Contents

First, we have to define some parameters.

```
1120 \newcommand\@pnumwidth{2em}
```

```
1121 \newcommand\@tocrmarg {3em}
```

```
1122 \newcommand\@dotsep{4.5}
```

```
1123 \setcounter{tocdepth}{\if@runinsubsubsec1\else2\fi}
```

`\tableofcontents` This is the main command for setting up tables of contents. We ensure a single-page layout, put in the chapter heading, read in the contents file, and then restore the old layout.

```
1124 \def\@toctthing#1#2{%
```

```
1125   \ifnextchar [{\@toctthing@i{#1}{#2}}{\@toctthing@i{#1}{#2}[\relax][\relax]]}%
```

```
1126 }
```

```
1127 \def\@toctthing@i#1#2[#3][#4]{%
```

```
1128   \if@twocolumn\@restonecoltrue\onecolumn\else\@restonecolfalse\fi%
```

```
1129   \@topsect@star{#1}#3{\parskip\z@\@starttoc{#2}}#4%
```

```
1130   \if@restonecol\twocolumn\fi%
```

```
1131 }
```

```
1132 \newcommand\tableofcontents{\@toctthing\contentsname{toc}}
```

Each section type *<type>* is typeset by a command `\l@<type>`: for example, the `\l@chapter` command typesets the entry for a chapter heading.

`\l@part` This command is vaguely interesting. We'll explore in detail.

```
1133 \def\l@part#1#2{%
```

We don't typeset the entry if `tocdepth` tells us not to. What kind of stupid user is going to disable *all* the contents items.

```
1134   \ifnum\c@tocdepth>-2\relax%
```

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Before we start, we try to break above the title. Later, we'll disable breaking afterwards. We then leave some vertical space.

```
1135 \addpenalty{-\@highpenalty}%
1136 \addvspace{2.25em\@plus\p@}%
```

We open a group, to avoid messing other things up. The `\numberline` macro, which numbers the entry on the left, typesets its argument in a box of width `\@tempdima`, which we must set up. We then set up the values of `\rightskip` and `\parfillskip` to avoid printing over the page number. We also make `\interlinepenalty` infinite to suppress breaking pages in the middle of the title.

```
1137 \begingroup%
1138 \tempdima3em%
1139 \parindent\z@%
1140 \rightskip\@pnumwidth%
1141 \parfillskip-\@pnumwidth%
1142 \interlinepenalty\@M
```

Time to typeset the actual title. This is fairly simple, apart from a complicated mixture of glue and penalties, which handles a line break right at the end of the title.

```
1143 {%
1144 \leavevmode%
1145 \large\bfseries {#1}%
1146 \nobreak\hfil\penalty\@highpenalty\hbox{}\nobreak\hfil%
1147 \hb@xt@\@pnumwidth{\hss #2}%
1148 }%
```

Now we end the paragraph and suppress page breaking here.

```
1149 \par%
1150 \nobreak%
1151 \global\@nobreaktrue%
1152 \everypar{\global\@nobreakfalse\everypar{}}%
1153 \endgroup%
1154 \fi%
1155 }
```

`\@artsw` Define a macro named after the first or second argument depending on whether the document is an article.

```
1156 \def\@artsw#1#2#3{%
1157 \edef\@tempa{#1\if@article\noexpand#3\else\noexpand#2\fi}%
1158 \@tempa%
1159 }
```

`\l@chapter` This is terribly similar to the previous macro.

```
1160 \@artsw\def\l@chapter\l@section#1#2{%
1161 \ifnum\c@tocdepth >\m@ne%
1162 \addpenalty{-\@highpenalty}%
1163 \vskip1.0em\@plus\p@%
```

```

1164 \setlength\@tempdima{2em}%
1165 \begingroup%
1166 \interlinepenalty\@M
1167 \parindent\z@%
1168 \rightskip\@pnumwidth%
1169 \parfillskip-\@pnumwidth%
1170 \leavevmode%
1171 \bfseries%
1172 \advance\leftskip\@tempdima%
1173 \hskip-\leftskip%
1174 {#1}%
1175 \nobreak\hfil\penalty\@highpenalty\hbox{}\nobreak\hfil%
1176 \hb@xt@\@pnumwidth{\hss #2}%
1177 \par%
1178 \penalty\@highpenalty%
1179 \endgroup%
1180 \fi%
1181 }

