

The bookshelf $\text{\LaTeX} 2_{\epsilon}$ document class*

Turn your bibliography into a bookshelf image

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Summary

The bookshelf package uses biblatex and *biber* to turn a BIB_{TeX} bibliography file into a randomly-coloured, randomly-sized shelf of books, with the title and author in a randomly-chosen typeface. The image (converted to JPEG from PDF) can then be used as a background in *Zoom*, *Teams*, *WhatsApp* etc video calls. It requires a little preliminary work with the supplied script to set up a list of all your fonts, a list of colors, and a list of the BIB_{TeX} entry names in your `.bib` file, but otherwise should work on any modern TeX distribution.



*This document corresponds to bookshelf v. 0.5 β , dated 2020/05/24.

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Note on required and optional features

In this document, the keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL have a specific meaning when shown in THIS TYPESTYLE, and MUST be interpreted as described in RFC 2119 ([Bradner, 1997](#)).

When shown in normal type, these words keep their conventional contextual degree of meaning.

Latest changes

v.0.5 (2020-05-24)

Finished initial testing

- Replaced hyperref with hypdoc to avoid *makeindex* bug

v.0.1 (2020-05-7)

First packaged draft

- Done manually from .tex file

v.0.4 (2020-05-19)

Completed documentation

- Updated note on bug in *biber* when processing `sgml.bib`
- Removed `sgml.bib` as example until problems are resolved
- Backtracked on attempt to use the monographic title for articles, chapters, etc
- Revised notes on production

v.0.3 (2020-05-14)

Finished first pass on documentation

- Done preliminary testing
- Script adapted for Mac OS X

See p. [41](#) for earlier changes.

Acknowledgments

Thanks to many people for the original suggestion; and to Isabel Yorke, Bethan Tovey-Walsh, Nelson Beebe, The \LaTeX Ninja, Stephan Lukasczyk, and others for their thesis bibliographies and testing comments.

1 Documentation

During the era of the COVID-19 lockdown, the popularity of group video messaging grew rapidly, both for business and domestic use. As people sought for what they believed to be more representative backgrounds than a messy kitchen, an untidy workroom, or a sterile blank wall, a well-populated bookshelf was a frequent choice.

This package is for those who cannot use (or don't have, or don't want to use) such a bookshelf, but can still lay their hands on a bibliography or reference list in BIB_TE_X format — perhaps from a recent or long-forgotten thesis, book, article, or other document.

X_YL_AT_EX and biblatex and biber

To avoid problems with accented and other characters, and to make it easier to maintain, this document class uses only X_YL_AT_EX and biblatex and *biber*.

It will not work with the *pdf_latex* or *bib_tex* programs, and it does not use the .bst files of old BIB_TE_X.

This is a work-in-progress: there are bugs (see [section 1.5 on page 9](#)).

1.1 What the package does

The bookshelf package generates what looks like shelves of book spines from your list of references, using random dimensions (within specified limits) in random but contrasting colors, with a randomly-selected typeface.

It does this by creating a box (rectangle) for each entry in your list, assigning colors to the background and foreground, deciding on the layout and font, and then stacking the boxes side-by-side as if they were letters on a line.

1.2 Preparation

To get things ready for this, you need to install this document class, and provide the following files.

1. Your BIB_TE_X file;

2. A list of all the entry values;
3. A list of all your usable text fonts;
4. A command defining how many such fonts;
5. A list of all the colors to choose from.

These are explained in more detail in the subsections below.

All but the first of these can be generated by the supplied shell script `prepdata.sh`. This works on UNIX/GNU Linux and on Apple Mac OS X, and may work in CygWin, but needs more work for plain Windows.

1.2.1 Your BIB_TE_X file

Your BIB_TE_X (`.bib`) file, suitable for use with *biber* rather than *bibtex*.

Old BIB_TE_X files will work, but possibly not optimally: if you want to update them, see [section 1.4 on page 8](#) for what to edit; but this is not needed for this class.

One thing that may help is to replace all the old-style symbolic notation accented characters like `{\ "a}` for ‘ä’ and `{\ l}` for ‘ℓ’. Not only is the symbolic notation no longer needed because X_Y-L^AT_EX and the *biber* program handle UTF-8 characters, which the old *bibtex* program doesn’t; the discipline of replacing helps to reduce the problem of unmatched curly braces, which is one of the biggest sources of errors in BIB_TE_X files.

If you have a bibliography in *EndNote*, *Mendeley*, *Zotero*, *ProCite*, *Reference Manager*, etc, you should be able to export it in either BIB_TE_X or RIS format. A RIS file can easily be converted to BIB_TE_X by opening it in *JabRef* and saving it as BIB_TE_X.

1.2.2 Entry values

A list of all the entry values from your BIB_TE_X file (the unique names immediately after the document type), each given as the argument to a `\makebook}{...}` command in a file called `entries.tex`.

1.2.3 Font file list

A set of 1–line files in a subdirectory called `fontsel` representing of all the usable text fonts on your system that you wish to use; that is, excluding broken or partial fonts, symbols, math, non-Latin characters or alphabets, and display or non-text fonts.

Each file **MUST** be numbered sequentially in its name (eg `1.tex`, `2.tex`, `3.tex`, etc) and **MUST** contain a `\newfontface{SILMfont}{...}`

command for the font name *and* a definition of its name in a `\SILmfontname{...}` command (see the examples generated by the `prepdata.sh` script). Be aware that many fonts on your system may not be suitable for setting normal text: see the comments in the script

These files are entirely dependent on your system because everyone has a different set of fonts.

