New LaTeX 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 LaTeX packages:

1. Run latex on `faosyb.ins`. This will produce the LaTeX class `faosyb.cls`.
2. Put the file `faosyb.cls` to the place where LaTeX can find it (see [2] or the documentation for your TeX system).
3. Update the database of file names. Again, see [2] or the documentation for your TeX 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` 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. Either `web` or `print` option must be chosen: there is no default.

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 LaTeX 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 facilty 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 LaTeX, 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.

One of the important parameters is `year`. While the package at this time does not provide facilities for the title pages, it needs to know the year for the proper typesetting of footers. The command

```
\faoset{year=2013}
```

is used to provide this information.

2.3 Fonts

`\narrowfamily` `\textnarrow` `\captionfamily` `\textcaption`

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 `\narrowfamily` and `\captionfamily` or by the commands `\textnarrow{`⟨*text*⟩`}` and `\textcaption{`⟨*text*⟩`}` following the usual LaTeX 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}}
```

The choice of `\narrowfamily` is automatically done by the `tablepages` environment.

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 2.7). Normally it is the current `@bgcolor` color, but it can be set to any required value.

`\selecticon` `\selectcolor`

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` `@tableheadcolor` `\currenticon`

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.

Foreword and other parts in the front matter of the book do not use icons. Instead they have geometric symbols. The key `symbol` can have the values `rigthttriangle`, `square`, `rightsemicircle` and sets the symbol for such part.

`\lettrine`

Front matter uses dropped capitals (lettrines) in the beginning of the sections. The command `\lettrine{W}{ord}` can help in this case.

2.5 Sectioning

`\part` `\section` `\subsection`

The main division of the text are `\part`s. The command `\part{`⟨*title*⟩`}` is used for numbered parts, while the command `\part*{`⟨*title*⟩`}` is used for unnumbered parts. The next division are `\section`s and `\subsection`s. They are never numbered. The style does not use `\chapter`s.

`\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 Headers and Footers

`\evenfootmark` `\oddfootmark`

Normally headers and footers are defined by the text. However, there is a possibility to change some of them. Commands `\evenfootmark{`⟨*text*⟩`}` and `\oddfootmark` set the right and left footers for even and odd pages correspondingly (the remaining footers are used by the page numbers). By default they are defined as

```
\evenfootmark{\textbf{FAO} Statistical Yearbook \textbf{\fao@year}}
\oddfootmark{\rightmark}
```

The last command sets the footer to be the current section name (or part name before the first section), but the user can change this.

2.7 Floats

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

In standard LaTeX floats "float": they can be placed by the algorithm anywhere. The previous version made them "sticky": the author explicitly tells TeX where floats should be placed. However, to do so the class required the author to make explicity page breaks, which was not very convenient.

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

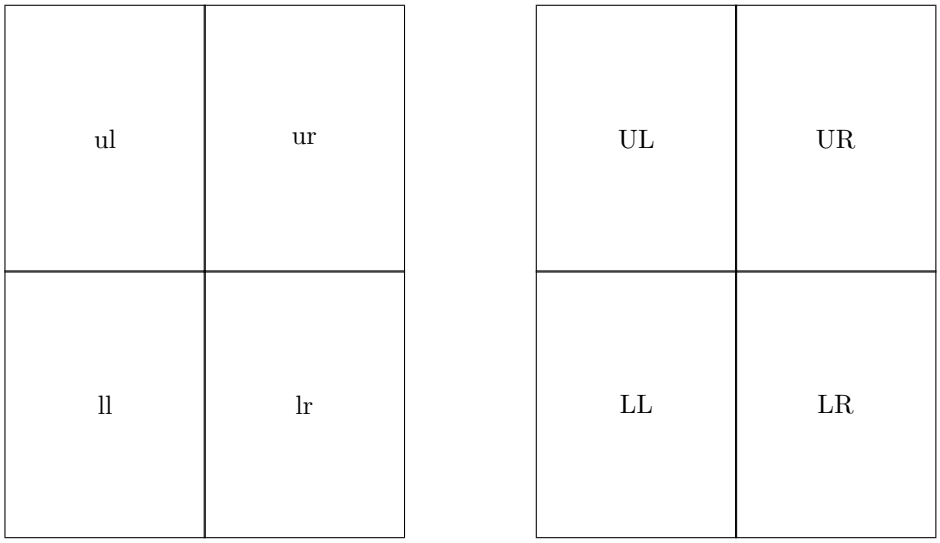

Figure 1: A Spread

1. Like in standard LaTeX, authors do not normally provide page breaks—TeX 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.

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` `map` `table`

There are three types of floats defined by the class:

chart plots and other charts,

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` `\chartheight`

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

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

\source Inside a a `chart`, `map` or `table` the macro `\source{`⟨*source*⟩`}` gives the source of the information, for example,

```
\Source{FAO, Statistical Division [FAOSTAT]}
```

\listoftables \listofcharts \listofmaps The standard LaTeX has the command `\listoftables` to produce the list of tables in the document. Our class retains this command and produces two additional commands `\listofcharts` and `\listofmaps` with the obvious meaning.

2.8 Page Breaks

\clearpage \cleardoublepage \clearspread Standard LaTeX has commands for immediate page break (e.g. `\clearpage`) and for switching to the next recto page, possibly ejecting the next verso page (`\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).

2.9 Tables

tablepages The tables at the end of a part should be typeset inside `tablepages` environment. The environment switches to the one column setup, decreases the margins and changes the font to `\narrowfamily`.

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{`⟨*specificaiton*⟩`}` 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 defalut a black interval, to make it the same color as the header background, use `>{\arrayrulecolor{@tableheadcolor}}|`.

The design of the tables in the current edition requires several important changes to the usual tables:

1. There should be no `\toprule` at the beginning of a table.
2. The first row header of a table must be empty and white; this is done by the command `\cellcolor{white}` in this cell.
3. `\hhline` separating rows in the header must not go through this first white cell; this is done by the `~` specificaton.

2.10 Publication Descriptions

publication

FAO yearboook 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.

publicationparskip
publicationskip

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}
```

2.11 Metadata

\metadatasection

The sources of the data are collected in special sections called "Metadata section". Each section is introduced by the command `\metadatasection{`⟨*title*⟩`}`, for example,

```
\metdatasection{Indicators}
```

metadata

The sources themselves are collected in the `metadata` environments. Each environment has one obligatory argument—the name of the source. It may include the following commands:

\key

`\key{`⟨***key***⟩`}` sets the corresponding key which is used for labeling the metadata

\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:

```
\metadatasection{Indicators}
\begin{metadata}{Agricultural population}
  \key{agripop}%
   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}
```

`\refMetadata` The metadata is referenced by the command `\refMetdata{`⟨*key*⟩`}`, for example

```
\refMetadata{agripop}
```

This command will not be typeset, but makes creates a backreference to the corresponding chart from the indicator section.

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

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 LaTeX defines `\textsuperscript`. The class adds a similar `\textsubscript` command.