```

The other types are all defined in terms of `\@dottedtocline`, which is redefined below.

```

1182 \@artsw\def\l@section\l@subsection{\@dottedtocline{1}{2em}{2.5em}}
1183 \@artsw\def\l@subsection\l@subsubsection{\@dottedtocline{2}{4.5em}{3.2em}}
1184 \@artsw\def\l@subsubsection\l@paragraph{\@dottedtocline{3}{7.7em}{4.1em}}
1185 \@artsw\def\l@paragraph\l@subparagraph{\@dottedtocline{4}{10.5em}{5em}}
1186 \@artsw\def\l@subparagraph\@tempa{\@dottedtocline{5}{12.5em}{6em}}

```

`\@dottedtocline` This is actually a part of the L^AT_EX kernel, although it's not quite right the way it is. We've improved the handling of line breaks after the title.

```

1187 \def\@dottedtocline#1#2#3#4#5{%

```

We have to make sure that we're meant to typeset this contents entry.

```

1188 \ifnum#1>\c@tocdepth\else%

```

Now we add in a little stretchy space.

```

1189 \vskip\z@ \@plus.2\p@%

```

Set up the paragraph layout now. We forbid page breaks in the middle of the title.

```

1190 {%
1191 \leftskip#2\relax%
1192 \rightskip\@tocrmarg%
1193 \parfillskip-\rightskip%
1194 \parindent#2\relax%
1195 \@afterindenttrue%
1196 \interlinepenalty\@M%

```

Now we typeset the actual title.

```

1197 \leavevmode%
1198 \@tempdima#3\relax%

```

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```
1199 \advance\leftskip\@tempdima%
1200 \hbox{}%
1201 \hskip-\leftskip%
1202 {\#4}%
```

This is the clever bit. After the actual title, we add the following items:

- A `\nobreak` penalty, to stop a break from eating the glue.
- A glob of `\hfil` glue. If there's a line break after this glue, the title is set flush left as a result of this. Otherwise, it is ignored because the leaders are `\hfill`.
- A penalty. This is a reasonable place to break the line if necessary.
- An empty `\hbox`. This stops the following glue from being discarded at the beginning of a new line.
- Another `\nobreak`, which stops a break at the following glue item.
- The dotted `\leaders`, which have `\hfill` stretchiness. This forces the page number to be flush right.

The net result of all this is we can now cope with a line break at the end of the title, before the page number, which means that the dots are put on the next line. The original L^AT_EX version forced the last word of the title onto the next line as well, which can cause underful boxes.

```
1203 \nobreak\hfil\penalty\@highpenalty\hbox{}\nobreak%
1204 \leaders\hbox{$\m@th\mkern\@dotsep mu.\mkern\@dotsep mu$}\hfill%
1205 \hb@xt@\@pnumwidth{\hfil\reset@font\rmfamily#5}\par%
1206 }%
1207 \fi%
1208 }
```

3.11.2 Lists of figures and tables

These macros are terribly similar to the other ones.

```
1209 \newcommand\listoffigures{\@tocting\listfigurename{lof}}
1210 \newcommand\l@figure{\@dottedtocline{0}{0pt}{2em}}
1211 \newcommand\listoftables{\@tocting\listtablename{lot}}
1212 \let\l@table\l@figure
```

3.12 Bibliography

This isn't actually terribly interesting.

thebibliography

```
1213 \newdimen\bibindent
1214 \bibindent1.5em
1215 %
1216 \newenvironment{thebibliography}[1]{%
```