1.2.4 Maximum number of fonts

A file called `pickfont.tex` containing a `\setcounter{SIL@maxfont}{...}` command to set the total number of the fonts which are represented in the `fontsel` subdirectory above

1.2.5 List of colors

A list of all the colors represented by the SVG palette used by the `xcolor` package: the file created by the script is called `svgnam.tex`. This contains three definitions:

1. the command `\SIL@svgcolname` which uses an `\ifcase` command to return the name of the *n*th color in alphabetical order;
2. the command `\SIL@svgcolval` which does the same to return the brightness value of that color, computed by the formula on page 16 (see script for details);
3. the counter `SIL@maxcolno` which holds the number of colors available.

1.3 Producing your bookshelf

This class comes with a file `test.tex` which you can use to test your file of references. It is initially set just to make the `test.aux` file that *biber* needs to create your `test.bbl` bibliography file; that is, it will *not* try to run the shell script *or* to create a bookshelf the first time round, until everything else is ready.

1. Run the shell script with your `.bib` filename as the argument, eg;

```
$ ./prepdata.sh mythesis.bib
```

2. Edit the `test.tex` file and change the name of the `.bib` file in the `\addbibresource` command to the name of your own file

Leave the two lines `\immediate` and `\input` commented out for the moment;

3. Delete any `test.aux` or `test.bbl` files in the directory in which you are doing this;
4. Typeset the test file with X_YLa_TE_X. You should get three messages:

```
LaTeX Warning: Empty bibliography on input line 12.
LaTeX Warning: There were undefined references.
Package biblatex Warning: Please (re)run Biber on the file:
(biblatex)                test
(biblatex)                and rerun LaTeX afterwards.
```

5. Process the test file with *biber* (not *bibtex*). You will probably get many warning messages: ignore them. If you get a fatal error, however, you will need to find the problem in your `.bib` file and fix it before going any further.

See also the known bug at item 3 in the list on p. 10;

6. Edit the test file and *uncomment* the line starting `\input`, save the file, and retypeset it twice.

You should now have a PDF bookshelf! The books are in the order in which they appear in your `.bib` file because the script creates the list of entries to process in that order, regardless of what *biblatex* or *biber* are configured to do.

1.3.1 Options

The class comes set for making an **a0paper** page (1189 mm × 841 mm or 4' 11" × 2' 10") in **landscape** mode, suitable for large bibliographies. If you have a smaller `.bib` file, or if you want fewer volumes per page, you can change the paper size option in the `\documentclass` command to a smaller one: all the 'A' sizes from 5 to 0 are supported, plus the common US office sizes including Ledger (Tabloid).

There is also a **portrait** option to produce the page in that format instead of landscape.

1.4 Changes between BIB_TE_X fields and *biblatex*

This has been expanded from the description provided in [§2.3 of the online documentation for biblatex v3.14](#) (1 December 2019).

This is for information only. You do not need to do any of this to use the bookshelf document class unless you encounter errors processing your `.bib` file.

1. The entry type `@inbook` (basically only use this where each chapter of the book is written by a different author). See §2.1.1 and §2.3.1 for details.
2. Replace `school` with `institution` for theses; replace `publisher` with `organization` for manuals and conference sponsors; and replace `address` with `location`. See §2.2.2, §2.2.5, and §2.3.4 for details.
3. The handling of certain types of titles. See §2.3.5 for details. Replace `journal` with `journaltitle` in `@article` entries.
4. The field `series`: only use it for journal series; for the main title of multi-volume works use `maintitle`. See §2.2.2 and §2.3.7 for details.
5. The fields `year` and `month` must be integers; `month` MUST NOT be alphabetic. The field `date` MUST be an ISO 8601 date in the format `yyyy-mm-dd`. See §2.2.2, §2.3.8, and §2.3.9 for details.
6. The field `edition` must be an integer with no ordinal indicator or abbreviation ‘ed’. See §2.2.2 for details.
7. Replace `key` with `label`. See §2.3.2 for details.

Most of this is for creating new entries. For converting `BIBTEX` files for use with *biblatex*, just change the field names as in items 2, 3, 4, and 7; and make sure your months and editions are integers.

1.5 Bugs

Some things don’t yet work as they should, and there are some features that may or may not make the final cut.

1. The shell script doesn’t run on Windows because I don’t have any Windows. If someone would write some Powershell I could include it in a later version.
2. There is no conscious ‘line’-breaking when a row of books comes to the `\pagewidth`, and as it is deliberately set `\raggedright` (because you can’t hyphenate a book and variable space between books seems to be a silly idea), there is no filler at the ends of lines to complete the ‘shelf’ (which is in any case just a bar below each book).

3. A test with a bibliography file from Nelson Beebe's collection (`sgml.bib`) generated a `test.bbl` with a missing closing curly brace, terminating (or rather, failing to terminate) the `\name` command for an entry. This appears to be a known bug in *biber* which is being fixed in the version 2.15.
4. There seems to be a recurrent problem with certain entries and certain fonts where the length of the title is measured as 0.0pt which causes an unresolvable problem for the routine which assigns space and layout. Any suggestions as to why this occurs are welcomed.
5. The objective of the field re-expressions (see [section 2.6.8 on page 28](#)) was to make sure the book spine for `journal@article`, `@incollection`, and `@inbook` entry types reflected the *book* or *journal* title, not the title of the article or chapter. This may or may not be a good idea.
6. During development, it became obvious that the number of fonts on many systems can be very large. The `prepdata.sh` script currently includes the exclusions I made on UNIX/GNU Linux and Apple Mac OS X in order to get a set of fonts that did not issue errors (bearing in mind we are using `fontspec`, so for simplicity the script deals only with TrueType and OpenType fonts, not Postscript Type 1 or Type 3, or font packaging systems like *Suitcase* or True Type Collections). I am not aware of any easily-accessible machine-readable list or API for identifying normal text fonts by name (there are commercial databases but that is outside the scope of this document class).