3 Implementation

3.1 Options

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

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

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

```
\newif\ifprint
\printfalse
\DeclareOption{web}{\printfalse
  \PassOptionsToPackage{paper=a4paper}{geometry}}
\DeclareOption{print}{\printtrue
  \PassOptionsToPackage{papersize={230mm,317mm},
    layouthoffset=1cm,layoutvoffset=1cm}{geometry}}
```

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

```
\newif\ifDraft
\Draftfalse
\DeclareOption{Draft}{\Drafttrue}
\DeclareOption{draft}{\Drafttrue}
```

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

```
\newif\if@issuumode
\@issuumodefalse
\DeclareOption{issuu}{\@issuumodetrue}
```

All other options are just sent to the main class:

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

3.2 Loading Class and Packages

We start with the base class and some packages

```
\LoadClass[10pt,twoside,twocolumn]{report}
\RequirePackage{graphicx,xkeyval}
\RequirePackage[table,cmyk]{xcolor}
\RequirePackage{tikz,dcolumn}
\RequirePackage{geometry}
\usetikzlibrary{calc}
\RequirePackage{fancyhdr}
\RequirePackage{lscape,longtable,siunitx,booktabs}
```

```
\RequirePackage{multicol,atbegshi,picture,hhline,afterpage}
\RequirePackage[T1]{fontenc}
\RequirePackage[utf8x]{inputenc}
\RequirePackage{pdfpages}
\RequirePackage[authoryear]{natbib}
\RequirePackage[breaklinks]{hyperref}
\RequirePackage{bookmark}
\RequirePackage{adjmulticol,lettrine}
\if@issuumode
\RequirePackage{issuulinks}
\fi
```

Options for the hyperef package are set as follows:

```
\ifprint
\hypersetup{breaklinks,colorlinks=false,pdfborder=0 0 0,
  pdfauthor={FAO},
  pdfsubject={Statistical Yearbook of the Food And Agricultural Organization for the United Na
  pdftitle={Statistical Yearbook of the Food And Agricultural Organization for the United Nati
  pdfkeywords={FAO, Food Security, Undernourishment, Sustainable agriculture},
  pdfpagelayout=TwoColumnLeft,
  pdfnewwindow=true
}
\else
\hypersetup{breaklinks,colorlinks=false,pdfborder=0 0 0,
  pdfauthor={FAO},
  pdfsubject={Statistical Yearbook of the Food And Agricultural Organization for the United Na
  pdftitle={Statistical Yearbook of the Food And Agricultural Organization for the United Nati
  pdfkeywords={FAO, Food Security, Undernourishment, Sustainable agriculture},
  pdfpagelayout=TwoColumnRight,
  pdfnewwindow=true
}
\fi
```

3.3 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).

```
\def\@pctchar{\expandafter\@gobble\string\%}
\def\@bchar{\expandafter\@gobble\string\\}
\immediate\pdfobj stream attr{/N 4}  file{FOGRA39L.icc}
\edef\OBJ@CVR{\the\pdflastobj}
\pdfcatalog{/OutputIntents [ <<
  /Type/OutputIntent
  /S/GTS_PDFX
  /OutputCondition (FOGRA39)
  /OutputConditionIdentifier (FOGRA39 \@bchar(ISO Coated v2
   300\@pctchar\space \@bchar(ECI\@bchar)\@bchar))
  /DestOutputProfile \OBJ@CVR\space 0 R
  /RegistryName(http://www.color.org)
 >> ]}
```

\LettrineFontHook We want the drop caps to have `@bgcolor`

```
\renewcommand\LettrineFontHook{\color{@bgcolor}}
```

\DefaultFindent The distance between the dropped capital and the text

```
\setlength\DefaultFindent{2pt}
```

3.4 Key-Value Interface

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

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

One of the important keys is `year`

```
\define@key{fao}{year}{\gdef\fao@year{#1}}
\faoset{year=20XX}
```

3.5 Fonts

We use arev for mathematics:

```
\RequirePackage{arevmath}
```

For body text we use PT Sans:

```
\def\PTSans@scale{0.95}
\def\PTSansNarrow@scale{0.95}
\def\PTSansCaption@scale{0.95}
\renewcommand{\sfdefault}{PTSans-TLF}
\renewcommand{\familydefault}{\sfdefault}
\renewcommand{\bfdefault}{b}
```

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

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

\textnarrow And the matching `\textnarrow` command:

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

\captionfamily Same with `\captionfamily`:

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

\textcaption And the matching `\textcaption` command:

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

\normalsize The basic size is 9.6pt:

```
\renewcommand\normalsize{%
   \@setfontsize\normalsize{9.6pt}{\@xiipt}%
   \abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
   \abovedisplayshortskip \z@ \@plus3\p@
   \belowdisplayshortskip 6\p@ \@plus3\p@ \@minus3\p@
   \belowdisplayskip \abovedisplayskip
   \let\@listi\@listI}
\normalsize
```

\small This is the small size:

```
\renewcommand\small{%
   \@setfontsize\small\@ixpt{10}%
   \abovedisplayskip 8.5\p@ \@plus3\p@ \@minus4\p@
   \abovedisplayshortskip \z@ \@plus2\p@
   \belowdisplayshortskip 4\p@ \@plus2\p@ \@minus2\p@
   \def\@listi{\leftmargin\leftmargini
               \topsep 4\p@ \@plus2\p@ \@minus2\p@
               \parsep 2\p@ \@plus\p@ \@minus\p@
               \itemsep \parsep}%
   \belowdisplayskip \abovedisplayskip}
```

We use `rm` style of URL:

```
\urlstyle{sf}
```

3.6 Margins and Paragraphing

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

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

We use a4paper.

```
\geometry{layout=a4paper,
    left=5cm,right=3.5cm,bottom=2cm,top=76mm,
    footskip=9mm, head=30mm, headsep=3mm,
    columnsep=6mm, twoside}%
\savegeometry{frontmatter}
\geometry{layout=a4paper,
  left=2cm,right=2cm,bottom=2cm,top=2.3cm,
  footskip=9mm, head=30mm, headsep=3mm,
  columnsep=6mm, twoside}%
\savegeometry{standard}
```

3.7 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

```
\AtBeginDocument{\ifprint
  \AtBeginShipout{%
    \AtBeginShipoutUpperLeftForeground{%
      \color{black}%
      \@tempdima=\Gm@layouthoffset
      \@tempdimb=\Gm@layoutvoffset
```

```
      \put(\@tempdima,-\@tempdimb+6\p@){\line(0,1){50}}%
      \put(\@tempdima-6\p@,-\@tempdimb){\line(-1,0){50}}%
      \advance\@tempdima by \Gm@layoutwidth
      \put(\@tempdima,-\@tempdimb+6\p@){\line(0,1){50}}%
      \put(\@tempdima+6\p@,-\@tempdimb){\line(1,0){50}}%
      \advance\@tempdimb by \Gm@layoutheight
      \put(\@tempdima,-\@tempdimb-6\p@){\line(0,-1){50}}%
      \put(\@tempdima+6\p@,-\@tempdimb){\line(1,0){50}}%
      \advance\@tempdima by -\Gm@layoutwidth
      \put(\@tempdima-6\p@,-\@tempdimb){\line(-1,0){50}}%
      \put(\@tempdima,-\@tempdimb-6\p@){\line(0,-1){50}}%
    }}\fi}
```

In draft mode we put the word 'DRAFT' across the page:

```
\AtBeginDocument{\ifDraft
  \AtBeginShipout{%
    \AtBeginShipoutUpperLeft{%
      \color{black!25}%
      \@tempdima=\Gm@layouthoffset
      \@tempdimb=\Gm@layoutvoffset
      \advance\@tempdima by 0.2\Gm@layoutwidth
      \advance\@tempdimb by 0.7\Gm@layoutheight
      \put(\@tempdima,-\@tempdimb){%
        \rotatebox{45}{%
          \fontsize{6cm}{6cm}\selectfont
          DRAFT}}}}\fi}
```

3.8 Setting Colors and Icons

`\fao@color@string` This is the command that remembers the present color for TOC

```
\def\fao@color@string{0,0,0}
```

`@bgcolor@next` We store the next background color in `@bgcolor@next`. We store the next heading background in `@tableheadcolor@next`.

