

New L^AT_EX Style for FAO Yearbook *

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Abstract

This package provides class for typesetting FAO Yearbook. This is a refactoring of the `faoyeabook` package

1 Introduction

The package `faoyearbook` [1] was written in 2011 for FAO Statistical Yearbook.

The package `faosyb` is a refactoring of this package. We use the lessons learned and incorporate new design requirements. We use some (actually plenty) code from the previous version, but since we do not have to be compatibility, we can correct some unfortunate decisions.

2 User Guide

The installation of the class follows the usual practice [2] for L^AT_EX packages:

1. Run `latex` on `faosyb.ins`. This will produce the L^AT_EX class `faosyb.cls`.
2. Put the file `faosyb.cls` to the place where L^AT_EX can find it (see [2] or the documentation for your T_EX system).
3. Update the database of file names. Again, see [2] or the documentation for your T_EX system for the system-specific details.
4. The file `faosyb.pdf` provides the documentation for the package (this is the file you are probably reading now).

As an alternative to items 2 and 3 you can just put the file `faosyb.cls` in the working directory where your `.tex` file is.

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2.1 Invocation

To use the class, put in the preamble of your document

```
\documentclass[\options]{faosyb}
```

If the option **web** (default) is chosen, the pages of the book have the dimensions corresponding to A4 paper. However, if the option **print** is chosen, then the pages are printed on a wider area, and crop marks are added for the trimming.

If the option **issuu** is chosen, the internal links are transformed to external in the form suitable for <http://www.issuu.com>. Note that this option probably does not make much sense unless **web** option is also chosen. However, it is still possible to select both **print** and **issuu** option if someone needs it for an obscure purpose.

The option **Draft** (note the capitalization!) leads to the the large word ‘DRAFT’ printed across the pages. The standard L^AT_EX option **draft** leads to the same result, but it also makes other changes, most notably, in the behavior of the `\includegraphics` command and warnings.

`\ifprint` It is possible to query the current mode using the macro `\ifprint`, for example

```
\ifprint
  Stuff for print version
\else
  Stuff for web version
\fi
```

Any branch of this conditional may be empty, so web-only stuff can be coded as

```
\ifprint\else Web-only stuff\fi
```

`\includegraphics` There is a special facility for `\includegraphics` command to choose a file depending on the current mode of the package. Namely, if there is a file `image_print.pdf` visible by L^AT_EX, then the commands `\includegraphics{image}` or `\includegraphics{image.pdf}` selects the file `image_print.pdf`. In the case this file is not found, the file `image.pdf` is selected instead. Similarly in the web mode the file `image_web.pdf` will be selected first, and only if it does not exist, `image.pdf` is selected. This rule works also for commands `\includeLargeGraphics` and `\includeExtraLargeGraphics` described below.

Note that at this time there is no similar facility for the `\input` command.

2.2 Setting Parameters

`\faoset` Some parameters in the class can be set with the command `\faoset{<key=value>}`, for example

```
\faoset{bgcolor=blue}
```

Most of the parameters are explained below.

2.3 Fonts

`\narrowfamily` The class uses PT Sans fonts [3] for body text and Arev fonts [4] for math. It defines two additional families: Narrow and Caption, corresponding to the PT Sans Narrow and PT Sans Caption font. They can be selected by the declarations `\captionfamily` and `\captionfamily` or by the commands `\textnarrow{<text>}` and `\textcaption{<text>}` following the usual L^AT_EX conventions. Note that since PT Sans does not provide math alphabet, this choice does not change the mathematical text.

PT Sans Narrow may be useful for typesetting tables, for example,

```
{\scriptsize\narrowfamily
\rowcolors{4}{@bgcolor!30}{@bgcolor!20}
\input{./Tables/P1.DEM_1.tex}}
```

2.4 Colors and Icons for Parts

A Yearbook is separated into parts (more on this below). Each part has its own color and icon. They are set by the keys `bgcolor` and `icon` of the `\faoset` command, for example,

```
\faoset{icon=./Icons/agriculture.png}
\faoset{icon=./Icons/population}
\faoset{bgcolor=blue}
\faoset{bgcolor=green!25!yellow}
```

The parameter for the `icon` key can be any file name (with or without extension), suitable for the `\includegraphics` command. The parameter for the `bgcolor` key can be specified in any form acceptable by `xcolor` package [5].

The key `tableheadcolor` sets the color for the headers of tables defined by H or P key (see Section 2.6). Normally it is 30% of the current `@bgcolor` color, but it can be set to any required value.

`\selecticon` Note that `\faoset` command does not change the icon or background color immediately. When issued *before* `\part` command, it sets up icon and color for the next part. If needed, you can manually change this using `\selecticon` and `\selectcolor` commands. In most cases you should *not* use these commands.

`@bgcolor` After a `\part` command (or explicit `\selecticon` and `\selectcolor` command we can access the current values of the color in `@bgcolor`, `@tablecolor` colors and `\currenticon` macro.

2.5 Sectioning

`\part` The main division of the text are `\parts`. The command `\part{<title>}` is used for numbered parts, while the command `\part*{<title>}` is used for unnumbered parts.

`\section` The next division are `\sections` and `\subsections`. They are never numbered.

`\subsection` The style does not use `\chapters`.

`\EndPartIntro` The sections immediately following new parts are special: they are typeset in one column and cannot have floats. The command `\EndPartIntro` switches to the “normal” sections.

2.6 Floats

One of the most important changes from the previous version of the class [1] is the treatment of floats.

In standard L^AT_EX floats “float”: they can be placed by the algorithm anywhere. The previous version made them “sticky”: the author explicitly tells T_EX where floats should be placed. However, to do so the class required the author to make explicit page breaks, which was not very convenient.

This version has a completely rewritten interface and algorithm for placing floats:

1. Like in standard L^AT_EX, authors do not normally provide page breaks—T_EX tries to make this decision for them.
2. Like in the previous version, floats are put exactly where the authors want them—no default placing and second-guessing.

Here is how it is done.

The main unit of the book is *spread*: a verso page and the corresponding recto page. Each page is divided into four quarters, upper left, upper right, lower left and lower right. We will denote them `ul`, `ur`, `ll`, `lr` for the verso page and `UL`, `UR`, `LL`, `LR` for the recto page (Figure 1). We allow four kinds of floats:

Single floats occupy exactly one quarter. They are denoted as `S`.

Tall floats occupy two quarters stacked vertically (for example, `ul` and `ll`). They are denoted as `T`.

Wide floats occupy two quarters adjacent horizontally (for example, `LL` and `LR`). They are denoted as `W`.

Big floats occupy all four quarters on a page. They are denoted as `B`.

The parameters `{⟨type⟩}` and `{⟨location⟩}` are mandatory for floats, for example

```
\begin{map}{T}{ur}
...
\end{map}
\begin{chart}{S}{UL}
...
\end{chart}
```

For multiquarter floats the location is the location of the upper left corner, so Big float can use only `ul` or `UL` location.



Figure 1: A Spread

Of course, not all combinations are valid: you cannot specify float as `{T}{ll}` or `{W}{UR}`, for example. If you use such combinations, the results may be unpredictable. Also it is not predictable what happens if you try to put overlapping floats (e.g. `{S}{UR}` and `{W}{UL}`).

There are two additional rules:

1. A verso page may have text and floats (still it is recommended that if it has text, then it should not have floats occupying the upper left corner).
2. A recto page may have *either* text or floats: if there are floats for this page, all text is moved to the following verso page.

`chart` There are three types of floats defined by the class:
`map` **chart** plots and other charts,
`table` **map** mapped data.
 table mini tables.

`caption` Each of these kinds of material is typeset using the corresponding environment: **chart**, **table** or **map**. Note that the caption for each of these environments *must* precede the graphical material, for example:

```

\begin{chart}{B}{UL}
  \caption{Hunger Data}
  \label{chart:hunger}
  \includegraphics{hunger.pdf}
\end{chart}

```

Note that our class redefines `table` environemnt!. For tables on separate pages use `longtable`.

`\chartwidth` Inside a `chart`, `map` or `table` it is useful to know the size allocated for the
`\charheight` graphics or table, for example, to be able to scale the graphics. Two lengths,
`\chartwidth` and `\charheight` provide this information, so the user can say, for
example,

```
\includegraphics[width=\chartwidth, height=\charheight]{theChart}
```

`\source` Inside a `chart`, `map` or `table` the macro `\source{<source>}` gives the source
of the information, for example,

```
\Source{FA0, Statistical Division [FA0STAT]}
```

`\listoftables` The standard L^AT_EX has the command `\listoftables` to produce the list of
`\listofcharts` tables in the document. Our class retains this command and produces two addi-
`\listofmaps` tional commands `\listofcharts` and `\listofmaps` with the obvious meaning.