2 Implementation

2.1 Auto-initialisation

This section is added automatically by *ClassPack* as a preamble to all classes and style packages. The `fixltx2e` package, which used to be included automatically, is no longer preloaded, as its features are now a part of the latest $\LaTeX 2_{\epsilon}$ kernel.

The code starts with identity and requirements which are generated automatically as needed by the DocTeX system. For details see the `ltxdoc` package documentation.

```
1 \NeedsTeXFormat{LaTeX2e}[2017/04/15]
2 \ProvidesClass{bookshelf}[2020/05/24 v0.5
3   Turn your bibliography into a bookshelf image]
```

`fix-cm` Preloaded functions to override the default \LaTeX step-size font sizes (which can still be used, but are no longer restrictions).

```
4 \RequirePackage{fix-cm}
```

`svgnames` Pass the `svgnames` option to the `xcolor` package if that gets loaded later. This avoids a conflict with any other packages (eg `hyperref`) which use their own default is when they load `xcolor`.

```
5 \PassOptionsToPackage{svgnames}{xcolor}
```

2.2 Options

The paper size and orientation are the only two valid options, both of which are the same as the standard `documentclass` options, and will be passed to the underlying class automatically, but they need recording so that they can be used by the `geometry` package. The default is for A0 paper, landscape.

```
6 \def\@paper{a0paper}%
```

```
7 \DeclareOption{a0paper}{%
8   \def\SIL@paper{a0paper}%
9   \setlength\paperheight {1189mm}%
10  \setlength\paperwidth  {841mm}}
11 \DeclareOption{a1paper}{%
12   \def\SIL@paper{a1paper}%
13   \setlength\paperheight {841mm}%
14   \setlength\paperwidth  {594mm}}
15 \DeclareOption{a2paper}{%
16   \def\SIL@paper{a2paper}%
17   \setlength\paperheight {594mm}%
18   \setlength\paperwidth  {420mm}}
19 \DeclareOption{a3paper}{%
20   \def\SIL@paper{a3paper}%
21   \setlength\paperheight {420mm}%
22   \setlength\paperwidth  {297mm}}
23 \DeclareOption{a4paper}{%
24   \def\SIL@paper{a4paper}%
25   \setlength\paperheight {297mm}%
26   \setlength\paperwidth  {210mm}}
27 \DeclareOption{a5paper}{%
28   \def\SIL@paper{a5paper}%
29   \setlength\paperheight {210mm}%
30   \setlength\paperwidth  {148mm}}
31 \DeclareOption{b5paper}{%
32   \def\SIL@paper{b5paper}%
33   \setlength\paperheight {250mm}%
34   \setlength\paperwidth  {176mm}}
35 \DeclareOption{letterpaper}{%
36   \def\SIL@paper{letterpaper}%
37   \setlength\paperheight {11in}%
38   \setlength\paperwidth  {8.5in}}
39 \DeclareOption{legalpaper}{%
40   \def\SIL@paper{legalpaper}%
41   \setlength\paperheight {14in}%
42   \setlength\paperwidth  {8.5in}}
43 \DeclareOption{executivepaper}{%
44   \def\SIL@paper{executivepaper}%
45   \setlength\paperheight {10.5in}%
46   \setlength\paperwidth  {7.25in}}
47 \DeclareOption{ledgerpaper}{%
48   \def\SIL@paper{ledgerpaper}%
49   \setlength\paperheight {17in}}
```

```

50     \setlength\paperwidth {11in}}
51 \DeclareOption{tabloidpaper}{%
52     \def\SIL@paper{tabloidpaper}%
53     \setlength\paperheight {17in}%
54     \setlength\paperwidth {11in}}
55 \def\SIL@orient{landscape}%
56 \DeclareOption{landscape}{%
57     \def\SIL@orient{landscape}%
58     \setlength\@tempdima {\paperheight}%
59     \setlength\paperheight {\paperwidth}%
60     \setlength\paperwidth {\@tempdima}}
61 \DeclareOption{portrait}{%
62     \def\SIL@orient{}}

```

2.3 Load the document base class

`report` This class is based on the standard \LaTeX report class, with no special options except the extra sizes defined above. The default is A0 paper, landscape.

```

63 \DeclareOption*{\ClassWarning{bookshelf}{%
64     Unknown option '\CurrentOption', please RTFM}}
65 \ProcessOptions\relax
66 \LoadClass{report}

```

2.4 Packages required for the class or package

`fontspec` Font specification setup for use with $X_{\text{T}}\LaTeX$.

```
67 \RequirePackage{fontspec}%
```

`calc` Required for calculations involving lengths or counters, such as changes to widths for margin adjustment.

```
68 \RequirePackage{calc}%
```

`fp` Used for fixed-point calculations;

```
69 \RequirePackage{fp}%
```

graphicx Provide for graphics (PNG, JPG, or PDF format (only) for pdf_latex; EPS format (only) for standard L^AT_EX).

```
70 \RequirePackage{graphicx}%
```

xcolor Provide color.

```
71 \RequirePackage{xcolor}%
72 \@ifundefined{T}{%
73   \newcommand{\T}[2]{\fontencoding{T1}%
74     \selectfont#2}}{}
```

There seems to be a bug in the T1 encoding of some package (unidentified, but possibly xcolor) which uses the command `\T1`, which is an impossibility (no digits allowed in command names). So we fake it here to stop L^AT_EX complaining, by dropping the first argument on the floor.