`\setbgcolor` The command `\setbgcolor` selects the next background color:

```
\def\setbgcolor#1{\colorlet{@bgcolor@next}[cmyk]{#1}%
  \@for\curr@ext:=\@toc@ext@list\do{%
    \addtocontents{\curr@ext}{\string\colorlet{@bgcolor}[cmyk]{#1}}}%
  \addtocontents{toc}{\string\colorlet{@bgcolor}[cmyk]{#1}}%
  \gdef\fao@color@string{#1}}
\colorlet{@bgcolor@next}[cmyk]{white}
```

The key-value interface for the same command:

```
\define@key{fao}{bgcolor}{\setbgcolor{#1}}
```

And for separate setting of `@tableheadcolor`

```
\define@key{fao}{tableheadcolor}{\colorlet{@tableheadcolor}[cmyk]{#1}}
```

`@bgcolor` The current color is in the macro `@bgcolor`.

`@tableheadcolor` `\selectcolor` This command makes the actual color change:

```
\def\selectcolor{\colorlet{@bgcolor}{@bgcolor@next}%
  \colorlet{@tableheadcolor}{@bgcolor}}
\selectcolor
```

`@tablebg` The color for table pages

```
\define@key{fao}{tablebg}{\colorlet{@tablebg}[cmyk]{#1}}
```

`\seticon` Setting the next icon for the part

```
\def\seticon#1{\gdef\next@icon{#1}}
\define@key{fao}{icon}{\seticon{#1}}
```

`\selecticon` `\currenticon` The actual icon change

```
\def\selecticon{\gdef\currenticon{\next@icon}}
\def\next@icon{}
```

`\newicon` Define an icon `#2` for the part `#1`

```
\def\newicon#1#2{\expandafter\gdef\csname @icon@#1\endcsname{#2}}
```

`\colored@icon` The icon for us is just a mask. This will create a colored icon using background `@bgcolor`

```
\newcommand\colored@icon[2][]{\bgroup\fboxsep=-1pt%
  \fcolorbox{white}{@bgcolor}{\includegraphics[#1]{#2}}\egroup}
```

`\colored@icon@fg` The icon for us is just a mask. This will create a colored icon using background `@bgcolor!#3`

```
\newcommand\colored@icon@fg[3][]{\bgroup\fboxsep=-1\p@%
  \fcolorbox{white}{@bgcolor!#3}{\includegraphics[#1]{#2}}\egroup}
```

3.9 Page Styles

`\evenfootmark` The mark on even pages

```
\def\evenfootmark#1{\gdef\@evenfootmark{#1}}
\evenfootmark{\textbf{FAO} Statistical Yearbook \textbf{\fao@year}}
```

`\oddfootmark` The mark on odd pages

```
\def\oddfootmark#1{\gdef\@oddfootmark{#1}}
\oddfootmark{\rightmark}
```

`frontmatterpagestyle` This is our page style for front matter

```
\fancypagestyle{frontmatterpagestyle}{%
  \fancyhf{}%
  \fancyhfoffset[LR]{1.5cm}%
  \renewcommand\headrulewidth{\z@}%
  \fancyfoot[RO,LE]{%
    \bgroup
    \setlength\fboxsep{10\p@}%
    \raisebox{-\height}{\fcolorbox{white}{white}{\thepage}}%
```

```
  \egroup}%
}
%
% \end{macro}
% \begin{macro}{spartpagestyle}
% \changes{v1.4}{2013/12/17}{Introduced macro}
%   This is our  page style for front matter
%    \begin{macrocode}
\fancypagestyle{spartpagestyle}{%
  \fancyhf{}%
  \fancyhfoffset[LR]{3cm}%
  \renewcommand\headrulewidth{\z@}%
  \fancyfoot[RO,LE]{%
    \bgroup
    \setlength\fboxsep{10\p@}%
    \raisebox{-\height}{\fcolorbox{white}{white}{\thepage}}%
  \egroup}%
}
%
% \end{macro}
%
% \begin{macro}{standardpagestyle}
% \changes{v1.3}{2013/12/14}{Changed position of footers}
% \changes{v1.4}{2013/12/17}{Increased sizes}
%   This is our main page style
%    \begin{macrocode}
\fancypagestyle{standardpagestyle}{%
  \fancyhf{}%
  \fancyhfoffset[LR]{2.22cm}%
  \renewcommand\headrulewidth{\z@}%
  \fancyhead[LE]{\hspace*{25\p@}\color{@bgcolor}\captionfamily
    \Huge\strut\ifnum\thepart>0\relax
    \thepart\fi\normalsize\dotfill}%
  \fancyhead[LO]{\hspace*{25\p@}\color{@bgcolor}\normalsize\dotfill
    \captionfamily\Huge\strut
    \leftmark\expandafter\ifx\csname @icon@\thepart\endcsname\relax\else\space
      \raisebox{-0.25\totalheight}{%
        \colored@icon[width=1.2cm]{\csname
          @icon@\thepart\endcsname}}\fi
      \hspace*{25\p@}}%
  \fancyfoot[LE]{%
    \bgroup
    \setlength\fboxsep{10\p@}%
    \color{@bgcolor}%
    \raisebox{-\height}{\fcolorbox{@bgcolor}{@bgcolor}{\color{white}\thepage}}%
    \normalsize\dotfill
    \raisebox{-\height}{\@evenfootmark\hspace*{25\p@}}%
  \egroup}%
  \fancyfoot[LO]{%
    \bgroup
```

```
    \setlength\fboxsep{10\p@}%
    \color{@bgcolor}%
    \raisebox{-\height}{\hspace*{25\p@}\@oddfootmark}%
    \normalsize\dotfill
    \raisebox{-\height}{\fcolorbox{@bgcolor}{@bgcolor}{\color{white}\thepage}}%
  \egroup}%
}
\pagestyle{standardpagestyle}
```

`\@partpagerpicture` A picture in the part page. `\@part` defines it to the combination of the current icons

```
\def\@partpagepicture{}
```