2.7 Page Breaks

`\clearpage` Standard L^AT_EX has commands for immediate page break (e.g. `\clearpage`)
`\cleardoublepage` and for switching to the next recto page, possibly ejecting the next verso page
`\clearspread` (`\cleardoublepage`). The class provides another command `\clearspread`. It
switches to the next *verso* page, possibly ejecting the next recto page (and putting
there floats intended for this page, if any).

2.8 Tables

To typeset numericall items one should use `d` column identifier with the format `d{<a.b>}`, where *a* is the number of decimal in the integer part of the number, and *b* is the number of decimal digitst in the fractional part. For example, a number 12.345 corresponds to `d{2.3}`. The column headers are usually *not* numerical, so one need to use `\multicolumn` entries to typeset them. The class defines several such entries:

H produces a centered entry.

P produces an entry of a given length, for example, `P{1.5cm}`

C produces an entry of the length corresponding to the given number of numerical columns. For example, `C{2}` corresponds to a header of two numerical columns. Each column is assumed to be of the size enough to store -99.999 .

`\hhline` For the rules that do not span the table width `\hhline{<specification>}` command from the `hhline` package should be used. The `{<specification>}` argument of this command has many variants, but for our purposes we need only one variant: the command `-` produces a horizontal line spanning one column. The color of this line is determined by the command `\arrayrulecolor{<color>}`, issued in the last `>{<argument>}` command before the `-` specification. Therefore the command `>{\arrayrulecolor{@tableheadcolor}}-` produces a line of the color `@tableheadcolor`, which is seen as the absence of line. The command `>{\arrayrulecolor{black}}---` produces a black line spanning three columns. Thus if we have a four-column table and want a rule spanning columns 2-3, the following command should be issued:

```
\hhline{>{\arrayrulecolor{@tableheadcolor}}-% Column 1, no rule
>{\arrayrulecolor{black}}--% Columns 2 and 3, black rule
>{\arrayrulecolor{@tableheadcolor}}-% Column 4, no rule
```

The usual `*` specification may be used for repeating patterns, for example, `*{5}{-}` is equivalent to `-----`.

The vertical bar `|` specification in the `\hhline` argument means an interruption of the line. The interruption is by default a black interval, to make it the same color as the header background, use `>{\arrayrulecolor{@tableheadcolor}}|`.

2.9 Publication Descriptions

`publication` FAO yearbook describes some FAO publications. These publications should be put inside the environment `publication`. The environment has one mandatory argument, which is the title of the publication, and one optional argument, which sets the file name of the publication cover. Note that the option argument, if present, must precede the mandatory one. If this argument is absent, no cover is included. Inside the environment the macros `\pDescription{<description>}`, `\pEdition{<year>}{<edition>}`, `\pWeb{<URL>}` and `\pCycle{<date>}` are used to typeset the corresponding items related to the publication. For example,

```
\pDescription
\pEdition
\pCycle
pWeb
\begin{publication}[./Plots/StateOfFoodAndAgriculture.png]{The State
of Food and Agriculture}
\pDescription{The State of Food and Agriculture, FAO's major
annual flagship publication, aims at bringing to a wider
audience balanced science-based assessments of important issues
in the field of food and agriculture. Each edition of the
report contains a comprehensive, yet easily accessible, overview
of a selected topic of major relevance for rural and
agricultural development and for global food security. This is
supplemented by a synthetic overview of the current global
agricultural situation.}
\pEdition{2010}{Livestock in the balance}
\pEdition{2011}{Women in Agriculture Closing the gender gap for
development}
\pCycle{May each year}
```

```
\pWeb{http://www.fao.org/docrep/013/i2050e/i2050e00.htm}
\end{publication}
```

Note that, as in the example, some fields may be repeated.

Two spacing parameters can be used for typesetting of publications: `publicationskip` is the amount of additional space between the publications, while `publicationparskip` is the space between the paragraphs inside the publication environment. The default values correspond to the command

```
\faoset{publicationskip=6pt plus 2pt minus 2pt,
        publicationparskip=6pt plus 6pt minus 4pt}
```

2.10 Metadata

MetadataCollection Each chart, map or table in the book has a *source*. Sources are collected in the **metadata** environment `MetadataCollection`, which consists of separate `metadata` environments. Each `metadata` environment has two obligatory arguments—the name of the source and the key. The key is used to identify the metadata in the charts, maps, tables and other objects. The environment may include other commands.

`\source` `\source{<source>}` sets the source of the data.

`\owner` `\owner{<owner>}` sets the owner of the data.

Note that there is no “description” command because any text which is not an argument of the commands above is considered to belong to the description of the data.

Example of the usage of these commands:

```
\begin{MetadataCollection}
\begin{metadata}{Agricultural population}{P1.DEM.FAO.POP.AGR}

    Agricultural population is defined as all persons depending for
    their livelihood on agriculture, hunting, fishing and forestry.
    It comprises all persons economically active in agriculture as
    well as their non-working dependents. It is not necessary that
    this referred population exclusively come from rural population.

    \source{FILL ME}
    \owner{FILL ME}
\end{metadata}
\end{MetadataCollection}
```

`\refMetadata` The metadata is referenced by the command `\refMetadata{<key>}`, for example

```
\refMetadata{P1.DEM.FAO.POP.AGR}
```


This command will be typset as

Source: Agricultural population, page NNNN.

This command must *not* occur in the caption of the chart, map or table.

Note that the package automatically provides backreferencing: all charts, maps and tables where the metadata is referenced, are mentioned in the corresponding metadata section.

The sources of each chart, map or table can be shown in the lists of charts, tables, maps or not. The key `metadataInLists` (by default `false`) determines whether they are shown there. To make them visible, put before the lists

```
\faosetup{metadataInLists=true}
```

2.11 Concepts and Methods

`ConceptsAndMethods` The environment `ConceptsAndMethods` starts a new section “Concepts and Methods”. Concepts and methods are collected in the series of `concept` environments. Each environment has one obligatory field: the name of the concept, for example:

```
\begin{ConceptsAndMethods}
  \begin{concept}{Gross domestic product}
    Gross domestic product (GDP) is the market value of all officially
    recognized final goods and services produced within a country in a
    given period of time.
  \end{concept}
  \begin{concept}{Gross state product}
    Gross state product (GSP), or gross regional product (GRP), is a
    measurement of the economic output of a state or province (i.e.,
    of a subnational entity). It is the sum of all value added by
    industries within the state and serves as a counterpart to the
    gross domestic product (GDP).
  \end{concept}
\end{ConceptsAndMethods}
```

2.12 Further Reading

`freading` The special environment `freading` is used for the “further reading” sections of the book. It starts the text from the new page and changes some defaults.

2.13 Subscripts in Text

`\textsubscript` The standard L^AT_EX defines `\textsuperscript`. The class adds a similar `\textsubscript` command.

2.14 Options

`\faoyearbook@size@warning` The font-changing options are not used in our setup, so we just produce a warning:

```
1 \long\def\faoyearbook@size@warning#1{%
2   \ClassWarning{faoyearbook}{Size-changing option #1 will not be
3     honored}}%
4 \DeclareOption{8pt}{\faoyearbook@size@warning{\CurrentOption}}%
5 \DeclareOption{9pt}{\faoyearbook@size@warning{\CurrentOption}}%
6 \DeclareOption{10pt}{\faoyearbook@size@warning{\CurrentOption}}%
7 \DeclareOption{11pt}{\faoyearbook@size@warning{\CurrentOption}}%
8 \DeclareOption{12pt}{\faoyearbook@size@warning{\CurrentOption}}%
```

`\ifprint` We have a flag which shows whether we are in Web or print mode

```
9 \newif\ifprint
10 \printfalse
11 \DeclareOption{web}{\printfalse}
12 \DeclareOption{print}{\printtrue}
13 \PassOptionsToPackage{papersize={230mm,317mm},layout=a4paper,
14   layoutoffset=1cm,layoutvoffset=1cm,twoside}{geometry}}
```

`\ifDraft` If we are in ‘Draft’ or ‘draft mode’, we print a word ‘draft’ across the page:

```
15 \newif\ifDraft
16 \Draftfalse
17 \DeclareOption{Draft}{\Drafttrue}
18 \DeclareOption{draft}{\Drafttrue}
```

`\if@issuemode` Whether we need issuu-style links

```
19 \newif\if@issuemode
20 \@issuemodefalse
21 \DeclareOption{issuu}{\@issuodemtrue}
```