eso-pic Add picture commands (or backgrounds) to every page.

```
75 \RequirePackage{eso-pic}%
```

geometry Package for establishing margins and text area.

```
76 \RequirePackage[\SIL@paper,\SIL@orient,nohead,
77   nofoot,margin=1cm]{geometry}%
```

biblatex Use biblatex instead of BIB_TE_X;

```
78 \RequirePackage[backend=biber,style=authoryear,
79   doi=true,isbn=true,url=true,uniquename=false]{biblatex}%
80 \AtBeginDocument{%
81   \setlength{\bibitemsep}{1ex}%
82   \setlength{\bibnamesep}{1.5\itemsep}%
83   \defbibheading{shortbib}[References]%
84     {\section{#1}}
85   \@ifpackagewith{babel}{british}{%
86     \DeclareLanguageMapping{british}%
87       {british-apa}}{\relax}
88   \providetoggle{blx@skipbiblist}
```

2.5 Non-package resources

`random.tex` There is one resource not available in packaged form, the module that lets \LaTeX create random values. This is in `random.tex`, which on the author's system is hiding in a directory `texmf/tex/generic/genmisc/`, in the `texmf-dist` tree, and indexed by an `ls-R` database, so it should therefore be findable by any \TeX system.

```
89 \input{random.tex}
```

2.6 The code

This is beta software: the code is messy and covered in tracing output.

2.6.1 Font selection

`maxfont` This is set in the `\input` file `pickfont.tex`, which is created by the preparatory data script `prepdata.sh`. It is the number of working text fonts found on the system.

```
90 \newcounter{SIL@maxfont}
```

`SIL@fontsel` This is set to a random number between one and
`SIL@maxfont` `SIL@maxfont`, and used as the name of the file containing the font name.

```
91 \newcounter{SIL@fontsel}
```

`pickfont.tex` This file is created by the preparatory data script
`SIL@maxfont` `prepdata.sh` after it sets up the subdirectory list of valid text fonts. It sets the value of `SIL@maxfont`.

```
92 \input{pickfont.tex}
```

2.6.2 Color selection

`SIL@maxcolno` This value is set at the end of the file `svgnam.tex`. This is the number of color names found by the routine in `prepdata.sh` which extracts the color names.

```
93 \newcounter{SIL@maxcolno}
```

`svgnam.tex` The preparatory data script `prepdata.sh` retrieves the colors named in the **svgnames** option to the `xcolor` package and instantiates them as a \LaTeX `\ifcase` list in the file `svgnam.tex` as the command `\SIL@svgcolname`.

```
94 \input{svgnam.tex}
```

`SIL@loopcount` The random font selection is done in a loop because of the need to test the values. This counter counts the iterations...

```
95 \newcounter{SIL@loopcount}
```

`SIL@maxloop` ...and this one the limit.

```
96 \newcounter{SIL@maxloop}
```

`SIL@bgcolno` The colors are selected numerically. This value is the background color of the spine of a book.

```
97 \newcounter{SIL@bgcolno}
```

`SIL@fgcolno` And this is the foreground color, used to typeset the title and author on the spine of a book.

```
98 \newcounter{SIL@fgcolno}
```

`SIL@bgcolno`
`SIL@fgcolno` To make sure that `SIL@bgcolno` and `SIL@fgcolno` are distinct, we will need to pick one ‘dark’ and one ‘light’, crudely distinguished by examining their ‘brightness’ (monochrome intensity value) using the formula $b = \sqrt{.241r^2 + .691g^2 + .068b^2}$ due to [Nir Dobovizki](#). From inspection, the modal point of the SVG values occurs around 0.6, so use use this to determine if the randomly-selected

color is ‘dark’ or ‘light’. Because it’s a decimal fraction, we express it as a dimension and strip off the ‘pt’ later.

```
99 \newlength{\SIL@splitpoint}
100 \setlength{\SIL@splitpoint}{0.6pt}
```

`\SIL@bgcol` We establish defaults for the background color...

```
101 \def\SIL@bgcol{White}
```

`\SIL@fgcol` ...and the foreground color.

```
102 \def\SIL@fgcol{Black}
```

`\SIL@bgval` The values computed by the `prepdata.sh` script and stored in `svgnam.tex` are decimal fractions, to they need to be retrieved as lengths. This is the background value...

```
103 \newlength{\SIL@bgval}
```

`\SIL@fgval` ...and the foreground value.

```
104 \newlength{\SIL@fgval}
```

`\SIL@bgfgdiff` The ‘dark’ or ‘light’ test discussed above also needs to test if the values are too close to the `splitpoint`. By examination, if the values have an absolute difference of 0.2 they should be visually distinct enough. The difference is calculated and stored in this length variable, as it’s a decimal fraction.

```
105 \newlength{\SIL@bgfgdiff}
```

`\SIL@notyetcols` In the testing for colors, the nested conditionals set this switch true or false, so that it can be used to control the iteration through successive attempts to find suitable random values.

```
106 \newif\ifSIL@notyetcols
```

2.6.3 Page border setup

`\AddToShipoutPictureBG` The page background color is set to a pale brown roughly matching the pine veneer of IKEA bookcases, with the inner page (behind the books) in a dark shadow brown. The technique for imposing a colored margin is due to [Ulrike Fischer](#) and uses the commands from the `eso-pic` package.

```
107 \pagecolor{BurlyWood}
108 \AddToShipoutPictureBG{%
109   \AtTextLowerLeft{\color{SaddleBrown}%
110     \rule[-\footskip]{\textwidth}{%
111       \dimexpr\textheight+\footskip}}}
```

2.6.4 Size and shape

Each book is assigned a random height and width, within the bounds set by the maxima and minima. The final dimensions may then be modified by the choice of layout and font.

```
112 \newlength{\SIL@bookheight}
113 \newlength{\SIL@bookwidth}
114 \newlength{\SIL@minbookwidth}
115 \newlength{\SIL@maxbookwidth}
116 \newlength{\SIL@minbookheight}
117 \newlength{\SIL@maxbookheight}
```