`partpagestyle` The page style for the parts introduction

```
\fancypagestyle{partpagestyle}{%
  \fancyhf{}%
  \fancyhead[L]{%
    \begin{picture}(0,0)
      \@partpagepicture
      \put(-7,63){%
        \raisebox{-\height}{\begin{tikzpicture}
          \fill[color=@bgcolor,opacity=.1]
          (0,0) rectangle ($(\textwidth,\textheight)+(5cm,5cm)$);
        \end{tikzpicture}}}
    \end{picture}}
  \fancyhfoffset[LR]{2.22cm}%
  \renewcommand\headrulewidth{\z@}%
  \fancyfoot[LE]{%
    \bgroup
    \setlength\fboxsep{10\p@}%
    \color{@bgcolor}%
    \raisebox{-\height}{\fcolorbox{@bgcolor}{@bgcolor}{\color{white}\thepage}}%
    \normalsize\dotfill
    \raisebox{-\height}{\@evenfootmark\hspace{20\p@}}%
  \egroup}%
  \fancyfoot[LO]{%
    \bgroup
    \setlength\fboxsep{10\p@}%
    \color{@bgcolor}%
    \raisebox{-\height}{\hspace*{25\p@}\@oddfootmark}%
    \normalsize\dotfill
    \raisebox{-\height}{\fcolorbox{@bgcolor}{@bgcolor}{\color{white}\thepage}}%
  \egroup}%
}
```

`\fao@partblobtop` `\fao@partblobbottom` Some pages have "part blobs": colored blobs on the specific positions of the page. These macros set the top and the bottom of the blob corresponding to the part set in the second parameter:

```
\def\fao@partblobtop#1#2{\expandafter\gdef\csname fao@blobstart#1\endcsname{#2}}
\def\fao@partblobbottom#1#2{\expandafter\gdef\csname fao@blobend#1\endcsname{#2}}
```

3.10 Nonfloats

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

`\@toc@ext@list` Added macro Comma-separated list of extensions for toc-like files:

```
\gdef\@toc@ext@list{toc}
```

`\nf@vert@sep` Vertical separation between the floats

```
\newlength\nf@vert@sep
\setlength\nf@vert@sep{10mm}
```

`\nf@width` The width of the nonfloat

```
\newlength\nf@width
```

`\nf@height` The height of the nonfloat

```
\newlength\nf@height
```

`\nf@captionheight` The height reserved for the caption

```
\newlength\nf@captionheight
\setlength\nf@captionheight{11mm}
```

`\nf@sourceheight` The height reserved for the source lines

```
\newlength\nf@sourceheight
\setlength\nf@sourceheight{2\baselineskip}
```

`\nf@margin` Margin for floats

```
\newlength\nf@margin
\setlength\nf@margin{12\p@}
```

`\nf@trianglebase` The design requres a triangle under the caption. Here it is

```
\newlength\nf@trianglebase
\setlength\nf@trianglebase{12\p@}
```

`\chartwidth` The resulting width of a chart

```
\newlength\chartwidth
```

`\chartheight` The resulting width of a chart

```
\newlength\chartheight
```

`\nf@topskip` Top separation for a nonfloat @topskip

`\nf@bottomskip` Bottom separation for a nonfloat @bottomskip

`\nonfloat@type` The counter to keep the next type to assign

```
\newcount\nonfloat@type
\nonfloat@type=4\relax
```

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

```
\newbox\nf@contentsbox
```

`\nf@mainbox` The box for the float

```
\newbox\nf@mainbox
```

`\newnon@float` The macro `\newnon@float` has the following arguments: TYPE, EXT, NAME for example

```
\newnon@float{map}{lom}{Map}
```

It defines a nonfloat with these parameters.

```
\def\newnon@float#1#2#3{%
```

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.

```
  \expandafter\ifx\csname ftype@#1\endcsname\relax
    \expandafter\edef\csname ftype@#1\endcsname{\the\nonfloat@type}%
    \multiply\nonfloat@type by 2\relax
  \fi
```

Now we define the extension for the floats

```
  \expandafter\def\csname ext@#1\endcsname{#2}%
  \xdef\@toc@ext@list{\@toc@ext@list,#2}%
```

The macro `\fnum@TYPE` formats the line like "Figure 1". We need to check whether the counter is defined

```
  \expandafter\ifx\csname the#1\endcsname\relax
  \newcounter{#1}\fi
  \expandafter\def\csname fnum@#1\endcsname{#3~\csname
    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

```
  \expandafter\let\csname #1\endcsname\relax
  \expandafter\let\csname end#1\endcsname\relax
```

And the actual definition

```
  \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}}}
```

```
\def\@getfirstletter#1{\@@getfirstletter#1}
\def\@@getfirstletter#1{#1\@gobbleword}
\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.

```
\def\non@float#1#2#3{
  \def\@captype{#1}%
  \def\nf@size{#2}%
  \def\nf@placement{#3}%
```

The macro `\nf@vert@pos` is either `u` or `l`

```
  \lowercase{\xdef\nf@vert@pos{\@getfirstletter#3\@endword}}
  \global\let\nf@source\@empty
```

Define the source command inside float

```
  \def\source##1{\gdef\nf@source{##1}}
```

Define the caption producing command:

```
\long\def\@makecaption##1##2{\long\gdef\nf@caption{%
    {\bfseries\large\color{white}
      \MakeUppercase{##1}: ##2}}}%
\gdef\nf@caption{}%
```

We calculate the size of the float and skips

```
  \nf@width=\columnwidth
  \nf@height=\dimexpr(\textheight/2-\nf@vert@sep)%
  \if\nf@vert@pos u\relax
    \nf@topskip=\z@
    \nf@bottomskip=\nf@vert@sep
  \else
    \nf@topskip=\nf@vert@sep%
    \nf@bottomskip=\z@
  \fi
  \def\tempW{W}%
  \def\tempT{T}%
  \def\tempB{B}%
  \ifx\nf@size\tempW
    \nf@width=\textwidth
  \fi
  \ifx\nf@size\tempT
    \nf@height=\textheight
    \nf@topskip=\z@
    \nf@bottomskip=\z@
  \fi
  \ifx\nf@size\tempB
    \nf@width=\textwidth
    \nf@height=\textheight
    \nf@topskip=\z@
    \nf@bottomskip=\z@
  \fi
  \chartheight=
    \dimexpr(\nf@height-\nf@captionheight-\nf@sourceheight
    -2\nf@margin-\nf@trianglebase)%
  \ifx\nf@size\tempB
```

```
    \advance\chartheight by -2\baselineskip
  \fi
  \ifx\nf@size\tempT
    \advance\chartheight by -2\baselineskip
  \fi
  \chartwidth=\dimexpr(\nf@width-2\nf@margin-0.5\nf@trianglebase)%
  \nf@height=\dimexpr(\nf@height+\nf@topskip+\nf@bottomskip)%
```

Now we construct the main box.

```
  \global\setbox\nf@contentsbox
    \color@vbox
     \normalcolor
     \vbox to \chartheight
     \bgroup
     \hsize\chartwidth
     \@parboxrestore
     \@floatboxreset
}
```