All other options are just sent to the main class:

```
22 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{report}}
23 \ProcessOptions\relax
```

2.15 Loading Class and Packages

We start with the base class and some packages

```
24 \LoadClass[10pt,twoside,twocolumn]{report}
25 \RequirePackage{graphicx,xkeyval}
26 \RequirePackage[table,cmyk]{xcolor}
27 \RequirePackage{tikz,geometry,dcolumn}
28 \usetikzlibrary{calc}
29 \RequirePackage{fancyhdr}
30 \RequirePackage{lscape,longtable,siunitx,booktabs}
31 \RequirePackage{multicol,atbegshi,picture,hhline,afterpage}
32 \RequirePackage[T1]{fontenc}
33 \RequirePackage[utf8x]{inputenc}
34 \RequirePackage{pdfpages}
```

```

35 \RequirePackage[authoryear]{natbib}
36 \RequirePackage[breaklinks]{hyperref}
37 \RequirePackage{bookmark}
38 \if@issuemode
39 \RequirePackage{issuulinks}
40 \fi

Options for the hyperref package are set as follows:

41 \ifprint
42 \hypersetup{breaklinks,colorlinks=false,pdfborder=0 0 0,
43   pdfauthor={FAO},
44   pdfsubject={Statistical Yearbook of the Food And Agricultural Organization for the United Na
45   pdftitle={Statistical Yearbook of the Food And Agricultural Organization for the United Nati
46   pdfkeywords={FAO, Food Security, Undernourishment, Sustainable agriculture},
47   pdfpagelayout=TwoColumnLeft,
48   pdfnewwindow=true
49 }
50 \else
51 \hypersetup{breaklinks,colorlinks=false,pdfborder=0 0 0,
52   pdfauthor={FAO},
53   pdfsubject={Statistical Yearbook of the Food And Agricultural Organization for the United Na
54   pdftitle={Statistical Yearbook of the Food And Agricultural Organization for the United Nati
55   pdfkeywords={FAO, Food Security, Undernourishment, Sustainable agriculture},
56   pdfpagelayout=TwoColumnRight,
57   pdfnewwindow=true
58 }
59 \fi

```

2.16 Color

We need to tell the printer that we are using CMYK color model. The following is taken from the pdfx package (the package itself is not too easy to make work).

```

60 \def\@pctchar{\expandafter\@gobble\string\%}
61 \def\@bchar{\expandafter\@gobble\string\\}
62 \immediate\pdfobj stream attr{/N 4} file{FOGRA39L.icc}
63 \edef\OBJ@CVR{\the\pdfastobj}
64 \pdfcatalog{/OutputIntents [ <<
65   /Type/OutputIntent
66   /S/GTS_PDFX
67   /OutputCondition (FOGRA39)
68   /OutputConditionIdentifier (FOGRA39 \@bchar(ISO Coated v2
69   300\@pctchar\space \@bchar(ECI\@bchar)\@bchar))
70   /DestOutputProfile \OBJ@CVR\space 0 R
71   /RegistryName(http://www.color.org)
72   >> ]}

```

2.17 Key-Value Interface

`\faoset` We define the family `fao` for our keys:

```
73 \def\faoset#1{\setkeys{fao}{#1}}
```

2.18 Fonts

We use arev for mathematics:

```
74 \RequirePackage{arevmath}
```

For body text we use PT Sans:

```
75 \def\PTSans@scale{0.95}
```

```
76 \def\PTSansNarrow@scale{0.95}
```

```
77 \def\PTSansCaption@scale{0.95}
```

```
78 \renewcommand{\sfdefault}{PTSans-TLF}
```

```
79 \renewcommand{\familydefault}{\sfdefault}
```

```
80 \renewcommand{\bfdefault}{b}
```

`\narrowfamily` We declare a new family, `\narrowfamily`:

```
81 \DeclareRobustCommand\narrowfamily{\fontfamily{PTSansNarrow-TLF}\selectfont}
```

`\textnarrow` And the matching `\textnarrow` command:

```
82 \DeclareTextFontCommand{\textnarrow}{\narrowfamily}
```

`\captionfamily` Same with `\captionfamily`:

```
83 \DeclareRobustCommand\captionfamily{\fontfamily{PTSansCaption-TLF}\selectfont}
```

`\textcaption` And the matching `\textcaption` command:

```
84 \DeclareTextFontCommand{\textcaption}{\captionfamily}
```

`\normalsize` The basic size is 9.6pt:

```
85 \renewcommand\normalsize{%
```

```
86   \@setfontsize\normalsize{9.6pt}{\@xipt}%
```

```
87   \abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
```

```
88   \abovedisplayshortskip \z@ \@plus3\p@
```

```
89   \belowdisplayshortskip 6\p@ \@plus3\p@ \@minus3\p@
```

```
90   \belowdisplayskip \abovedisplayskip
```

```
91   \let\@listi\@listI}
```

```
92 \normalsize
```

`\small` This is the small size:

```
93 \renewcommand\small{%
```

```
94   \@setfontsize\small{\ixpt{10}}%
```

```
95   \abovedisplayskip 8.5\p@ \@plus3\p@ \@minus4\p@
```

```
96   \abovedisplayshortskip \z@ \@plus2\p@
```

```
97   \belowdisplayshortskip 4\p@ \@plus2\p@ \@minus2\p@
```

```
98   \def\@listi{\leftmargin\leftmarginI
```

```
99       \topsep 4\p@ \@plus2\p@ \@minus2\p@
```

```
100       \parsep 2\p@ \@plus\p@ \@minus\p@
```

```
101       \itemsep \parsep}%
```

```
102   \belowdisplayskip \abovedisplayskip}
```

We use `rm` style of URL:

```
103 \urlstyle{sf}
```

2.19 Margins and Paragraphing

We use a4paper.

```
104 \geometry{layout=a4paper,  
105   left=2cm,right=2cm,bottom=2cm,top=2cm,twoside,  
106   columnsep=30pt, twoside}%  
107 \savegeometry{standard}
```

`\parindent` We use not indented paragraphs with paragraph borders given by skips

```
\parskip 108 \setlength\parindent\z@  
109 \setlength\parskip{6\p@ plus 6\p@ minus 4\p@}
```

2.20 Cropmarks

There are several packages that provide crop marks. Unfortunately they do not work for us because they put crop marks at the background. Since we have colored pages, we want crop marks to be on the foreground.

In this section we re-implement cropmarks of the `geometry` package, putting the marks on the foreground.

We postpone the code to the beginning of the document to get the proper value of the switch

```
110 \AtBeginDocument{\ifprint  
111   \AtBeginShipout{%  
112     \AtBeginShipoutUpperLeftForeground{%  
113       \color{black}%  
114       \@tempdima=\Gm@layouthoffset  
115       \@tempdimb=\Gm@layoutvoffset  
116       \put(\@tempdima,-\@tempdimb+6\p@){\line(0,1){50}}%  
117       \put(\@tempdima-6\p@,-\@tempdimb){\line(-1,0){50}}%  
118       \advance\@tempdima by \Gm@layoutwidth  
119       \put(\@tempdima,-\@tempdimb+6\p@){\line(0,1){50}}%  
120       \put(\@tempdima+6\p@,-\@tempdimb){\line(1,0){50}}%  
121       \advance\@tempdimb by \Gm@layoutheight  
122       \put(\@tempdima,-\@tempdimb-6\p@){\line(0,-1){50}}%  
123       \put(\@tempdima+6\p@,-\@tempdimb){\line(1,0){50}}%  
124       \advance\@tempdima by -\Gm@layoutwidth  
125       \put(\@tempdima-6\p@,-\@tempdimb){\line(-1,0){50}}%  
126       \put(\@tempdima,-\@tempdimb-6\p@){\line(0,-1){50}}%  
127     }}\fi}
```

In draft mode we put the word ‘DRAFT’ across the page:

```
128 \AtBeginDocument{\ifDraft  
129   \AtBeginShipout{%  
130     \AtBeginShipoutUpperLeft{%  
131       \color{black!25}%  
132       \@tempdima=\Gm@layouthoffset  
133       \@tempdimb=\Gm@layoutvoffset  
134       \advance\@tempdima by 0.2\Gm@layoutwidth  
135       \advance\@tempdimb by 0.7\Gm@layoutheight
```

```

136      \put(\@tempdima,-\@tempdimb){%
137      \rotatebox{45}{%
138      \fontsize{6cm}{6cm}\selectfont
139      DRAFT}}}\fi}

```

2.21 Nonfloats

In Faoyearbook we used float package. Since we changed too much in the internals, here we just rewrite the code from scratch.