2.6.5 Title and author dimensions

The title and author need to be measured, and decisions are made about what size they need to be. The two layouts (author separately at the top, and author inline to title) are distinguished with the `\SIL@topauthor` conditional. If the title (with or without the author can fit on one line (rather than multiple lines) this is signalled with the `\SIL@titleoneline` conditional.

```
118 \newlength{\SIL@titlewidth}
119 \newlength{\SIL@authorwidth}
120 \newlength{\SIL@titleheight}
121 \newlength{\SIL@authorheight}
```

```

122 \newlength{\SIL@scaletitle}
123 \newlength{\SIL@heightfortitle}
124 \newbox\SIL@titlebox
125 \newif\ifSIL@topauthor
126 \newif\ifSIL@titleonline

```

2.6.6 Handling the math

`SIL@scale` To extract the integer part of a fixed-point value, we define a simple strip which uses the integer and throws away the rest. The integer ends up in this counter.

```

127 \newcounter{SIL@scale}

```

`\SIL@scaleint` The integer macro returns the counter above.

```

128 \def\SIL@scaleint#1.#2\sentinel{%
129   \setcounter{SIL@scale}{#1}}

```

2.6.7 Settings

We set the space around a box and the thickness of the rule, and remove the page numbers.

```

130 \fboxsep1em\fboxrule.1pt
131 \pagestyle{empty}

```

2.6.8 Making the book

The `\makebook` macro is huge, and handles all the detail of making a book spine. It takes one mandatory argument: a `BIBTEX` entry label value from the declared `BIBTEX` .bib file in `\addbibresource`.

`\makebook` Start by announcing the entry label and setting the values that need to be reset every time.

```

132 \newcommand{\makebook}[1]{%
133   \typeout{^^J#1}%
134   \setcounter{SIL@maxloop}{10}%
135   \setcounter{SIL@loopcount}{0}%
136   % observed

```

```

137 \setlength{\SIL@minbookwidth}{5mm}%
138 \setlength{\SIL@maxbookwidth}{20mm}%
139 % A5 to A4 height
140 \setlength{\SIL@minbookheight}{70mm}%
141 \setlength{\SIL@maxbookheight}{110mm}%
142 \setlength{\SIL@bookwidth}{0pt}%
143 \setlength{\SIL@bookheight}{0pt}%
144 \setlength{\SIL@heightfortitle}{0pt}%
145 \SIL@topauthorfalse

```

`\loop` Start a loop which will pick two random integers, one for background and one for foreground colors. Look these up in the `\SIL@svgcolval` (in `svgnam.tex`) to get the brightness values, and calculate the absolute distance between them.

```

146 \loop
147 \addtocounter{SIL@loopcount}{1}%
148 \typeout{Try \theSIL@loopcount}%
149 \setrannum{\c@SIL@bgcolno}{1}{%
150 \c@SIL@maxcolno}%
151 \typeout{BG=\theSIL@bgcolno}%
152 \setrannum{\c@SIL@fgcolno}{1}{%
153 \c@SIL@maxcolno}%
154 \typeout{FG=\theSIL@fgcolno}%
155 \setlength{\SIL@bgval}{%
156 \SIL@svgcolval{\theSIL@bgcolno}pt}%
157 \typeout{BGval=\the\SIL@bgval}%
158 \setlength{\SIL@fgval}{%
159 \SIL@svgcolval{\theSIL@fgcolno}pt}%
160 \typeout{FGval=\the\SIL@fgval}%
161 \setlength{\SIL@bgfgdiff}{%
162 \SIL@bgval - \SIL@fgval}%
163 \typeout{Split gap is \the\SIL@bgfgdiff}%
164 \ifdim\SIL@bgfgdiff<0pt
165 \setlength{\SIL@bgfgdiff}{%
166 \SIL@fgval - \SIL@bgval}%
167 \typeout{Using absolute value
168 \the\SIL@bgfgdiff}%
169 \fi

```

The colours need to be separated either side of the 0.6 splitpoint value of the calculated brightness, so make this the outer test, and make the inner test for the separation

SIL@maxloop

difference. This will return true if the colors are separated enough, and come from opposite sides of the split point. If the loop makes SIL@maxloop iterations without finding a pair of values, use whatever was tested last.

```

170     \ifdim\SIL@bgval<\SIL@splitpoint
171         \ifdim\SIL@fgval>\SIL@splitpoint
172             \ifdim\SIL@bgfgdiff>0.2pt
173                 \SIL@notyetcolsfalse
174             \else
175                 \SIL@notyetcolstrue
176             \fi
177         \else
178             \SIL@notyetcolstrue
179         \fi
180     \else
181         \ifdim\SIL@fgval<\SIL@splitpoint
182             \ifdim\SIL@bgfgdiff>0.2pt
183                 \SIL@notyetcolsfalse
184             \else
185                 \SIL@notyetcolstrue
186             \fi
187         \else
188             \SIL@notyetcolstrue
189         \fi
190     \fi
191     \typeout{BG=\theSIL@bgcolno,
192             FG=\theSIL@fgcolno}%
193     \ifnum\c@SIL@loopcount>\c@SIL@maxloop
194         \SIL@notyetcolsfalse
195     \fi
196 \ifSIL@notyetcols\repeat
197 \def\SIL@bgcol{\SIL@svgcolname{%
198     \theSIL@bgcolno}}%
199 \def\SIL@fgcol{\SIL@svgcolname{%
200     \theSIL@fgcolno}}%
201 \typeout{BG=\SIL@bgcol, FG=\SIL@fgcol}%

```

Now pick a random font: the files generated by `prepdata.sh` are named as integers with a `.tex` extension in the `fontsel` directory. These files load the font as `\SILmfont` (no @ sign, because this is occurring in user mode), and define `\SILmfontname` as the name (for the

same reason).

```
202 \setrannum{\c@SIL@fontsel}{1}{\c@SIL@maxfont}%
203 \input{fontsel/\theSIL@fontsel.tex}%
204 \typeout{Set in \SILmfontname}%
```