```

1217 \@topsect\bibName%
1218 \list{\@biblabel{\arabic{enumiv}}}%
1219 {\settowidth\labelwidth{\@biblabel{#1}}%
1220 \leftmargin\labelwidth%
1221 \advance\leftmargin\labelsep%
1222 \if@openbib%
1223   \advance\leftmargin\bibindent%
1224   \itemindent-\bibindent%
1225   \listparindent\itemindent%
1226   \parsep\z@%
1227 \fi%
1228 \usecounter{enumiv}%
1229 \let\p@enumiv\@empty%
1230 \renewcommand\theenumiv{\arabic{enumiv}}}%
1231 \if@openbib%
1232   \renewcommand\newblock{\par}%
1233 \else%
1234   \renewcommand\newblock{\hskip.11em\@plus.33em\@minus.07em}%
1235 \fi%
1236 \sloppy%
1237 \clubpenalty4000%
1238 \widowpenalty4000%
1239 \sfcode'\.\@m%
1240 }{%
1241 \def\@noitemerr{\@latex@warning{Empty ‘thebibliography’ environment}}%
1242 \endlist%
1243 }
1244 %
1245 \newcommand\newblock{}

```

3.13 Index

Defines the theindex environment.

theindex The macros are fairly simple. We change to a two column layout, and redefine `\item` appropriately.

```

1246 \newenvironment{theindex}{%
1247   \columnseprule\z@%
1248   \columnsep35\p@%
1249   \@topsect\indexname%
1250   \if@twocolumn\else%
1251     \begin{multicols}{2}%
1252   \fi%
1253   \parskip\z@\@plus.3\p@\relax%
1254   \raggedright%
1255   \let\item\@idxitem%
1256 }{%
1257   \if@twocolumn\else%
1258     \end{multicols}%
1259   \fi%
1260 }

```

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Now we define the item and spacing macros.

```
1261 \newcommand\idxitem {\par\hangindent 40\p@}
1262 \newcommand\subitem {\par\hangindent 40\p@ \hspace*{20\p@}}
1263 \newcommand\subsubitem{\par\hangindent 40\p@ \hspace*{30\p@}}
1264 \newcommand\indexspace{\par \vskip 10\p@ \@plus5\p@ \@minus3\p@\relax}
```

`\passim` The `passim` encapsulator is used to typeset the word ‘*passim*’ after a page range.

```
1265 \def\passim#1{#1 \textit{passim}} % Passim encapsulator for indices
```

Other useful commands for indexing:

`\Term` typesets its argument in italics, and adds it to the index.
`\term` typesets its first argument in italics, and adds its second to the index.
`\Index` typesets its argument normally, and adds it to the index.

```
1266 \def\Term#1{\emph{#1}\index{#1}}
1267 \def\term#1{\emph{#1}\index{#1}}
1268 \def\Index#1{#1\index{#1}}
```

3.14 Footnotes

`\footnoterule` This macro typesets the rule above footnotes. This is a bit more complex than the default: we try and typeset the rule to be at most 1 in wide, although if the column isn’t wide enough, we use $\frac{4}{10}$ of the box width instead.

```
1269 \def\footnoterule{%
1270   \@tempdima.4\columnwidth%
1271   \ifdim\@tempdima>1in\relax%
1272     \@tempdima1in\relax%
1273   \fi%
1274   \kern-3\p@%
1275   \hrule\@width\@tempdima%
1276   \kern2.6\p@%
1277 }
```

We number footnotes within chapters:

```
1278 \@addtoreset{footnote}{chapter}
```

`\@makefnstext` This is the macro which actually typesets a footnote. This is rather complicated. It’s based on example code from *classes.dtx* which doesn’t actually work properly.

```
1279 \long\def\@makefnstext#1{%
```

First, we redefine `\par` to set up the correct paragraph shape. This is indented from the left margin by a small amount.

```
1280   \setpar{%
1281     \@@par%
```

```

1282     \@tempdima\hsize%
1283     \advance\@tempdima-1.6em%
1284     \parshape\@ne1.6em\@tempdima%
1285 }%

```

Now we set up some parameters so that list environments work properly within the footnote. We also clear `\parindent` to prevent nasty indentation. The `\par` sets up the paragraph shape for the next paragraph: we're in vertical mode already, so it does nothing else.

```

1286 \advance\linewidth-1.6em%
1287 \advance\@totalleftmargin1.6em%
1288 \par%
1289 \parindent\z@%

```

We leave vertical mode to stop the hbox created by `\llap` from being stacked vertically. Then we typeset the footnote mark, and put in the main text. Finally we leave some space afterwards, to space out the next footnote.