<code>\nf@vert@sep</code>	Vertical separation between the floats
140	<code>\newlength\nf@vert@sep</code>
141	<code>\setlength\nf@vert@sep{30pt}</code>
<code>\nf@width</code>	The width of the nonfloat
142	<code>\newlength\nf@width</code>
<code>\nf@height</code>	The height of the nonfloat
143	<code>\newlength\nf@height</code>
<code>\nf@captionheight</code>	The height reserved for the caption
144	<code>\newlength\nf@captionheight</code>
145	<code>\setlength\nf@captionheight{32\p@}</code>
<code>\nf@sourceheight</code>	The height reserved for the source lines
146	<code>\newlength\nf@sourceheight</code>
147	<code>\setlength\nf@sourceheight{48\p@}</code>
<code>\nf@margin</code>	Margin for floats
148	<code>\newlength\nf@margin</code>
149	<code>\setlength\nf@margin{12\p@}</code>
<code>\nf@trianglebase</code>	The design requires a triangle under the caption. Here it is
150	<code>\newlength\nf@trianglebase</code>
151	<code>\setlength\nf@trianglebase{12\p@}</code>
<code>\chartwidth</code>	The resulting width of a chart
152	<code>\newlength\chartwidth</code>
<code>\chartheight</code>	The resulting width of a chart
153	<code>\newlength\chartheight</code>
<code>\nf@topskip</code>	Top separation for a nonfloat @topskip
<code>\nf@bottomskip</code>	Bottom separation for a nonfloat @bottomskip
<code>\nonfloat@type</code>	The counter to keep the next type to assign
154	<code>\newcount\nonfloat@type</code>
155	<code>\nonfloat@type=4\relax</code>

`\nf@contentsbox` The box to keep the contents of the float
156 `\newbox\nf@contentsbox`

`\nf@mainbox` The box for the float
157 `\newbox\nf@mainbox`

`\newnon@float` The macro `\newnon@float` has the following arguments: TYPE, EXT, NAME, LISTNAME, for example
`\newnon@float{map}{lom}{Map}{List of Maps}`

It defines a nonfloat with these parameters.
158 `\def\newnon@float#1#2#3#4{%`
First, we need to define `\ftype@TYPE`: the type of the float. Note that tables are taken, so we need to make a special care of nonfloats that correspond to floats.
159 `\expandafter\ifx\csname ftype@#1\endcsname\relax`
160 `\expandafter\edef\csname ftype@#1\endcsname{\the\nonfloat@type}%`
161 `\multiply\nonfloat@type by 2\relax`
162 `\fi`
Now we define the extension for the floats
163 `\expandafter\def\csname ext@#1\endcsname{#2}%`
The macro `\fnum@TYPE` formats the line like “Figure 1”. We need to check whether the counter is defined
164 `\expandafter\ifx\csname the#1\endcsname\relax`
165 `\newcounter{#1}\fi`
166 `\expandafter\def\csname fnum@#1\endcsname{#3~\csname`
167 `the#1\endcsname}%`
Now we want to define the environment TYPE. Since it might be already defined, we first delete this definition, otherwise `\newenvironment` might throw an error
168 `\expandafter\let\csname #1\endcsname\relax`
169 `\expandafter\let\csname end#1\endcsname\relax`
And the actual definition
170 `\newenvironment{#1}{\non@float{#1}}{\endnon@float}}`

`\@getfirstletter` An aux macro to get a first letter of a word. Used in constructs
`\edef\U{\@getfirstletter{AAAAA\@endword}}`

171 `\def\@getfirstletter#1{\@getfirstletter#1}`
172 `\def\@getfirstletter#1{#1\@gobbleword}`
173 `\def\@gobbleword#1\@endword{}`

`\non@float` Now we are ready to define the `\non@float` macro. It has three parameters: TYPE, SIZE and PLACEMENT. `\nf@source` is the source of the float.
174 `\def\non@float#1#2#3{`

```

175 \def\@capttype{#1}%
176 \def\nf@size{#2}%
177 \def\nf@placement{#3}%
The macro \nf@vert@pos is either u or l
178 \lowercase{\xdef\nf@vert@pos{\@getfirstletter#3\@endword}}
179 \global\let\nf@source\@empty
Define the source command inside float
180 \def\source##1{\gdef\nf@source{##1}}
Define the caption producing command:
181 \long\def\@makecaption##1##2{\long\gdef\nf@caption{%
182     {\bfseries\large\color{white}
183     \MakeUppercase{##1}: ##2}}}%
184 \gdef\nf@caption{}%
We calculate the size of the float and skips
185 \nf@width=\columnwidth
186 \nf@height=\dimexpr(\textheight/2-\nf@vert@sep)%
187 \if\nf@vert@pos u\relax
188     \nf@topskip=\z@
189     \nf@bottomskip=\nf@vert@sep
190 \else
191     \nf@topskip=\nf@vert@sep%
192     \nf@bottomskip=\z@
193 \fi
194 \def\tempW{W}%
195 \def\tempT{T}%
196 \def\tempB{B}%
197 \ifx\nf@size\tempW
198     \nf@width=\textwidth
199 \fi
200 \ifx\nf@size\tempT
201     \nf@height=\textheight
202     \nf@topskip=\z@
203     \nf@bottomskip=\z@
204 \fi
205 \ifx\nf@size\tempB
206     \nf@width=\textwidth
207     \nf@height=\textheight
208     \nf@topskip=\z@
209     \nf@bottomskip=\z@
210 \fi
211 \chartheight=
212     \dimexpr(\nf@height-\nf@captionheight-\nf@sourceheight
213     -2\nf@margin-\nf@trianglebase)%
214 \chartwidth=\dimexpr(\nf@width-2\nf@margin-0.5\nf@trianglebase)%
215 \nf@height=\dimexpr(\nf@height+\nf@topskip+\nf@bottomskip)%
Now we construct the main box.
216 \global\setbox\nf@contentsbox

```



```

217 \color@vbox
218 \normalcolor
219 \vbox to \chartheight
220 \bgroup
221 \hsize\chartwidth
222 \@parboxrestore
223 \@floatboxreset
224 }

\endnon@float The actual typesetting
225 \def\endnon@float{\@endfloatbox\par
226 \hsize=\nf@width
227 \setbox\nf@mainbox=\vbox to \nf@height\bgroup
228 \hsize=\chartwidth
229 \vskip\nf@topskip
230 \noindent
231 \begin{picture}(0,0)%
232 \put(0,0){\color{@bgcolor}%
233 \begin{tikzpicture}[baseline=(current bounding box.north)]
234 \fill (0,0) -- (\nf@trianglebase,0) --
235 (0.5\nf@trianglebase,-\nf@trianglebase) -- cycle;
236 \end{tikzpicture}}
237 \end{picture}%
238 \def\@tempa{chart}%
239 \ifx\@tempa\@capytype
240 \begin{picture}(0,0)%
241 \put(0,0){\color{@bgcolor}%
242 \begin{tikzpicture}[baseline=(current bounding box.north)]
243 \draw(0,0) -- (\nf@width,0);
244 \draw (0.5\nf@trianglebase,-2\nf@trianglebase) --
245 (0.5\nf@trianglebase,-\chartheight-2\nf@trianglebase
246 -\nf@margin) --
247 (\nf@width-\pgflinewidth, -\chartheight-2\nf@trianglebase
248 -\nf@margin) -- (\nf@width-\pgflinewidth, 0);
249 \end{tikzpicture}}
250 \end{picture}%
251 \fi
252 {\color{@bgcolor}\color@block{\nf@width}{\nf@captionheight}{.1\p@}}%
253 \hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
254 \vbox to \nf@captionheight\bgroup
255 \nf@caption\vfill
256 \egroup\par\nointerlineskip\vskip\nf@trianglebase
257 \vskip\nf@margin
258 \noindent\hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
259 \box\nf@contentsbox\par\nointerlineskip
260 \vskip\nf@margin
261 \hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
262 \vbox to \nf@sourceheight\bgroup
263 \ifx\nf@source\@empty\else
264 \noindent{\color{@bgcolor}%

```

```

265      \rule{.2em}{.2em}~\rule{.2em}{.2em}~%
266      \rule{.2em}{.2em}~\rule{.2em}{.2em}~%
267      \rule{.2em}{.2em}\par}
268      \noindent Source: \nf@source\par\vfill\fi\egroup
269      \vfill\egroup
270      \edef\nf@currbox{\expandafter\csname nfbox@\nf@size
271      @\nf@placement\endcsname}%
272      \global\setbox\nf@currbox=
273      \vbox{\box\nf@currbox\nointerlineskip\penalty0\box\nf@mainbox}}

\map A standard nonfloat:
274 \newnon@float{map}{lom}{Map}{List of Maps}

\table Another one
275 \newnon@float{table}{lot}{Table}{List of Tables}

\chart And another one
276 \newnon@float{chart}{loc}{Chart}{List of Charts}

```

2.22 Output Routine

This is hairy because output routines are hairy...

