

# Extending Peter Flynn's bookshelf package for multilanguage libraries

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## Peter's package: a legacy of pandemics



The poster features a background of a bookshelf filled with colorful books. A large white banner with a red outline contains the text 'JULY 24-26' and '2020'. To the right, a brown banner lists topics: 'T<sub>E</sub>X AND L<sup>A</sup>T<sub>E</sub>X', 'TYPOGRAPHY', 'TYPESETTING', 'FONTS', 'DESIGN', 'PUBLISHING', and 'AND MORE'. Below the date, it reads '41<sup>ST</sup> ANNUAL CONFERENCE OF THE T<sub>E</sub>X USERS GROUP'. The main title 'TUG'20' is in large black letters, with 'online' in red script below it. Keynote speakers are listed as Steve Matteson (Monotype) and John MacFarlane (UC Berkeley). Logos for RIT Cary Graphic Arts Collection, TeXFolio, Overleaf, dante.e.v., and The University of Adelaide are present. A QR code and the URL 'https://tug.org/tug2020 | tug2020@tug.org' are at the bottom left, and the TeX Users Group logo is at the bottom right.

T<sub>E</sub>X AND L<sup>A</sup>T<sub>E</sub>X  
TYPOGRAPHY  
TYPESETTING  
FONTS  
DESIGN  
PUBLISHING  
AND MORE

JULY 24-26  
**2020**

41<sup>ST</sup> ANNUAL CONFERENCE OF THE T<sub>E</sub>X USERS GROUP

**TUG'20**  
*online*

KEYNOTE SPEAKERS  
Steve Matteson, Monotype  
John MacFarlane, UC Berkeley

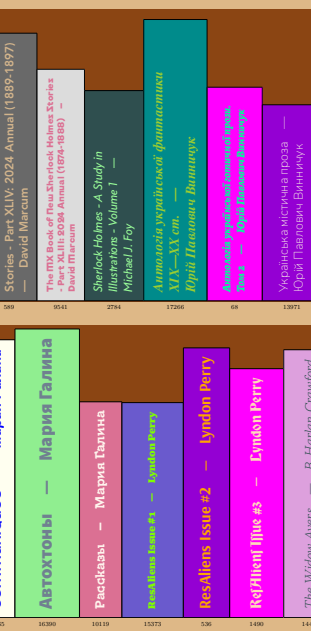
RIT Cary Graphic Arts Collection  
TeXFolio  
Overleaf  
dante.e.v.  
THE UNIVERSITY OF ADELAIDE

 <https://tug.org/tug2020> | [tug2020@tug.org](mailto:tug2020@tug.org) 

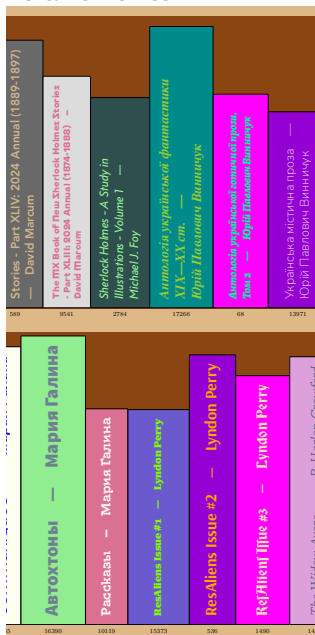
# My electronic library



# Books and fonts



# Books and fonts



589: AvenirLTStd-Heavy

9541: KyivTypeTitling-Bold2

2784: Concourse4Italic, Stylistic Set 3

17266: XITS-BoldItalic

68: Alegreja-ExtraBoldItalic, Stylistic Set 4

13971: Nunito-ExtraLight

16390: SourceSansPro-Black, Small Caps

10119: KyivTypeTitling-Bold, Stylistic Set 4

15373: RobotoSerif-Black, Old Style Numbers

536: Arsenal-Bold, Stylistic Set 2

1490: BradleyDJR-Micro, Historical Ligatures

# Peter Flynn's Package

**Algorithm:** Repeat for each book:

1. Select random rectangle within limits.
2. Select random foreground and background colors. If the contrast is too low, repeat.
3. Select random font.
4. Typeset author and title to fit in the box.

**My problems:**

- ▶ I have books in English, Ukrainian, Russian, and other languages. A random font in step 3 may not work!
- ▶ I want to show off my fonts with stylistic variants, swashes, etc.