`\endnon@float` The actual typesetting

```
\def\endnon@float{\@endfloatbox\par
  \hsize=\nf@width
  \setbox\nf@mainbox=\vbox to \nf@height\bgroup
    \hsize=\chartwidth
    \vskip\nf@topskip
    \noindent
    \begin{picture}(0,0)%
      \put(0,0){\color{@bgcolor}%
        \begin{tikzpicture}[baseline=(current bounding box.north)]
          \fill (0,0) -- (\nf@trianglebase,0) --
          (0.5\nf@trianglebase,-\nf@trianglebase) -- cycle;
        \end{tikzpicture}}
    \end{picture}%
    \def\@tempa{chart}%
    \ifx\@tempa\@captype
    \begin{picture}(0,0)%
      \put(0,0){\color{@bgcolor}%
        \begin{tikzpicture}[baseline=(current bounding box.north)]
          \draw(0,0) -- (\nf@width,0);
          \draw (0.5\nf@trianglebase,-2\nf@trianglebase) --
          (0.5\nf@trianglebase,-\chartheight-2\nf@trianglebase
          -\nf@margin) --
          (\nf@width-\pgflinewidth, -\chartheight-2\nf@trianglebase
          -\nf@margin) -- (\nf@width-\pgflinewidth, 0);
        \end{tikzpicture}}
    \end{picture}%
    \fi
    {\color{@bgcolor}\color@block{\nf@width}{\nf@captionheight}{.1\p@}}%
    \hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
    \vbox to \nf@captionheight\bgroup
```

```
    \nf@caption\vfill\normalcolor
    \egroup\par\nointerlineskip\vskip\nf@trianglebase
    \vskip\nf@margin
    \noindent\hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
    \box\nf@contentsbox\par\nointerlineskip
    \vskip\nf@margin
    \hskip\dimexpr(\nf@margin+0.5\nf@trianglebase)%
    \vbox to \nf@sourceheight\bgroup
    \leftskip-\nf@margin\parskip\z@\parindent\z@
    \ifx\nf@source\@empty\else
    \vskip0.5\baselineskip
    \color{@bgcolor}%
      \rule{.2em}{.2em}~\rule{.2em}{.2em}~%
      \rule{.2em}{.2em}~\rule{.2em}{.2em}~%
      \rule{.2em}{.2em}~\rule{.2em}{.2em}~%
      \rule{.2em}{.2em}\par\normalcolor
    Source: \nf@source\par\vfill\fi\egroup
    \vfill\egroup
    \edef\nf@currbox{\expandafter\csname nfbox@\nf@size
      @\nf@placement\endcsname}%
    \global\setbox\nf@currbox=
    \vbox{\box\nf@currbox\nointerlineskip\penalty0\box\nf@mainbox}}
```

`\map` A standard nonfloat:

```
\newnon@float{map}{lom}{Map}
```

`\listofmapsname` The name for the list of maps

```
\def\listofmapsname{List of Maps}
```

`\table` Another one

```
\newnon@float{table}{lot}{Table}
```

`\chart` And another one

```
\newnon@float{chart}{loc}{Chart}
```

`\listofchartsname` The name for the list of charts

```
\def\listofchartsname{List of charts}
```

3.11 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.

```
\newbox\nfbox@S@ul
\newbox\nfbox@S@ur
\newbox\nfbox@S@ll
\newbox\nfbox@S@lr
```

```
\newbox\nfbox@S@UL
\newbox\nfbox@S@UR
\newbox\nfbox@S@LL
\newbox\nfbox@S@LR
\newbox\nfbox@T@ul
\newbox\nfbox@T@ur
\newbox\nfbox@T@UL
\newbox\nfbox@T@UR
\newbox\nfbox@W@ul
\newbox\nfbox@W@ll
\newbox\nfbox@W@UL
\newbox\nfbox@W@LL
\newbox\nfbox@B@ul
\newbox\nfbox@B@UL
```

`\@tempboxb` Standard LaTeX has `\@tempboxa`. We need more...

```
\ifx\@tempboxb\@undefined
  \newbox\@tempboxb
\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?

```
\edef\standard@output{\the\output}
```

`\output` Right now we use standard output on one column pages and the new one with two columns

```
\output{\if@twocolumn\the\nf@output\else\standard@output\fi}
```

`\nf@output` Here we define our own output routine.

```
\newtoks\nf@output
\nf@output {%
```

We define the current boxes `\curr@nfbox...`. Also, `uc` or `lc` mean Upper or Lower Current column

```
  \ifodd\c@page
    \global\let\curr@nfbox@S@ul\nfbox@S@UL
    \global\let\curr@nfbox@S@ur\nfbox@S@UR
    \global\let\curr@nfbox@S@ll\nfbox@S@LL
    \global\let\curr@nfbox@S@lr\nfbox@S@LR
    \global\let\curr@nfbox@T@ul\nfbox@T@UL
    \global\let\curr@nfbox@T@ur\nfbox@T@UR
    \global\let\curr@nfbox@W@ul\nfbox@W@UL
    \global\let\curr@nfbox@W@ll\nfbox@W@LL
    \global\let\curr@nfbox@B@ul\nfbox@B@UL
  \else
    \global\let\curr@nfbox@S@ul\nfbox@S@ul
    \global\let\curr@nfbox@S@ur\nfbox@S@ur
    \global\let\curr@nfbox@S@ll\nfbox@S@ll
    \global\let\curr@nfbox@S@lr\nfbox@S@lr
```

```
    \global\let\curr@nfbox@T@ul\nfbox@T@ul
    \global\let\curr@nfbox@T@ur\nfbox@T@ur
    \global\let\curr@nfbox@W@ul\nfbox@W@ul
    \global\let\curr@nfbox@W@ll\nfbox@W@ll
    \global\let\curr@nfbox@B@ul\nfbox@B@ul
  \fi
  \if@firstcolumn
    \global\let\curr@nfbox@S@uc\curr@nfbox@S@ul
    \global\let\curr@nfbox@S@lc\curr@nfbox@S@ll
    \global\let\curr@nfbox@T@uc\curr@nfbox@T@ul
  \else
    \global\let\curr@nfbox@S@uc\curr@nfbox@S@ur
    \global\let\curr@nfbox@S@lc\curr@nfbox@S@lr
    \global\let\curr@nfbox@T@uc\curr@nfbox@T@ur
  \fi
  \let \par \@@par
%
% There are several possibilities when we start the output routine for
% a single column in a two-column layout.
% \begin{enumerate}
% \item Wide or big non-floats completely cover the page.  In this
% case we do not need to create columns, and directly go to the
% output.
% \item The columnd is occupied by tall or single nonfloats.  We make
% a column of nonfloats and send it further.
% \item There is room for text on the page, but its height
% (\cs{@colroom}) is different from the one known to the page builder
% (\cs{vsize}).  In this case we change \cs{vsize} and return.
% \item The room for text is exactly \cs{vsize}.  In this case we form
% a column and return.
% \end{enumerate}
%    \begin{macrocode}
  \global\@colht=\textheight
  \ifdim\ht\curr@nfbox@B@ul>0.5\baselineskip
    \global\advance\@colht by -\textheight
  \fi
  \ifdim\ht\curr@nfbox@W@ul>0.5\baselineskip
    \global\advance\@colht by -0.5\textheight
  \fi
  \ifdim\ht\curr@nfbox@W@ll>0.5\baselineskip
    \global\advance\@colht by -0.5\textheight
  \fi
  \ifdim\@colht < \baselineskip
    \nf@output@widepage
  \else
    \nf@makecol
  \fi
}
```

`\nf@output@widepage` The macro `\nf@output@widepage` outputs a page completely filled by wide pic-

tures.