We need several insert boxes. Naming convention: the letter for the box size and two letter code for the location. We use `\newbox` instead of `\newinsert` since we do not use associated `\count`, `\dimen` and `\skip` registers.

```

277 \newbox\nfbox@S@ul
278 \newbox\nfbox@S@ur
279 \newbox\nfbox@S@ll
280 \newbox\nfbox@S@lr
281 \newbox\nfbox@S@UL
282 \newbox\nfbox@S@UR
283 \newbox\nfbox@S@LL
284 \newbox\nfbox@S@LR
285 \newbox\nfbox@T@ul
286 \newbox\nfbox@T@ur
287 \newbox\nfbox@T@UL
288 \newbox\nfbox@T@UR
289 \newbox\nfbox@W@ul
290 \newbox\nfbox@W@ll
291 \newbox\nfbox@W@UL
292 \newbox\nfbox@W@LL
293 \newbox\nfbox@B@ul
294 \newbox\nfbox@B@UL

\@tempboxb Standard LATEX has \@tempboxa. We need more...
295 \ifx\@tempboxb\@undefined
296   \newbox\@tempboxb
297 \fi

```

```

\standard@output The standard LATEX output routine is saved as \standard@output. We use it for
one column pages—maybe one even wants a standard float here?
298 \edef\standard@output{\the\output}

\output Right now we use standard output on one column pages and the new one with
two columns
299 \output{\if@twocolumn\the\nf@output\else\standard@output\fi}

\nf@output Here we define our own output routine.
300 \newtoks\nf@output
301 \nf@output {%
    We define the current boxes \curr@nfbox.... Also, uc or lc mean Upper or
    Lower Current column
302 \ifodd\c@page
303 \global\let\curr@nfbox@S@ul\nfbox@S@UL
304 \global\let\curr@nfbox@S@ur\nfbox@S@UR
305 \global\let\curr@nfbox@S@ll\nfbox@S@LL
306 \global\let\curr@nfbox@S@lr\nfbox@S@LR
307 \global\let\curr@nfbox@T@ul\nfbox@T@UL
308 \global\let\curr@nfbox@T@ur\nfbox@T@UR
309 \global\let\curr@nfbox@W@ul\nfbox@W@UL
310 \global\let\curr@nfbox@W@ll\nfbox@W@LL
311 \global\let\curr@nfbox@B@ul\nfbox@B@UL
312 \else
313 \global\let\curr@nfbox@S@ul\nfbox@S@ul
314 \global\let\curr@nfbox@S@ur\nfbox@S@ur
315 \global\let\curr@nfbox@S@ll\nfbox@S@ll
316 \global\let\curr@nfbox@S@lr\nfbox@S@lr
317 \global\let\curr@nfbox@T@ul\nfbox@T@ul
318 \global\let\curr@nfbox@T@ur\nfbox@T@ur
319 \global\let\curr@nfbox@W@ul\nfbox@W@ul
320 \global\let\curr@nfbox@W@ll\nfbox@W@ll
321 \global\let\curr@nfbox@B@ul\nfbox@B@ul
322 \fi
323 \if@firstcolumn
324 \global\let\curr@nfbox@S@uc\curr@nfbox@S@ul
325 \global\let\curr@nfbox@S@lc\curr@nfbox@S@ll
326 \global\let\curr@nfbox@T@uc\curr@nfbox@T@ul
327 \else
328 \global\let\curr@nfbox@S@uc\curr@nfbox@S@ur
329 \global\let\curr@nfbox@S@lc\curr@nfbox@S@lr
330 \global\let\curr@nfbox@T@uc\curr@nfbox@T@ur
331 \fi
332 \let \par \@@par

333 %
334 % There are several possibilities when we start the output routine for
335 % a single column in a two-column layout.
336 % \begin{enumerate}

```

```

337 % \item Wide or big non-floats completely cover the page. In this
338 % case we do not need to create columns, and directly go to the
339 % output.
340 % \item The column is occupied by tall or single nonfloats. We make
341 % a column of nonfloats and send it further.
342 % \item There is room for text on the page, but its height
343 % (\cs{colroom}) is different from the one known to the page builder
344 % (\cs{vsize}). In this case we change \cs{vsize} and return.
345 % \item The room for text is exactly \cs{vsize}. In this case we form
346 % a column and return.
347 % \end{enumerate}
348 % \begin{macrocode}
349 \global\@colht=\textheight
350 \ifdim\ht\curr@nfbox@B@ul>0.5\baselineskip
351 \global\advance\@colht by -\textheight
352 \fi
353 \ifdim\ht\curr@nfbox@W@ul>0.5\baselineskip
354 \global\advance\@colht by -0.5\textheight
355 \fi
356 \ifdim\ht\curr@nfbox@W@ll>0.5\baselineskip
357 \global\advance\@colht by -0.5\textheight
358 \fi
359 \ifdim\@colht < \baselineskip
360 \nf@output@widepage
361 \else
362 \nf@makecol
363 \fi
364 }

```

`\nf@output@widepage` The macro `\nf@output@widepage` outputs a page completely filled by wide pictures.

```

365 \def\nf@output@widepage{%
366 \if@firstcolumn\else
367 \ClassError{faosyb}{Wide or big nonfloats defined too late. Move
368 them up}{I encountered Big or Wide floats when I already made the
369 first column. Please move them up}
370 \fi
371 \ifdim\ht\curr@nfbox@B@ul>0.5\baselineskip
372 \global\setbox\@outputbox\vsplit\curr@nfbox@B@ul to \textheight
373 \else
374 \setbox\@tempboxa\vsplit\curr@nfbox@W@ul to \textheight
375 \setbox\@tempboxb\vsplit\curr@nfbox@W@ll to \textheight
376 \setbox\@outputbox\vbox\bgroup
377 \box\@tempboxa
378 \nointerlineskip
379 \box\@tempboxb
380 \egroup
381 \fi
382 \global\vsize\textheight
383 \global\@colht\textheight

```

```

384 \outputpage
385 }

```

`\nf@makecol` This macro tries to make one column of text. If successful, it puts first column into temporary storage, and outputs the page when or if the second column is ready.

When we start `\nf@makecol`, `\@colht` already reflects possible wide nonfloats. This to get `\@colroom`, we need to take into account only the narrow ones

```

386 \def\nf@makecol{%
387   \global\@colroom\@colht
388   \ifdim\ht\curr@nfbox@T@uc>0.5\baselineskip
389     \global\@colroom=0pt
390   \fi
391   \ifdim\ht\curr@nfbox@S@uc>0.5\baselineskip
392     \global\advance\@colroom by -0.5\textheight
393   \fi
394   \ifdim\ht\curr@nfbox@S@lc>0.5\baselineskip
395     \global\advance\@colroom by -0.5\textheight
396   \fi

```

Now there could be two cases. If `\@colroom` is small, we fill the column with the non-floats only. Otherwise we have a “mixed” column with both text and nonfloats.

```

397   \ifdim\@colroom<0.5\baselineskip
398     \nf@makenfcol
399     \unvbox\@cclv
400   \else
401     \nf@makemixedcol
402   \fi}

```

`\nf@makenfcol` This macro outputs a column with only non-floats. If it is called, we already know that the narrow non-floats would fill the column, so we do not do any additional checks.

```

403 \def\nf@makenfcol{%
404   \ifdim\@colht>0.9\textheight % one tall or two squares
405     \ifdim\ht\curr@nfbox@T@uc>0.5\baselineskip
406       \setbox\@outputbox\vbox\bgroup
407       \boxmaxdepth \@maxdepth
408       \vsplit \curr@nfbox@T@uc to \textheight
409       \egroup
410     \else
411       \setbox\@tempboxa\vbox\bgroup
412       \boxmaxdepth \@maxdepth
413       \vsplit\curr@nfbox@S@uc to 0.5\textheight
414       \egroup
415       \setbox\@tempboxb\vbox\bgroup
416       \boxmaxdepth \@maxdepth
417       \vsplit\curr@nfbox@S@lc to 0.5\textheight
418       \egroup

```

```

419     \setbox\@outputbox\vbox\bgroup
420         \boxmaxdepth \@maxdepth
421         \unvbox\@tempboxa
422         \nointerlineskip
423         \unvbox\@tempboxb
424     \egroup
425 \fi
426 \else % one square
427     \ifdim\ht\curr@nfbox@S@uc>0.49\textheight
428         \setbox\@outputbox\vsplit \curr@nfbox@S@uc to 0.5\textheight
429     \else
430         \setbox\@outputbox\vsplit \curr@nfbox@S@lc to 0.5\textheight
431     \fi
432 \fi
433 \nf@opcol}

```

`\nf@makemixedcol` This macro is used when we have a mix of text with nonfloats (or possibly just text).