```

1290 \leavevmode%
1291 \llap{\@makefnmark\enspace}#1\par%
1292 \vskip\parskip%
1293 }

```

`\@makecol` The standard L^AT_EX output routine messes up footnotes a bit, in my opinion:

- If a page is cut off short, because the next item won't fit (e.g., a section heading), then footnotes are added right below the end of the text, which can look strange.
- Footnotes are displayed *above* floats at the bottom of a page, which also looks strange.
- The `\@makefntext` routine above needs to add vertical space between footnotes, but this leaves a gap at the very bottom. We remove this gap with an `\unskip`.

```

1294 \def\@makecol{%
1295   \setbox\@outputbox \box\@cclv
1296   \xdef\@freelist{\@freelist\@midlist}%
1297   \global \let \@midlist \@empty
1298   \@combinefloats
1299   \ifvoid\footins \else
1300     \setbox\@outputbox \vbox {%
1301       \boxmaxdepth \@maxdepth
1302       \unvbox \@outputbox
1303       \vskip \skip\footins
1304       \vfil
1305       \footnoterule
1306       \unvbox \footins
1307       \unskip
1308     }%
1309   \fi
1310   \ifvbox\@kludgeins
1311     \@makespecialcolbox
1312   \else

```

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```
1313 \setbox\@outputbox \vbox to\@colht {%
1314 \texttop
1315 \dimen@ \dp\@outputbox
1316 \unvbox \@outputbox
1317 \vskip -\dimen@
1318 \textbottom
1319 }%
1320 \fi
1321 \global \maxdepth \@maxdepth
1322 }
```

3.15 Tidying up

This section gathers together various other useful bits of standard document class setting.

3.15.1 Item names

These commands typeset bits of text. They can then be redefined by `babel` and `suchlike`.

```
1323 \newcommand\contentsname{Contents}
1324 \newcommand\listfigurename{List of figures}
1325 \newcommand\listtablename{List of tables}
1326 \if@article\newcommand\bibname{References}
1327 \else\newcommand\bibname{Bibliography}\fi
1328 \newcommand\indexname{Index}
1329 \newcommand\figurename{Figure}
1330 \newcommand\tablename{Table}
1331 \newcommand\partname{Part}
1332 \newcommand\abstractname{Abstract}
1333 \newcommand\chaptername{Chapter}
1334 \newcommand\appendixname{Appendix}
1335 \newcommand\today{\number\day\space\ifcase\month\or
1336 January\or February\or March\or April\or May\or June\or
1337 July\or August\or September\or October\or November\or December\fi
1338 \space\number\year}
```

3.15.2 Final fiddling for two columns

```
1339 \columnsep10\p@
1340 \columnseprule\z@
1341 \pagestyle{headings}
1342 \pagenumbering{arabic} % Arabic page numbers
1343 \if@twocolumn
1344 \twocolumn
1345 \sloppy
1346 \flushbottom
1347 \else
1348 \onecolumn
1349 \fi
```

3.16 The `central` environment

Because of the strange layout of the pages, text which is centred using normal \LaTeX commands is centred in the text area, not on the page, which is undesirable for large headings, like part headings.

central The `central` environment typesets its contents centrally on the page. It should only be used from outer vertical mode.

The code just creates a box of the appropriate size and moves it into the right place.

```

1350 \newenvironment{central}{%
1351   \par%
1352   \vbox\bgroup\moveleft\leftindent\vbox\bgroup%
1353   \textwidth\paperwidth%
1354   \advance\textwidth-2\pagesurround\relax%
1355   \hsize\textwidth%
1356   \hrule\@height\z@\@depth\z@\@width\hsize%
1357 }{%
1358   \egroup%
1359   \egroup%
1360 }
```

3.17 Headers and footers

The `strayman` class uses `fancyheadings` for its headers and footers. This has already been included in the preamble. We now need to fix a few problems with `fancyheadings` and set up some macros.

\title We extend `\title`, and give it an optional argument. It can now specify the document title as used by `\maketitle` and the running title for the header separately.