Measure the author width and height at the default size (10pt). If the author fits in 90% of the maximum width of the book, we put it at the top of the spine and shrink the book width to 1.1 times the set width, provided that is not less than the defined minimum width. The book width is therefore fixed at this point and won't change later.

```
205 \settowidth{\SIL@authorwidth}{%
206     \SILmfont\citefullauthor{#1}}%
207 \typeout{Author width: \the\SIL@authorwidth}%
208 \settoheight{\SIL@authorheight}{%
209     \SILmfont\citefullauthor{#1}}%
210 \typeout{Author height: \the\SIL@authorheight}%
211 \ifdim\SIL@authorwidth<.9\SIL@maxbookwidth
212     \typeout{Author width is less than 90%
213         of \the\SIL@maxbookwidth}%
214     \setlength{\SIL@bookwidth}{%
215         1.1\SIL@authorwidth}%
216     \typeout{Book width set to \the\SIL@bookwidth}%
217     \ifdim\SIL@bookwidth<\SIL@minbookwidth
218         \setlength{\SIL@bookwidth}{%
219             \SIL@minbookwidth}%
220     \typeout{Book width reset to min
221         \the\SIL@minbookwidth}%
222     \fi
223     \SIL@topauthortrue
224 \else
225     \typeout{Author won't fit in .9 of
226         \the\SIL@maxbookwidth}%
227 \fi
```

Now measure the title, with an em rule and the author if it hasn't been assigned to the top of the spine.

```
228 \settowidth{\SIL@titlewidth}{%
229     \SILmfont\citetitle{#1}}%
230 \ifdim\SIL@titlewidth=0pt
231     \typeout{WARNING title width for entry "#1"}
```

```

232     set in \SILfontname=Opt!}%
233     \typeout{Likely that the entry has faulty
234     syntax or a bogus title field}%
235     \typeout{or a BiBTeX management or
236     crossref setting is being misinterpreted.}%
237     \typeout{I can't go any further until you
238     fix this, sorry}%
239     \end{document}%
240 \fi
241 \ifSIL@topauthor
242     \typeout{Title width: \the\SIL@titlewidth}%
243 \else
244     \addtolength{\SIL@titlewidth}{%
245         \widthof{\SILfont~---}}}%
246     \addtolength{\SIL@titlewidth}{%
247         \SIL@authorwidth}%
248     \typeout{Title width with em rule and author:
249         \the\SIL@titlewidth}%
250 \fi

```

We now have enough data to make a shot at the dimensions. Pick a random book height and set the height available for the title (set sideways) to 90% of that, so that it fits comfortably. Then if the author was earlier assigned to the top of the spine, reduce this height available for the title by 1.2 times the height occupied by the author (again, to leave a little space). In this case, the width has already been set; otherwise, generate a random width now.

```

251     \typeout{Limits: width=\the\SIL@minbookwidth
252             -\the\SIL@maxbookwidth;
253             height=\the\SIL@minbookheight
254             -\the\SIL@maxbookheight}%
255     \setrandim{\SIL@bookheight}%
256             {\SIL@minbookheight}%
257             {\SIL@maxbookheight}%
258     \typeout{Height generated as
259             \the\SIL@bookheight}%
260     \setlength{\SIL@heightfortitle}%
261             {.9\SIL@bookheight}%
262     \typeout{Height available for title (90\%):
263             \the\SIL@heightfortitle}%
264 \ifSIL@topauthor

```

```

265     \typeout{Width set because author fits:
266             \the\SIL@bookwidth}%
267     \addtolength{\SIL@heightfortitle}%
268             {-1.2\SIL@authorheight}%
269     \typeout{Height available for title reset to
270             \the\SIL@heightfortitle}%
271     \else
272     \setrandim{\SIL@bookwidth}%
273             {\SIL@minbookwidth}%
274             {\SIL@maxbookwidth}%
275     \typeout{Width generated as
276             \the\SIL@bookwidth}%
277     \fi

```

See how the title will fit the space: if it's smaller, it will fit on one line, but we scale it up so it occupies more of the space available. To do this, we perform fixed-point arithmetic on the space it takes and the space available, and use the resulting decimal fraction later to scale the title. However, if the value resulting is greater than four, set it to four, otherwise the title will be too big to fit. The value four was obtained by inspection and trial and error.

```

278     \ifdim\SIL@titlewidth<\SIL@heightfortitle
279     \typeout{Titling fits in
280             \the\SIL@heightfortitle}%
281     \SIL@titleonelinetrue
282     \edef\titleval{\strip@pt\SIL@titlewidth}%
283     \edef\heightval{\strip@pt\SIL@heightfortitle}%
284     \FPeval\SIL@scaledtitle{\heightval/\titleval}%
285     \typeout{Scaling 1-line title by
286             \SIL@scaledtitle}%
287     \expandafter\SIL@scaleint
288             \SIL@scaledtitle\sentinel
289     \ifnum\c@SIL@scale>4
290     \gdef\SIL@scaledtitle{4}%
291     \typeout{Resetting scale \theSIL@scale\ to
292             \SIL@scaledtitle}%
293     \fi

```

Otherwise (too long) the title needs to be set in a box as a multi-line title. This gets complicated:

1. set the title in a `\vbox` and then add the height and

depth it occupies to get the height of the set title;