We check whether the page builder has the right idea about the text size; if not, we return from the output routine

```

434 \def\nf@makemixedcol{%
435     \ifdim\@colroom=\vsize
436         \nf@makemixedcol@
437     \else
438         \global\vsize=\@colroom
439         \unvbox\@cclv
440     \fi}

```

`\nf@makmixedcol@` And now the real work of `\nf@makemixedcol@`

```

441 \def\nf@makemixedcol@{%
442     \ifvoid\footins
443         \setbox\@outputbox \box\@cclv
444     \else
445         \setbox\@outputbox \vbox {%
446             \boxmaxdepth \@maxdepth
447             \box \@cclv
448             \vskip \skip\footins
449             \color@begingroup
450             \normalcolor
451             \footnoterule
452             \unvbox \footins
453             \color@endgroup
454         }%
455     \fi
456     \ifdim\ht\curr@nfbox@S@uc>0.49\textheight
457         \setbox\@tempboxa\vsplit\curr@nfbox@S@uc to 0.5\textheight
458         \setbox\@outputbox \vbox
459             \bgroup
460             \box\@tempboxa

```

```

461         \nointerlineskip
462         \box\@outputbox
463     \egroup
464 \fi
465 \ifdim\ht\curr@nfbox@S@lc>0.49\textheight
466     \setbox\@tempboxa\vsplit\curr@nfbox@S@lc to 0.5\textheight
467     \setbox\@outputbox \vbox
468         \bgroup
469             \box\@outputbox
470             \nointerlineskip
471             \box\@tempboxa
472         \egroup
473 \fi
474 \nf@opcol}

```

\nf@opcol This is like the standard L^AT_EX \@outputdblcol, but with the treatment of wide nonfloats.

```

475 \def\nf@opcol{%
476     \if@firstcolumn
477         \global\@firstcolumnfalse
478         \global\setbox\@leftcolumn\box\@outputbox
479     \else
480         \global\@firstcolumntrue
481         \ifdim\ht\curr@nfbox@W@ul>0.5\baselineskip
482             \setbox\@tempboxa\vsplit \curr@nfbox@W@ul to 0.5\textheight
483         \else
484             \setbox\@tempboxb\box\@tempboxa
485         \fi
486         \setbox\@outputbox \vbox\bgroup
487             \box\@tempboxa
488             \nointerlineskip
489             \hb@xt@\textwidth {%
490                 \hb@xt@\columnwidth {%
491                     \box\@leftcolumn \hss}%
492                 \hfil
493                 {\normalcolor\vrule \@width\columnseprule}%
494                 \hfil
495                 \hb@xt@\columnwidth {%
496                     \box\@outputbox \hss}%
497             }%
498         \egroup
499         \ifdim\ht\curr@nfbox@W@ll>0.5\baselineskip
500             \setbox\@tempboxa\vsplit \curr@nfbox@W@ll to 0.5\textheight
501             \setbox\@outputbox\vbox\bgroup
502                 \box\@outputpage
503                 \nointerlineskip
504                 \box\@tempboxa
505             \egroup
506         \fi
507     \@outputpage

```

```

508     \global\vsizetextheight
509     \global\colhttextheight
510     \global\colroomtextheight
511     \fi}

\standard@clearpage The usual \clearpage flushes the floats. We keep it in \standard@clearpage
512 \let\standard@clearpage\clearpage

\clearpage Now we can define \clearpage to take care of the mode:
513 \def\clearpage{%
514     \if@twocolumn
515         \nf@clearpage
516     \else
517         \standard@clearpage
518 \fi}

\nf@totalheight The total height of all non-floats
519 \def\nf@totalheight{\dimexpr(
520     \ht\nfbox@S@UL+
521     \ht\nfbox@S@UR+
522     \ht\nfbox@S@LL+
523     \ht\nfbox@S@LR+
524     \ht\nfbox@T@UL+
525     \ht\nfbox@T@UR+
526     \ht\nfbox@W@UL+
527     \ht\nfbox@W@LL+
528     \ht\nfbox@B@UL+
529     \ht\nfbox@S@ul+
530     \ht\nfbox@S@ur+
531     \ht\nfbox@S@ll+
532     \ht\nfbox@S@lr+
533     \ht\nfbox@T@ul+
534     \ht\nfbox@T@ur+
535     \ht\nfbox@W@ul+
536     \ht\nfbox@W@ll+
537     \ht\nfbox@B@ul)}

\nf@clearpage We keep ejecting pages until get rid of nf stuff
538 \def\nf@clearpage{%
539     \ifvmode
540         \ifnum \@dbltopnum =\m@ne
541             \ifdim \pagetotal <\topskip
542                 \hbox{}%
543             \fi
544         \fi
545     \fi
546     \newpage
547     \write\m@ne{}%
548     \vbox{}%

```



```

549 \penalty -\@Mi
550 \ifdim\nf@totalheight>\baselineskip
551 \null\vfill\clearpage\fi
552 }

```

`\clearspread` This is like `\cleardoublepage`, but with the logic inverted:

```

553 \def\clearspread{\clearpage\if@twoside \ifodd\c@page
554 \hbox{}\newpage\if@twocolumn\hbox{}\newpage\fi\fi\fi}

```

We need to clear everything at the end

```

555 \AtEndDocument{\clearpage}

```

References

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Index

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.

Symbols	458, 462, 467,	<code>\AtBeginShipout</code> 111, 129
<code>\%</code> 60	469, 478, 486, 496	<code>\AtBeginShipoutUpperLeft</code>
<code>\@getfirstletter</code> .	<code>\@outputpage</code> 384, 502, 507	..... 130
..... 171, 172	<code>\@parboxrestore</code> ... 222	<code>\AtBeginShipoutUpperLeftForeground</code>
<code>\@par</code> 332	<code>\@pctchar</code> 60, 69	..... 112
<code>\@Mi</code> 549	<code>\@plus</code> ... 87, 88, 89,	<code>\AtEndDocument</code> 555
<code>\@bchar</code> 61, 68, 69	95, 96, 97, 99, 100	
<code>\@bgcolor</code> 3	<code>\@setfontsize</code> ... 86, 94	B
<code>\@capttype</code> 175, 239	<code>\@tableheadcolor</code> ... 3	<code>\baselineskip</code>
<code>\@cclv</code> 399, 439, 443, 447	<code>\@tempa</code> 238, 239	... 350, 353, 356,
<code>\@colht</code> ... 349, 351,	<code>\@tempboxa</code>	359, 371, 388,
354, 357, 359,	... 374, 377, 411,	391, 394, 397,
383, 387, 404, 509	421, 457, 460,	405, 481, 499, 550
<code>\@colroom</code> 387,	466, 471, 482,	<code>\begin</code> 231, 233,
389, 392, 395,	484, 487, 500, 504	240, 242, 336, 348
397, 435, 438, 510	<code>\@tempboxb</code> 295, 375,	<code>\belowdisplayshortskip</code>
<code>\@curr@nfbox@T@uc</code> . 408	379, 415, 423, 484	..... 89, 97
<code>\@dbltopnum</code> 540	<code>\@tempdima</code> ... 114,	<code>\belowdisplayskip</code> .
<code>\@empty</code> 179, 263	116, 117, 118,	..... 90, 102
<code>\@endfloatbox</code> 225	119, 120, 122,	<code>\bfdefault</code> 80
<code>\@endword</code> 173, 178	123, 124, 125,	<code>\bfseries</code> 182
<code>\@firstcolumnfalse</code> . 477	126, 132, 134, 136	<code>\bgroup</code> 220, 227, 254,
<code>\@firstcolumntrue</code> . 480	<code>\@tempdimb</code>	262, 376, 406,
<code>\@floatboxreset</code> ... 223	... 115, 116, 117,	411, 415, 419,
<code>\@getfirstletter</code> ..	119, 120, 121,	459, 468, 486, 501
..... 171, 178	122, 123, 125,	<code>\box</code> 259, 273, 377, 379,
<code>\@gobble</code> 60, 61	126, 133, 135, 136	443, 447, 460,
<code>\@gobbleword</code> .. 172, 173	<code>\@undefined</code> 295	462, 469, 471,
<code>\@issuundefalse</code> .. 20	<code>\@width</code> 493	478, 484, 487,
<code>\@issuomodetrue</code> ... 21	<code>\@xiipt</code> 86	491, 496, 502, 504
<code>\@ixpt</code> 94	<code>\@</code> 61	<code>\boxmaxdepth</code> .. 407,
<code>\@leftcolumn</code> .. 478, 491		412, 416, 420, 446
<code>\@listI</code> 91	A	C
<code>\@listi</code> 91, 98	<code>\abovedisplayshortskip</code>	<code>\c@page</code> 302, 553
<code>\@makecaption</code> 181	..... 88, 96	<code>\caption</code> 5
<code>\@maxdepth</code> ... 407,	<code>\abovedisplayskip</code> .	<code>\captionfamily</code> 3, 83, 84
412, 416, 420, 446	... 87, 90, 95, 102	<code>\chart</code> 276
<code>\@minus</code> 87,	<code>\advance</code> 118, 121, 124,	<code>chart (environment)</code> .. 5
89, 95, 97, 99, 100	134, 135, 351,	<code>\charheight</code> . 6, 153,
<code>\@ouputbox</code> 501	354, 357, 392, 395	211, 219, 245, 247
<code>\@outputbox</code> 372, 376,	<code>\AtBeginDocument</code> ..	<code>\chartwidth</code> 6,
406, 419, 428,	..... 110, 128	152, 214, 221, 228
430, 443, 445,		<code>\ClassError</code> 367