We store the running header in the macro `\@headertitle`, which is initially empty.

```

1361 \def\@headertitle{}
```

Now we define the `\title` macro, using `\@dblarg` to duplicate the mandatory argument if the optional one is omitted.

```

1362 \def\title{\@dblarg\title@i}
1363 \def\title@i[#1]#2{%
1364   \gdef\@title{#2}%
1365   \gdef\@headertitle{#1}%
1366 }
```

\innerhead We allow the user to specify an ‘inner heading’ which is displayed on the inside of the header on of each page. This can be used for security classifications, for example. Any `fancyheadings` commands can be used to control the header, which is expanded on each page.

```

1367 \def\l@innerhead{}
1368 \def\r@innerhead{}
```

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```
1369 \def\l@innerfoot{}
1370 \def\r@innerfoot{}
1371 \def\innerhead{\@dblarg\innerhead@i}
1372 \def\innerhead@i[#1]#2{%
1373   \def\l@innerhead{#1}%
1374   \def\r@innerhead{#2}%
1375 }
1376 \def\innerfoot{\@dblarg\innerfoot@i}
1377 \def\innerfoot@i[#1]#2{%
1378   \def\l@innerfoot{#1}%
1379   \def\r@innerfoot{#2}%
1380 }
```

The next step is to set up the headings:

```
1381 \let\headrulewidth\z@
1382 \headwidth\textwidth
1383 \advance\headwidth\leftindent
1384 \fancyhfoffset[LE,LO]{\leftindent}
1385 \fancypagestyle{headings}{%
1386   \fancyhf{}
1387   \fancyhead[LE]{\bfseries\@headertitle}
1388   \if@article\fancyhead[RO]{\rightmark}\else\fancyhead[RO]{\leftmark}\fi
1389   \fancyhead[RE]{\l@innerhead} \fancyhead[LO]{\r@innerhead}
1390   \fancyfoot[RE]{\l@innerfoot} \fancyfoot[LO]{\r@innerfoot}
1391   \fancyfoot[LE,RO]{\thepage}
1392 }
1393 \fancypagestyle{plain}{%
1394   \fancyhf{}%
1395   \fancyfoot[RE]{\l@innerfoot} \fancyfoot[LO]{\r@innerfoot}
1396   \fancyfoot[LE,RO]{\thepage}%
1397 }
1398 \let\ps@fancy\ps@@fancy
```

The fancyheadings package by default expects pages to be symmetrical. We have to redefine the `\ps@fancy` macro to make it work properly.

```
1399 \def\@lodd{\ifodd\c@page\hss\else\relax\fi}
1400 \def\@rodd{\ifodd\c@page\relax\else\hss\fi}
```

Finally, we can choose the page style we want:

```
1401 \pagestyle{headings}
```

3.18 Parbox alteration

The standard L^AT_EX `\parbox` command, and the `minipage` environment, reset `\parskip` to zero, which is inconsistent with the document style. We amend `\@arrayparboxrestore`, the macro which sets up the paragraph style for parboxes.

First, we define a macro explaining how the parbox should set the spacing.

```
1402 \def\parboxparskip{2ex}
```

Next, we redefine the macro. This is taken directly from the $\text{\LaTeX} 2_{\epsilon}$ source.

```

1403 \def\@arrayparboxrestore{%
1404   \let\par\@par
1405   \let\-\@dischph
1406   \let\'\@acci\let\'\@accii\let\=\@acciii
1407   \parindent\z@ \parskip\z@
1408   \everypar{\parskip\parboxparskip\everypar{}}%
1409   \linewidth\hsize
1410   \@totalleftmargin\z@
1411   \leftskip\z@skip \rightskip\z@skip \@rightskip\z@skip
1412   \parfillskip\@flushglue \lineskip\normallineskip
1413   \baselineskip\normalbaselineskip
1414   \@noskipsectrue%      % The comp.text.tex gurus said it should be
1415   \sloppy}

```

3.19 Other features

At the end is a miscellany of useful features.

3.19.1 Other typesetting conventions

Some items need typesetting in particular ways.

```

1416 \let\key\textit
1417 \let\button\textbf
1418 \def\submenu{\ensuremath\rightarrow}
1419 \let\name\relax
1420 \def\file#1{\mbox{\itshape #1\/}}

```

3.19.2 And finally

```

1421 \sloppy
1422 \raggedbottom
1423 \def\riscos{RISC~OS}
1424 \hyphenpenalty1000
1425 \strayman

```

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Appendix

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Version 2, June 1991

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