2. if that height is more than the width of the book, use the method above to divide the available height by the [over]used height and use that to reduce the point size by deducting it from 10 (points);
3. otherwise (the multiline title fits in the width of the book), do the reverse and increase the point size to take advantage of the extra space by adding it to 10pt.

```

294 \else
295   \typeout{Titling won't fit
296             \the\SIL@heightfortitle}%
297   \SIL@titleonelinefalse
298   \setbox\SIL@titlebox=\vbox{%
299     \hsize\SIL@heightfortitle
300     \SILmfont\raggedright
301     \vrule height1em width0pt
302     \bfseries\citetitle{#1}%
303     \vrule depth.2em width0pt
304   }%
305   \setlength{\SIL@titleheight}%
306             {\ht\SIL@titlebox + \dp\SIL@titlebox}%
307   \typeout{Multiline title takes
308             \the\SIL@titleheight}%
309   \ifdim\SIL@titleheight>\SIL@bookwidth
310     \typeout{Height of title
311               \the\SIL@titleheight\
312               is greater than
313               \the\SIL@bookwidth}%
314     \edef\titleval{\strip@pt\SIL@titleheight}%
315     \edef\heightval{\strip@pt\SIL@bookwidth}%
316     \FPeval\SIL@scaledtitle
317             {10 - \heightval / \titleval}%
318     \typeout{10 - \heightval\ ÷ \titleval\
319             = \SIL@scaledtitle}%
320     \typeout{Using smaller font \SIL@scaledtitle
321             pt for multiline title}%
322   \else
323     \typeout{Height of title
324               \the\SIL@titleheight\
325               is less than
326               \the\SIL@bookwidth}%

```

```

327     \edef\titleval{\strip@pt\SIL@titleheight}%
328     \edef\heightval{\strip@pt\SIL@bookwidth}%
329     \FPeval\SIL@scaledtitle
330         {10 + \heightval / \titleval}%
331     \typeout{10 + \heightval\ ÷ \titleval\
332         = \SIL@scaledtitle}%
333     \typeout{Using larger font \SIL@scaledtitle
334         pt for multiline title}%
335     \fi
336     \fi

```

Finally, set a `\vbox` to the defined width *less* the space occupied by the `\fcolorbox` border and rule; then set the `\fcolorbox` with the chosen colors, with the author at the top if that's what was selected earlier, and the title below, either scaled using `\scalebox` if it was a single-line title, or with the amended font size if it was a multiline title.

For a setting with the author inline to the title, just do the scaling of the title.

```

337     \leavevmode\vbox{\hsize\SIL@bookwidth
338         \advance\hsize by2\fboxsep
339         \advance\hsize by2\fboxrule
340     \fcolorbox{black}{\SIL@bgcol}{%
341         \ifSIL@topauthor
342             \typeout{Setting with top author}%
343         \vbox to\SIL@bookheight{\hsize\SIL@bookwidth
344             \typeout{Spine is a vbox to
345                 \the\SIL@bookheight,
346                 hsize=\the\SIL@bookwidth}%
347             \centering
348             \SILmfont\color{\SIL@fgcol}%
349             \citefullauthor{#1}%
350             \par\vfill
351             \rotatebox{90}{\vbox to\SIL@bookwidth{%
352                 \hsize\SIL@heightfortitle
353                 \null\vfill
354                 \typeout{Title in a vbox to
355                     \the\SIL@bookwidth,
356                     hsize=\the\SIL@heightfortitle}%
357             \raggedright\color{\SIL@fgcol}%
358             \ifSIL@titleonline
359                 \scalebox{\SIL@scaledtitle}%

```

```

360             {\bfseries\citetitle{#1}}%
361         \else
362             \fontsize{\SIL@scaledtitle}%
363             {\SIL@scaledtitle}\selectfont
364             \bfseries\citetitle{#1}%
365         \fi
366         \par\vfill}%
367     }%
368 }%
369 \else
370     \typeout{Setting author inline to title}%
371     \vbox to\SIL@bookheight{\hspace\SIL@bookwidth
372         \typeout{Spine is a vbox to
373             \the\SIL@bookheight,
374             hsize=\the\SIL@bookwidth}%
375         \centering
376         \SILmfont\color{\SIL@fgcol}%
377         \rotatebox{90}{\vbox to\SIL@bookwidth{%
378             \hspace\SIL@heightfortitle
379             \null\vfill
380             \typeout{Title and author in a vbox to
381                 \the\SIL@bookwidth,
382                 hsize=\the\SIL@heightfortitle}%
383             \raggedright\color{\SIL@fgcol}%
384             \ifSIL@titleonline
385                 \scalebox{\SIL@scaledtitle}%
386                 {{\bfseries\citetitle{#1}}\quad
387                 -\ \ \citefullauthor{#1}}}%
388             \else
389                 \fontsize{\SIL@scaledtitle}%
390                 {\SIL@scaledtitle}\selectfont
391                 {\bfseries\citetitle{#1}}\quad
392                 -\ \ \citefullauthor{#1}}}%
393             \fi
394             \par\vfill}%
395         }%
396     }%
397 \fi
398 }%

```

At the bottom, add a colored bar to fake up the shelf the books stand on. The number is the number of the font that was selected, and is there for error-tracing purposes only.

Despite best efforts at ending all non-control-sequence line-ends with a percent shield, space is creeping in somewhere, so the final negative kern removes it.

```
399   \\fboxsep0pt\fboxrule0pt
400   \colorbox{BurlyWood}{\hbox to\hsize{%
401       \hfil\vrule height3mm depth6mm width0pt
402       \normalfont\scriptsize\theSIL@fontsel\hfil}}%
403   }%
404   \kern-2.2mm}%
```

`\DeclareCiteCommand` Trying to ensure we have an author’s full name, not just the surname. This came from [lockstep](#), modified at biblatex’s suggestion to use given-family instead of first-last, but it doesn’t seem to have any effect.

```
405 \DeclareCiteCommand{\citefullauthor}
406   {\boolfalse{citetracker}%
407   \boolfalse{pagetracker}%
408   \DeclareNameAlias{labelname}{given-family}%
409   \usebibmacro{prenote}}
410 {\ifciteindex
411   {\indexnames{labelname}}
412   }%
413   \printnames{labelname}}
414 {\multicitedelim}
415 {\usebibmacro{postnote}}
```