\ClassWarning 2	\CurrentOption	ConceptsAndMethods
\cleardoublepage 6	. . . . . 4, 5, 6, 7, 8, 22	. . . . . 9
\clearpage 6, 512,		freading 9
513, 551, 553, 555		map 5
	D	metadata 8
\clearspread 6, 553	\DeclareOption	MetadataCollection
\color 113, 131, 182,	4, 5, 6, 7, 8, 11,	. . . . . 8
232, 241, 252, 264	12, 17, 18, 21, 22	publication 7
\color@begingroup . 449	\DeclareRobustCommand	table 5
\color@block 252	. . . . . 81, 83	\expandafter
\color@endgroup . . . 453	\DeclareTextFontCommand	. . . . . 60, 61, 159,
\color@vbox 217	. . . . . 82, 84	160, 163, 164,
\columnseprule 493	\def 1, 60,	166, 168, 169, 270
\columnwidth	61, 73, 75, 76,	
. 185, 490, 495	77, 98, 158, 163,	F
ConceptsAndMethods	166, 171, 172,	\familydefault 79
(environment) . . . 9	173, 174, 175,	\faoset 2, 73
\cs 343, 344, 345	176, 177, 180,	\faoyearbook@size@warning
\csname 159,	181, 194, 195,	. . . . . 1
160, 163, 164,	196, 225, 238,	\fi 40, 59,
166, 168, 169, 270	365, 386, 403,	127, 139, 162,
\curr@nfbbox@B@ul 311,	434, 441, 475,	165, 193, 199,
321, 350, 371, 372	513, 519, 538, 553	204, 210, 251,
\curr@nfbbox@S@lcl . .	\dimexpr 186,	268, 297, 299,
. 325, 329, 394,	212, 214, 215,	322, 331, 352,
417, 430, 465, 466	253, 258, 261, 519	355, 358, 363,
\curr@nfbbox@S@ll . .	\Draftfalse 16	370, 381, 390,
. 305, 315, 325	\Drafttrue 17, 18	393, 396, 402,
\curr@nfbbox@S@lrl . .	\draw 243, 244	425, 431, 432,
. 306, 316, 329	E	440, 455, 464,
\curr@nfbbox@S@uc 324,	\edef . . . 63, 160, 270, 298	473, 485, 506,
328, 391, 413,	\egroup . . . 256, 268,	511, 518, 543,
427, 428, 456, 457	269, 380, 409,	544, 545, 551, 554
\curr@nfbbox@S@ul . .	414, 418, 424,	\fill 234
. 303, 313, 324	463, 472, 498, 505	\fontfamily 81, 83
\curr@nfbbox@S@ur . .	\else 50, 190,	\fontsize 138
. 304, 314, 328	263, 299, 312,	\footins . . . 442, 448, 452
\curr@nfbbox@T@uc . .	327, 361, 366,	\footnoterule 451
. 326, 330, 388, 405	373, 400, 410,	freading (environ-
\curr@nfbbox@T@ul . .	426, 429, 437,	ment) 9
. 307, 317, 326	444, 479, 483, 516	
\curr@nfbbox@T@ur . .	\end 236,	G
. 308, 318, 330	237, 249, 250, 347	\gdef 180, 181, 184
\curr@nfbbox@W@ll . .	\endcsname 159, 160,	\geometry 104
. 310, 320,	163, 164, 166,	\global . . . 179, 216,
356, 375, 499, 500	167, 168, 169, 271	272, 303, 304,
\curr@nfbbox@W@ul . .	\endnonfloat . 170, 225	305, 306, 307,
. 309, 319,	\EndPartIntro 4	308, 309, 310,
353, 374, 481, 482	environments:	311, 313, 314,
\currenticon 3	chart 5	315, 316, 317,

318, 319, 320,	435, 456, 465,	N
321, 324, 325,	481, 499, 541, 550	<code>\narrowfamily</code> . 3, <u>81</u> , <u>82</u>
326, 328, 329,	<code>\ifDraft</code> <u>15</u> , <u>128</u>	<code>\newbox</code> . . . 156, 157,
330, 349, 351,	<code>\ifnum</code> 540	277, 278, 279,
354, 357, 372,	<code>\ifodd</code> 302, 553	280, 281, 282,
382, 383, 387,	<code>\ifprint</code> . . 2, <u>9</u> , 41, 110	283, 284, 285,
389, 392, 395,	<code>\ifvmode</code> 539	286, 287, 288,
438, 477, 478,	<code>\ifvoid</code> 442	289, 290, 291,
480, 508, 509, 510	<code>\ifx</code> 159, 164, 197, 200,	292, 293, 294, 296
<code>\Gm@layoutheight</code> . .	205, 239, 263, 295	<code>\newcount</code> 154
. <u>121</u> , <u>135</u>	<code>\immediate</code> 62	<code>\newcounter</code> 165
<code>\Gm@layouthoffset</code> .	<code>\includegraphics</code> . . . 2	<code>\newenvironment</code> . . . 170
. <u>114</u> , <u>132</u>	<code>\item</code> . 337, 340, 342, 345	<code>\newif</code> 9, 15, 19
<code>\Gm@layoutvoffset</code> .	<code>\itemsep</code> 101	<code>\newlength</code> 140, 142,
. <u>115</u> , <u>133</u>		143, 144, 146,
<code>\Gm@layoutwidth</code> . . .	L	148, 150, 152, 153
. <u>118</u> , <u>124</u> , <u>134</u>	<code>\large</code> 182	<code>\newnon@float</code>
H	<code>\leftmargin</code> 98	. . . <u>158</u> , 274, 275, 276
<code>\hb@xt@</code> . . . 489, 490, 495	<code>\leftmargini</code> 98	<code>\newpage</code> 546, 554
<code>\hbox</code> 542, 554	<code>\let</code> 91, 168,	<code>\newtoks</code> 300
<code>\hfil</code> 492, 494	169, 179, 303,	<code>\nf@bottomskip</code>
<code>\hline</code> 7	304, 305, 306,	. . . . . <u>154</u> , 189,
<code>\hsize</code> 221, 226, 228	307, 308, 309,	192, 203, 209, 215
<code>\hskip</code> 253, 258, 261	310, 311, 313,	<code>\nf@caption</code> 181, 184, 255
<code>\hss</code> 491, 496	314, 315, 316,	<code>\nf@captionheight</code> .
<code>\ht</code> . . . 350, 353, 356,	317, 318, 319,	. . . <u>144</u> , 212, 252, 254
371, 388, 391,	320, 321, 324,	<code>\nf@clearpage</code> . 515, <u>538</u>
394, 405, 427,	325, 326, 328,	<code>\nf@contentsbox</code> . . .
456, 465, 481,	329, 330, 332, 512	. . . . . <u>156</u> , 216, 259
499, 520, 521,	<code>\line</code> 116,	<code>\nf@currbox</code> 270, 272, 273
522, 523, 524,	117, 119, 120,	<code>\nf@height</code>
525, 526, 527,	122, 123, 125, 126	. . . <u>143</u> , 186, 201,
528, 529, 530,	<code>\listofcharts</code> 6	207, 212, 215, 227
531, 532, 533,	<code>\listofmaps</code> 6	<code>\nf@mainbox</code> <u>157</u> , 227, 273
534, 535, 536, 537	<code>\listoftables</code> 6	<code>\nf@makecol</code> . . . 362, <u>386</u>
<code>\hypersetup</code> 42, 51	<code>\LoadClass</code> 24	<code>\nf@makemixedcol</code> . .
I	<code>\long</code> 1, 181	. . . . . 401, <u>434</u>
<code>\if</code> 187	<code>\lowercase</code> 178	<code>\nf@makemixedcol@</code> .
<code>\if@firstcolumn</code> . . .	M	. . . . . 436, 441
. 323, 366, 476	<code>\m@ne</code> 540, 547	<code>\nf@makenfcol</code> . 398, <u>403</u>
<code>\if@issuemode</code> . . . <u>19</u> , 38	<code>\MakeUppercase</code> 183	<code>\nf@makmixedcol@</code> . . <u>441</u>
<code>\if@twocolumn</code>	<code>\map</code> <u>274</u>	<code>\nf@margin</code>
. 299, 514, 554	<code>map</code> (environment) 5	. . . <u>148</u> , 213, 214,
<code>\if@twoside</code> 553	<code>metadata</code> (environ-	246, 248, 253,
<code>\ifdim</code> 350, 353, 356,	ment) 8	257, 258, 260, 261
359, 371, 388,	<code>MetadataCollection</code>	<code>\nf@opcol</code> . 433, 474, <u>475</u>
391, 394, 397,	(environment) . . . 8	<code>\nf@output</code> . . . 299, <u>300</u>
404, 405, 427,	<code>\multiply</code> 161	<code>\nf@output@widedpage</code>
		. . . . . 360, <u>365</u>
		<code>\nf@placement</code> . 177, 271