## Font selection for multilanguage libraries

Select a random font. Try to typeset the current book using the current font. If you cannot, use another font. Easier in  $\text{\LaTeX}$ 3:

```
\prg_new_conditional:Nnn \__SIL_primitive_font_glyph_if_exists:n {TF,F}
{
  \tex_iffontchar:D \l_fontspec_font `#1 \scan_stop:
  \prg_return_true:
}
\else:
  \prg_return_false:
\fi:
}
\prg_new_conditional:Nnn \__SIL_can_typeset:n {TF}
{
  \typeout{Trying - to - typeset - #1}
  \bool_set_true:N \l_tmpa_bool
  \str_map_inline:nn {#1} {
    \__SIL_primitive_font_glyph_if_exists:nTF {##1} {}{
      \bool_set_false:N \l_tmpa_bool
      \typeout{Cannot - typeset - ##1}
      \str_map_break:
    }
  }
  \bool_if:nTF \l_tmpa_bool {\prg_return_true:} {\prg_return_false:}
}
\cs_generate_variant:Nn \__SIL_can_typeset:nTF {x}
\NewDocumentCommand\CanTypesetTF { m m m }{
  \__SIL_can_typeset:xTF{#1}{#2}{#3}
}
}
```

# Biber hacking

Biber makes a complex list of author's names.

```
\entry{RudnickJosephGaspariGeorge731}{book}{}{}  
\name{author}{2}{}{%  
  {hash=5040ed76c9f4c1fec4ec7d7bb797e4b0}{%  
    family={Rudnick},  
    familyi={R\bibinitperiod},  
    given={Joseph},  
    giveni={J\bibinitperiod}}}%  
  {hash=f7f6ce8a4dd11440b02e27dcdf616bf}{%  
    family={Gaspari},  
    familyi={G\bibinitperiod},  
    given={George},  
    giveni={G\bibinitperiod}}}%  
}
```

We need the a simple representation to check the characters in authors' names

```
\DeclareSourcemap{%  
  \maps{%  
    \map{%  
      \step[fieldsource=author]  
      \step[fieldset=rawauthor, origfieldval]  
      \step[fieldsource=rawauthor, fieldtarget=usera]  
    }}}
```

Result:

```
\field{usera}{Joseph Rudnick and George Gaspari}
```



# A problem with fonts I

**The problem:** the number of font slots is limited. When we open too many files,  $\TeX$  run bombs.

**A solution:** Open up to  $N \approx 2100$  new files. Then reuse the fonts already opened.

An unholy mix of of  $\TeX 3$  and  $\TeX 2_{\epsilon}$ :

```
\ExplSyntaxOn
\seq_new:N \l__SIL_fontstack
\NewDocumentCommand\AddFontToStack {m} {%
  \seq_gput_right:Ne \l__SIL_fontstack {#1}
}
\NewDocumentCommand\ReuseFont {} {
  \seq_rand_item:N \l__SIL_fontstack
}
\ExplSyntaxOff

\newcount\SIL@num@fontsel@files
\SIL@num@fontsel@files=0
\def\SIL@max@fontsel@files{2100}
```

## A problem with fonts II

```
\loop
  \ifnum\SIL@num@fontsel@files<\SIL@max@fontsel@files
    \advance\SIL@num@fontsel@files by 1\relax
    \typeout{Opening new fontsel file, counter=\the\SIL@num@fontsel@files}%
    \setranum{\c@SIL@fontsel}{1}{\c@SIL@maxfont}%
    \AddFontToStack{\the\c@SIL@fontsel}%
  \else
    \typeout{Reusing fontsel file}%
    \expandafter\c@SIL@fontsel\ReuseFont\relax
  \fi
  \input{fontsel/\theSIL@fontsel.tex}\unskip%
  \typeout{Trying \SILmfontname, attempt \the\c@SIL@loopcount}%
  \CanTypesetTF{\extractcitextresult}{\global
    \SIL@fontfoundtrue}{\global
    \SIL@fontfoundfalse}%
  \ifSIL@fontfound
    \c@SIL@loopcount=\SIL@maxfonttries\relax
  \else
    \addtocounter{SIL@loopcount}{1}%
  \fi
  \ifnum\c@SIL@loopcount<\SIL@maxfonttries\repeat
\ifSIL@fontfound\else
  \typeout{Did not find font. Bailing out with the default}%
  \input{fontsel/0.tex}\unskip%
\fi
\typeout{Set in \SILmfontname}%
```

## A problem with fonts III

**The problem:** Changing font size opens a slot!

**A solution:** Typeset in a box, and then resize it!

```
\scalebox{\SIL@S}{\vbox{\hsize=\SIL@w pt\relax  
\raggedright\noindent#1\vskip0pt}}%
```

## Aside: Listing of all fonts

Which fonts do you want, the system ones or the  $\TeX$  fonts?

For  $\TeX$  fonts

1. Read all `ls-R` files.
2. Extract `.ttf` and `.otf` files.
3. Use `otfinfo -f` to extract font features.
4. List fonts and “interesting” features

Result:

```
...  
Arsenal-Bold.otf  
Arsenal-Bold.otf hist  
Arsenal-Bold.otf smcp  
Arsenal-Bold.otf ss01  
Arsenal-Bold.otf ss02  
Arsenal-Bold.otf swsh  
...
```

# Conclusions

## **Current situation:**

1. 1584 books
2. 19183 fonts and font variants

## **Plans:**

1. Release the code.
2. Code cleanup and refactoring. Streamlining Biber run
3. Making book size dependent on the actual book size.