```
\def\nf@output@widepage{%
  \unvbox\@cclv
  \penalty\outputpenalty
  \if@firstcolumn\else
  \ClassError{faosyb}{Wide or big nonfloats defined too late.  Move
    them up}{I encountered Big or Wide floats when I already made the
    first column.  Please move them up}
  \fi
  \ifdim\ht\curr@nfbox@B@ul>0.5\baselineskip
     \setbox\@tempboxa\vsplit\curr@nfbox@B@ul to \textheight
     \setbox\@outputbox \vbox\bgroup
     \boxmaxdepth \@maxdepth
     \box\@tempboxa
     \vfill
     \egroup
  \else
     \setbox\@tempboxa\vsplit\curr@nfbox@W@ul to 0.5\textheight
     \setbox\@tempboxb\vsplit\curr@nfbox@W@ll to 0.5\textheight
     \setbox\@outputbox\vbox\bgroup
        \boxmaxdepth \@maxdepth
        \box\@tempboxa
        \nointerlineskip
        \box\@tempboxb
        \vfill
     \egroup
  \fi
  \global\vsize\textheight
  \global\@colht\textheight
  \@outputpage
  \@firstcolumntrue
}
```

`\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

```
\def\nf@makecol{%
  \global\@colroom\@colht
  \ifdim\ht\curr@nfbox@T@uc>0.5\baselineskip
     \global\@colroom=0pt
  \fi
  \ifdim\ht\curr@nfbox@S@uc>0.5\baselineskip
     \global\advance\@colroom by -0.5\textheight
  \fi
  \ifdim\ht\curr@nfbox@S@lc>0.5\baselineskip
     \global\advance\@colroom by -0.5\textheight
  \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.

```
\ifdim\@colroom<0.5\baselineskip
  \nf@makenfcol
\else
  \nf@makemixedcol
\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.

```
\def\nf@makenfcol{%
  \unvbox\@cclv
  \penalty\outputpenalty
  \ifdim\@colht>0.9\textheight  % one tall or two squares
    \ifdim\ht\curr@nfbox@T@uc>0.5\baselineskip
      \setbox\@outputbox\vbox\bgroup
      \boxmaxdepth \@maxdepth
      \vsplit \curr@nfbox@T@uc to \textheight
      \egroup
    \else
     \setbox\@outputbox\vbox\bgroup
      \boxmaxdepth \@maxdepth
      \vsplit\curr@nfbox@S@uc to 0.5\textheight
       \nointerlineskip
       \vsplit\curr@nfbox@S@lc to 0.5\textheight
     \egroup
    \fi
  \else  % one square
    \ifdim\ht\curr@nfbox@S@uc>0.49\textheight
      \setbox\@outputbox\vsplit \curr@nfbox@S@uc to 0.5\textheight
    \else
      \setbox\@outputbox\vsplit \curr@nfbox@S@lc to 0.5\textheight
    \fi
  \fi
  \nf@opcol
}
```

`\nf@makemixedcol` This macros 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

```
\def\nf@makemixedcol{%
  \ifdim\@colroom=\vsize
    \nf@makemixedcol@
  \else
    \global\vsize=\@colroom
    \unvbox\@cclv
```

```
    \penalty\outputpenalty
  \fi}
```

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

```
\def\nf@makemixedcol@{%
  \ifvoid\footins
    \setbox\@outputbox \box \@cclv
  \else
    \setbox\@outputbox \vbox {%
      \boxmaxdepth \@maxdepth
      \unvbox \@cclv
      \vskip \skip\footins
      \color@begingroup
        \normalcolor
        \footnoterule
        \unvbox \footins
      \color@endgroup
      }%
  \fi
  \ifdim\ht\curr@nfbox@S@uc>0.49\textheight
    \setbox\@tempboxa\vsplit\curr@nfbox@S@uc to 0.5\textheight
    \setbox\@outputbox \vbox
      \bgroup
        \box\@tempboxa
        \nointerlineskip
        \box\@outputbox
      \egroup
  \fi
  \ifdim\ht\curr@nfbox@S@lc>0.49\textheight
    \setbox\@tempboxa\vsplit\curr@nfbox@S@lc to 0.5\textheight
    \setbox\@outputbox \vbox
      \bgroup
        \box\@outputbox
        \nointerlineskip
        \box\@tempboxa
      \egroup
  \fi
  \nf@opcol}
```

`\nf@opcol` This is like the standard LaTeX `\@outputdblcol`, but with the treatment of wide nonfloats.

```
\def\nf@opcol{%
 \if@firstcolumn
   \global\@firstcolumnfalse
   \global\setbox\@leftcolumn\box\@outputbox
 \else
   \global\@firstcolumntrue
   \ifdim\ht\curr@nfbox@W@ul>0.5\baselineskip
     \setbox\@tempboxa\vsplit \curr@nfbox@W@ul to 0.5\textheight
   \else
```

```
      \setbox\@tempboxb\box\@tempboxa
    \fi
    \setbox\@outputbox \vbox\bgroup
      \box\@tempboxa
      \nointerlineskip
      \hb@xt@\textwidth {%
        \hb@xt@\columnwidth {%
          \box\@leftcolumn \hss}%
        \hfil
        {\normalcolor\vrule \@width\columnseprule}%
        \hfil
        \hb@xt@\columnwidth {%
          \box\@outputbox \hss}%
      }%
    \egroup
    \ifdim\ht\curr@nfbox@W@ll>0.5\baselineskip
      \setbox\@tempboxa\vsplit \curr@nfbox@W@ll to 0.5\textheight
      \setbox\@outputbox\vbox\bgroup
        \box\@outputbox
        \nointerlineskip
        \box\@tempboxa
      \egroup
    \fi
    \@outputpage
    \global\vsize\textheight
    \global\@colht\textheight
    \global\@colroom\textheight
   \fi}
```

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

```
\let\standard@clearpage\clearpage
```

`\clearpage` Now we can define `\clearpage` to take care of the mode:

```
\def\clearpage{%
  \if@twocolumn
    \nf@clearpage
  \else
    \standard@clearpage
\fi}
```

`\nf@totalheight` The total height of all non-floats

```
\def\nf@totalheight{\dimexpr(%
  \ht\nfbox@S@UL+
  \ht\nfbox@S@UR+
  \ht\nfbox@S@LL+
  \ht\nfbox@S@LR+
  \ht\nfbox@T@UL+
  \ht\nfbox@T@UR+
  \ht\nfbox@W@UL+
```

```
  \ht\nfbox@W@LL+
  \ht\nfbox@B@UL+
  \ht\nfbox@S@ul+
  \ht\nfbox@S@ur+
  \ht\nfbox@S@ll+
  \ht\nfbox@S@lr+
  \ht\nfbox@T@ul+
  \ht\nfbox@T@ur+
  \ht\nfbox@W@ul+
  \ht\nfbox@W@ll+
  \ht\nfbox@B@ul)}
```

`\nf@clearpage` We keep ejecting pages until get rid of nf stuff

```
\def\nf@clearpage{%
  \write\m@ne{}%
  \if@firstcolumn
    \ifdim\dimexpr(\pagetotal+\nf@totalheight)>\baselineskip
    \leavevmode
     \null\vfill\newpage
     \null\vfill\newpage
    \fi
  \else
    \leavevmode
   \null\vfill\newpage
  \fi
  \ifdim\nf@totalheight>\baselineskip
  \nf@clearpage\fi
}
```

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