<code>\nf@size</code>	176, 197, 200, 205, 270
<code>\nf@source</code> . . . . .	. 179, 180, 263, 268
<code>\nf@sourceheight</code> . .	. . . . . 146, 212, 262
<code>\nf@topskip</code> . . . . .	. 154, 188, 191, 202, 208, 215, 229
<code>\nf@totalheight</code> 519,	550
<code>\nf@trianglebase</code> . .	. . . . . 150, 213, 214, 234, 235, 244, 245, 247, 253, 256, 258, 261
<code>\nf@vert@pos</code> . .	178, 187
<code>\nf@vert@sep</code> . . . . .	. 140, 186, 189, 191
<code>\nf@width</code> . . . . .	. 142, 185, 198, 206, 214, 226, 243, 247, 248, 252
<code>\nfbox@B@UL</code> 294, 311,	528
<code>\nfbox@B@ul</code> 293, 321,	537
<code>\nfbox@S@LL</code> 283, 305,	522
<code>\nfbox@S@ll</code> 279, 315,	531
<code>\nfbox@S@LR</code> 284, 306,	523
<code>\nfbox@S@lr</code> 280, 316,	532
<code>\nfbox@S@UL</code> 281, 303,	520
<code>\nfbox@S@ul</code> 277, 313,	529
<code>\nfbox@S@UR</code> 282, 304,	521
<code>\nfbox@S@ur</code> 278, 314,	530
<code>\nfbox@T@UL</code> 287, 307,	524
<code>\nfbox@T@ul</code> 285, 317,	533
<code>\nfbox@T@UR</code> 288, 308,	525
<code>\nfbox@T@ur</code> 286, 318,	534
<code>\nfbox@W@LL</code> 292, 310,	527
<code>\nfbox@W@ll</code> 290, 320,	536
<code>\nfbox@W@UL</code> 291, 309,	526
<code>\nfbox@W@ul</code> 289, 319,	535
<code>\noindent</code> . . . . .	. 230, 258, 264, 268
<code>\nointerlineskip</code> . .	. . . . . 256, 259, 273, 378, 422, 461, 470, 488, 503
<code>\non@float</code> . . .	170, 174
<code>\nonfloat@type</code> . . . .	. . . . . 154, 160, 161
<code>\normalcolor</code> . . . . .	. . . . . 218, 450, 493
<code>\normalsize</code>	85
<code>\null</code>	551
O	
<code>\OBJ@CVR</code>	63, 70
<code>\output</code>	298, 299
<code>\owner</code>	8
P	
<code>\p@</code> 87, 88, 89, 95, 96,	97, 99, 100, 109, 116, 117, 119, 120, 122, 123, 125, 126, 145, 147, 149, 151, 252
<code>\pagetotal</code>	541
<code>\par</code>	225, 256, 259, 267, 268, 332
<code>\parindent</code>	108
<code>\parsep</code>	100, 101
<code>\parskip</code>	108
<code>\part</code>	3
<code>\PassOptionsToClass</code>	22
<code>\PassOptionsToPackage</code>	. . . . . 13
<code>\pCycle</code>	7
<code>\pDescription</code>	7
<code>\pdfcatalog</code>	64
<code>\pdflastobj</code>	63
<code>\pdfobj</code>	62
<code>\pEdition</code>	7
<code>\penalty</code>	273, 549
<code>\pgflinewidth</code> .	247, 248
<code>\printfalse</code>	10, 11
<code>\printtrue</code>	12
<code>\ProcessOptions</code> . . .	23
<code>\PSSans@scale</code>	75
<code>\PSSansCaption@scale</code>	77
<code>\PSSansNarrow@scale</code>	76
<code>publication (environ-</code>	<code>ment)</code> 7
<code>\put</code> 116, 117, 119, 120,	122, 123, 125, 126, 136, 232, 241
<code>\pWeb</code>	7
R	
<code>\refMetadata</code>	8
<code>\relax</code>	23, 155, 159, 161, 164, 168, 169, 187
<code>\renewcommand</code> . . . .	. 78, 79, 80, 85, 93
<code>\RequirePackage</code> 25,	26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 74
<code>\rotatebox</code>	137
<code>\rule</code>	265, 266, 267
S	
<code>\savegeometry</code>	107
<code>\section</code>	3
<code>\selectcolor</code>	3
<code>\selectfont</code> .	81, 83, 138
<code>\selecticon</code>	3
<code>\setbox</code> 216, 227, 272,	372, 374, 375, 376, 406, 411, 415, 419, 428, 430, 443, 445, 457, 458, 466, 467, 478, 482, 484, 486, 500, 501
<code>\setkeys</code>	73
<code>\setlength</code> . . . . .	. 108, 109, 141, 145, 147, 149, 151
<code>\sfdefault</code>	78, 79
<code>\skip</code>	448
<code>\small</code>	93
<code>\source</code>	6, 8, 180
<code>\space</code>	69, 70
<code>\standard@clearpage</code>	. . . . . 512, 517
<code>\standard@output</code> . .	. . . . . 298, 299
<code>\string</code>	60, 61
<code>\subsection</code>	3
T	
<code>\table</code>	275
<code>table (environment)</code> . .	5
<code>\tempB</code>	196, 205
<code>\tempT</code>	195, 200
<code>\tempW</code>	194, 197
<code>\textcaption</code>	3, 84

<code>\textheight</code>	186, 201, 207, 349, 351, 354, 357, 372, 374, 375, 382, 383, 392, 395, 404, 408, 413, 417, 427, 428, 430, 456, 457, 465, 466, 482, 500, 508, 509, 510	U	256, 257, 260, 448
<code>\textnarrow</code>	..... 3, <u>82</u>	<code>\unvbox</code>	..... 399, 421, 423, 439, 452
<code>\textsubscript</code>	..... 9	<code>\urlstyle</code>	..... 103
<code>\textwidth</code>	198, 206, 489	<code>\usetikzlibrary</code>	... 28
<code>\the</code>	... 63, 160, 298, 299	V	
<code>\topsep</code>	..... 99	<code>\vbox</code>	. 219, 227, 254, 262, 273, 376, 406, 411, 415, 419, 445, 458, 467, 486, 501, 548
<code>\topskip</code>	..... 541	<code>\vfill</code>	255, 268, 269, 551
		<code>\vrule</code>	..... 493
		<code>\vsize</code>	382, 435, 438, 508
		<code>\vskip</code>	..... 229,
		W	
		<code>\write</code>	..... 547
		X	
		<code>\xdef</code>	..... 178
		Z	
		<code>\z@</code>	..... 88, 96, 108, 188, 192, 202, 203, 208, 209