`\DeclareLabeltitle` Similarly, in an attempt to get keep the author and title for books and monographs, but use the editors and volume/journal/book title for articles, incollection, and inbook entry types, these two definitions don’t seem to have any effect. The remaining definitions are needed to cope with the expected commands found in sample bibliographies.

```
416 %%\DeclareLabeltitle[article]{%
417 %% \field{journaltitle}
418 %%}
419 %%\DeclareLabeltitle
420 %% [inbook,incollection,inproceedings]{%
421 %% \field{booktitle}
422 %% \field{maintitle}
```

```
423 %%}  
424 %  
425 \DeclareFieldFormat*{citetitle}{#1}  
426 \let\citeA\textcite  
427 \let\titleref\emph  
428 \def\emdash{~--- }
```

References

- Bradner, S. (1997). *Key words for use in RFCs to Indicate Requirement Levels* (tech. rep.). Internet Engineering Task Force. Reston, VA, Internet Standard.
<https://tools.ietf.org/rfc/rfc2119.txt>
- Flynn, P. (2020). *Formatting Information* (6th). Cork, Ireland, Silmaril Consultants. <http://latex.silmaril.ie/formattinginformation>

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A.6 Whether and How to Distribute Works under This License

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A.6.1 Choosing This License or Another License

If for any part of your work you want or need to use *distribution* conditions that differ significantly from those in this license, then do not refer to this license anywhere in your work but, instead, distribute your work under a different license. You may use the text of this license as a model for your own license, but your license should not refer to the LPPL

or otherwise give the impression that your work is distributed under the LPPL.

The document `modguide.tex` in the base \LaTeX distribution explains the motivation behind the conditions of this license. It explains, for example, why distributing \LaTeX under the GNU General Public License (GPL) was considered inappropriate. Even if your work is unrelated to \LaTeX , the discussion in `modguide.tex` may still be relevant, and authors intending to distribute their works under any license are encouraged to read it.

A.6.2 A Recommendation on Modification Without Distribution

It is wise never to modify a component of the Work, even for your own personal use, without also meeting the above conditions for distributing the modified component. While you might intend that such modifications will never be distributed, often this will happen by accident — you may forget that you have modified that component; or it may not occur to you when allowing others to access the modified version that you are thus distributing it and violating the conditions of this license in ways that could have legal implications and, worse, cause problems for the community. It is therefore usually in your best interest to keep your copy of the Work identical with the public one. Many works provide ways to control the behavior of that work without altering any of its licensed components.

A.6.3 How to Use This License

To use this license, place in each of the components of your work both an explicit copyright notice including your name and the year the work was authored and/or last substantially modified. Include also a statement that the distribution and/or modification of that component is constrained by the conditions in this license.

Here is an example of such a notice and statement:

```
%%% pig.dtx
%%% Copyright 2005 M. Y. Name
%%
%% This work may be distributed and/or modified under the
%% conditions of the LaTeX Project Public License, either version 1.3
%% of this license or (at your option) any later version.
%% The latest version of this license is in
%% http://www.latex-project.org/lppl.txt
%% and version 1.3 or later is part of all distributions of LaTeX
```

```
%% version 2005/12/01 or later.
%%
%% This work has the LPPL maintenance status 'maintained'.
%%
%% The Current Maintainer of this work is M. Y. Name.
%%
%% This work consists of the files pig.dtx and pig.ins
%% and the derived file pig.sty.
```

Given such a notice and statement in a file, the conditions given in this license document would apply, with the ‘Work’ referring to the three files `pig.dtx`, `pig.ins`, and `pig.sty` (the last being generated from `pig.dtx` using `pig.ins`), the ‘Base Interpreter’ referring to any ‘ \LaTeX -Format’, and both ‘Copyright Holder’ and ‘Current Maintainer’ referring to the person M. Y. Name.

If you do not want the Maintenance section of LPPL to apply to your Work, change ‘maintained’ above into ‘author-maintained’. However, we recommend that you use ‘maintained’ as the Maintenance section was added in order to ensure that your Work remains useful to the community even when you can no longer maintain and support it yourself.

A.6.4 Derived Works That Are Not Replacements

Several clauses of the LPPL specify means to provide reliability and stability for the user community. They therefore concern themselves with the case that a Derived Work is intended to be used as a (compatible or incompatible) replacement of the original Work. If this is not the case (e.g., if a few lines of code are reused for a completely different task), then clauses 6b and 6d shall not apply.

A.6.5 Important Recommendations

A.6.5.1 Defining What Constitutes the Work : The LPPL requires that distributions of the Work contain all the files of the Work. It is therefore important that you provide a way for the licensee to determine which files constitute the Work. This could, for example, be achieved by explicitly listing all the files of the Work near the copyright notice of each file or by using a line such as:

```
%% This work consists of all files listed in manifest.txt.
```

in that place. In the absence of an unequivocal list it might be impossible for the licensee to determine what is considered by you to comprise the Work and, in such a case, the licensee would be entitled to make reasonable conjectures as to which files comprise the Work.

Change History

v0.1	note on bug in biber when processing sgml.bib; 2)
General: First packaged draft: Done manually from .tex file.	Removed sgml.bib as example until problems are resolved; 3) Backtracked on attempt to use the monographic title for articles, chapters, etc; 4)
	Revised notes on production.
v0.2	
General: Started documentation: Code doc done, user doc still missing.	
v0.3	
General: Finished first pass on documentation: 1) Done preliminary testing; 2) Script adapted for Mac OS X.	
v0.4	
General: Completed documentation: 1) Updated	
	v0.5
	General: Finished initial testing: Replaced hyperref with hypdoc to avoid makeindex bug.

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Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

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