```
\def\clearspread{\clearpage\ifodd\c@page
    \hbox{}\newpage\if@twocolumn\hbox{}\newpage\fi\fi\@firstcolumntrue}
```

We need to clear everything at the end

```
\AtEndDocument{\if@twocolumn
  \ifdim\nf@totalheight>\baselineskip
  \null\vfill\clearpage\fi
\fi}
```

3.12 Sectioning

`\if@mainmatter` This is used to check whether we are at main matter

```
\newif\if@mainmatter
```

`\frontmatter` We want Arabic numbers for front matter:

```
\def\frontmatter{%
  \pagestyle{frontmatterpagestyle}%
  \onecolumn\@mainmatterfalse}
```

`\mainmatter` We want Arabic numbers for main matter:

```
\def\mainmatter{\loadgeometry{standard}\onecolumn
  \@mainmattertrue}
```

`\tocdepth` Only sections and up are allowed in TOC:

```
\setcounter{tocdepth}{1}
```

`\secnumdepth` Only the parts are numbered in out setup:

```
\setcounter{secnumdepth}{-1}
```

`\thepart` And the parts are numbered using Arabic numbers:

```
\renewcommand \thepart {\@arabic\c@part}
```

`\c@fao@partnum` To draw the blobs in part color in the proper position, we need to associate them with parts. However, some parts are numbered, some are not. The macro `\fao@partnum` keeps the current part number counted continuously from the beginning to end.

```
\newcounter{fao@partnum}
\setcounter{fao@partnum}{0}
```

`\fao@currentpartnum` The current value of `\fao@partnum` used in TOC:

```
\def\fao@currentpartnum{0}
```

`\part` The largest partition in the book

```
\renewcommand\part{%
  \secdef\@part\@spart}
```

`\EndPartIntro` This command switches off the special formatting of part pages:

```
\def\EndPartIntro{\end{adjmulticols}\clearspread\twocolumn\normalcolor
  \pagestyle{standardpagestyle}}
```

`iconfill` Fill a line with the icons of increasing size. The parameters are the initial size, length of the strip and the intensity of the background

```
\def\@maxpart{1}
\def\iconfill#1#2#3{%
  \expandafter\ifx\csname @icon@1\endcsname\relax\strut\else
  \@tempcnta=1
  \setbox\@tempboxa=\hbox{}%
  \loop
  \@tempdima=#1
  \setbox\@tempboxa=\hbox{\unhbox\@tempboxa
    \colored@icon@fg[width=\@tempdima]{\csname
      @icon@\the\@tempcnta\endcsname}{#3}\hspace{0.3\@tempdima}}%
  \advance\@tempcnta by 1\relax
  \ifnum\@tempcnta>\@maxpart\relax\@tempcnta=1\fi
  \ifdim\wd\@tempboxa>#2\else\repeat
  \unhbox\@tempboxa
  \fi}
```

`\currenticonfill` Several iterations of the current icon with increasing sizes. The parameters are the initial size, length and the intensity of the background.

```
\def\currenticonfill#1#2#3{%
  \expandafter\ifx\csname @icon@\thepart\endcsname\relax\strut\else
  \setbox\@tempboxa=\hbox{}%
  \@tempdima=#1
  \loop
  \@tempdima=1.44\@tempdima
  \setbox\@tempboxa=\hbox{\unhbox\@tempboxa
    \colored@icon@fg[width=\@tempdima]{\csname
      @icon@\thepart\endcsname}{#3}\hspace{0.2\@tempdima}}%
  \ifdim\wd\@tempboxa>#2\else\repeat
  \unhbox\@tempboxa
  \fi}
```

`\@part` This is the actual part making macro.

```
\def\@part[#1]#2{%
  \clearspread
  \onecolumn
  \clearspread
  \selectcolor
  \selecticon
  \color{@bgcolor}%
  \rowcolors{2}{@bgcolor!10}{}%
  \pagestyle{partpagestyle}%
  \refstepcounter{part}%
  \addcontentsline{toc}{part}{\thepart\hspace{1em}#1}%
  \protected@write\@auxout{}%
  {\string\newicon{\thepart}{\currenticon}
    \string\gdef\string\@maxpart{\thepart}}%
  \def\@partpagepicture{%
    \put(-15,-500){\rotatebox{30}{%
      \iconfill{1.2cm}{0.4\textwidth}{20}%
      \currenticonfill{1.2cm}{0.6\textwidth}{20}}}%
    \put(40,-550){\rotatebox{30}{%
      \iconfill{1.2cm}{1.2\textwidth}{100}}}%
    \put(40,-600){\rotatebox{30}{%
      \iconfill{1.2cm}{1.2\textwidth}{20}}}%
}
  \markboth{#1}{#1}%
  \null
  \newpage
  \def\@partpagepicture{\put(160,-180){\rotatebox{30}{\iconfill{1cm}{14cm}{20}}}%
  \gdef\@partpagepicture{}}
  {\interlinepenalty \@M
    \vspace*{80\p@}
    \captionfamily
    \fontsize{240\p@}{240\p@}\selectfont\raggedright\thepart~%
    \parbox[b]{0.8\textwidth}{\fontsize{64\p@}{72\p@}\selectfont
```

```
      \raggedright\null#2\par}\par\vskip80\p@
  }\par\normalcolor
  \begin{adjmulticols}{1}{44mm}{0mm}}
```

`\@currentsymbol` he symbol for the next unnumbered part

```
\define@choicekey*+{fao}{symbol}[\val\nr]%
{righttriangle,square,rightsemicircle}{%
  \ifcase\nr\relax
    \gdef\@currentsymbol{(0,0) -- (1ex,0) -- (1ex,1ex) -- cycle}%
  \or
   \gdef\@currentsymbol{(0,0) -- (1ex,0) -- (1ex,1ex) -- (0,1ex) --
     cycle}%
  \or
   \gdef\@currentsymbol{(0,0) arc[start angle=90, end angle=-90, x
     radius = 0.5ex, y radius = 0.5ex] -- cycle}%
   \fi
}{\ClassError{faosyb}{Bad symbol value \val}}
\faoset{symbol=square}
```

`\@spart` Unnmumbered parts are only in the foreword

```
\def\@spart#1{%
  \cleardoublepage
  \loadgeometry{frontmatter}%
  \pagestyle{spartpagestyle}%
  \onecolumn
  \selectcolor
  \selecticon
  \rowcolors{2}{@bgcolor!10}{}%
  \phantomsection
  \addcontentsline{toc}{spart}{\hspace{1em}#1}%
  \makebox[0pt]{%
       \raisebox{-\totalheight}%
       [0pt][0pt]{\rotatebox{90}{\fontsize{9mm}{9mm}\selectfont
           \captionfamily
           \tikz\fill[color=@bgcolor]\@currentsymbol;\space
           \color{gray}#1\strut}}%
     \hspace*{50pt}}\par\vspace*{-\baselineskip}%
 \vspace*{-\parskip}}
```

`\sectionmark` We do not want to have uppercase sections in the footers

```
\def\sectionmark#1{\markright{#1}}
```

`\section` New sections start on a recto page in one column mode and on a verso page in two column mode

```
\renewcommand\section{\par\clearspread
  \@startsection {section}{1}{\z@}%
                                    {-1sp}%
                                    {2.3ex \@plus.2ex}%
                                    {\normalfont\Large\bfseries\raggedright
                                    \color{@bgcolor}}}
```

`\subsection` The subsection macro

```
\renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
                                      {-1sp}%
                                      {1.5ex \@plus .2ex}%
                                      {\normalfont\large\bfseries\raggedright
                                      \color{@bgcolor}}}
```

3.13 Tables

`\tablepages` Long tables at the end of a part

```
\newenvironment{tablepages}{\onecolumn
  \bgroup\narrowfamily\multicolsep=\z@
  \vspace*{-2cm}%
  \def\emph{\textsl}%
  \begin{adjmulticols}{1}{-1.3cm}{-1.3cm}\centering\normalcolor}%
  {\end{adjmulticols}\egroup}
```

`\tablemph` Some styles define `\tablemph` commands. Here we supply a stub

```
\AtBeginDocument{\providecommand{\tablemph}[1]{\emph{#1}}}
```

We define new column types for table headers:

```
\newcolumntype{d}[1]{D{.}{.}{#1}}
\newcolumntype{H}{>{\columncolor{@tableheadcolor}[1.01\tabcolsep][1.01\tabcolsep]}c}
```

`P` columntype is much more complex. Basically we want a centered entry with a parbox of the given width inside.:

```
\newcolumntype{P}[1]{>{\columncolor{@tableheadcolor}[1.01\tabcolsep][1.01\tabcolsep]%
    \@fao@Pentry{#1}}c<{\end@fao@Pentry}}
```

`\@fao@Pentry` Since `\parbox` needs "real" braces to delimit the argument, we use this trick. Note `\hspace{0pt}` to allow TEX to hyphenate the first word.

```
\def\@fao@Pentry#1#2\end@fao@Pentry{%
\parbox[t]{#1}{\centering\strut\hspace{\z@}#2\strut}}
```

Same with `C` entry:

```
\newcolumntype{C}[1]{>{\columncolor{@tableheadcolor}[1.01\tabcolsep][1.01\tabcolsep]%
    \@fao@Centry{#1}}c<{\end@fao@Centry}}
```

`\@fao@Centry` This macro is similar to `\@fao@Pentry`, but with different way to set the width of the `\parbox`:

```
\def\@fao@Centry#1#2\end@fao@Centry{%
\settowidth{\@tempdima}{$-99.999$}%
\@tempdima=#1\@tempdima\relax
\parbox[t]{\@tempdima}{\centering\strut\hspace{\z@}#2\strut}}
```

`\LT@makecaption` This macro produces the caption for the long tables. We redefine it to get the tables in the way specified by the designer

```
\def\LT@makecaption#1#2#3{%
```

```
\LT@mcol\LT@cols {@{}l}{\cellcolor{white}%
  \rlap{\fcolorbox{white}{@tableheadcolor}{\normalsize
    \captionfamily\large\strut
    \textcolor{white}{#1{\MakeUppercase{#2}: }#3}}}%
  \begin{picture}(0,0)%
    \put(.5,-7){\color{@bgcolor}%
      \begin{tikzpicture}[baseline=(current bounding box.north)]
        \fill (0,0) -- (\nf@trianglebase,0) --
        (.5\nf@trianglebase,-\nf@trianglebase) -- cycle;
      \end{tikzpicture}}
  \end{picture}\normalcolor
  \raisebox{-17pt}{\strut}}}
```

3.14 Front Matter

`\@generictoc` This is a generic macro with two parameters: name of the toc and file extension

```
\def\@generictoc#1#2{\clearpage\loadgeometry{standard}%
  \pagestyle{frontmatterpagestyle}\onecolumn
  {\fontsize{48pt}{48pt}\selectfont
    \captionfamily\color{black!40}#1\par}\@mkboth{#1}{#1}\bigskip
  \@starttoc{#2}}
```

`\tableofcontents` Our table of contents

```
\renewcommand\tableofcontents{\clearpage\loadgeometry{standard}%
  \pagestyle{frontmatterpagestyle}\onecolumn
  \@mkboth{\contentsname}{\contentsname}%
  \makebox[0pt][l]{\fontsize{24pt}{32pt}\selectfont \bfseries
    \color{black!70}\MakeUppercase{\contentsname}\space}%
  \par\vspace{-2\baselineskip}\vspace{-\parskip}%
  \@starttoc{toc}}
```

`\@tocpartskip` This is the skip between the parts in TOC:

```
\newlength{\@tocpartskip}
\define@key{fao}{tocpartskip}{\setlength{\@tocpartskip}{#1}}
\faoset{tocpartskip=\z@}
```

`\@fao@tocrule@start` The start of the current TOC colored rule

```
\newdimen\@fao@tocrule@start
```

`\@fao@tocrule@height` The height of the current TOC rule

```
\newdimen\@fao@tocrule@height
```

`\@draw@tocrule@part` Drawing the toc rule for a part

```
\def\@draw@tocrule@part{\@fao@tocrule@height=\pagetotal
  \protected@write\@auxout{}{\string\fao@partblobbottom{\fao@currentpartnum}{\the\@fao@tocrule
  \advance\@fao@tocrule@height-\@fao@tocrule@start
  \bgroup\parskip\z@
  \parbox[b][\z@]{\z@}{\hspace*{-15\p@}\color{@bgcolor}\rule{2\p@}{\@fao@tocrule@height}}%
  \parbox[b][\z@]{\z@}{\hspace*{330\p@}%
```

```
    \color{@bgcolor}\rule{41\p@}{\@fao@tocrule@height}}%
  \par\vspace{-0.5\baselineskip}\egroup}
```

`\@draw@tocrule@section` Drawing the toc rule for a section

```
\def\@draw@tocrule@section{\@fao@tocrule@height=\pagetotal
  \protected@write\@auxout{}{\string\fao@partblobbottom{\fao@currentpartnum}{\the\@fao@tocrule
  \advance\@fao@tocrule@height-\@fao@tocrule@start
  \advance\@fao@tocrule@height5\p@
  \bgroup\parskip\z@\small
  \raisebox{\baselineskip}[\z@][\z@]{\parbox[b][\z@]{\z@}{\hspace*{-35\p@}\color{@bgcolor}\rul
  \raisebox{\baselineskip}[\z@][\z@]{\parbox[b][\z@]{\z@}{\hspace*{310\p@}%
      \color{@bgcolor}\rule{41\p@}{\@fao@tocrule@height}}}%
  \par\vspace{-\baselineskip}\egroup}
```

`\l@part` This prints the part in TOC:

```
\renewcommand*\l@part[2]{%
  \ifnum \c@tocdepth >-2\relax
    \addpenalty{-\@highpenalty}%
    \setlength\@tempdima{3em}%
    \addvspace{\@tocpartskip}%
    \begingroup
```

We store the current vertical position of the page into `\@fao@tocrule@start`

```
%     \addvspace{-2pc}\par
     \@fao@tocrule@start=\pagetotal
     \protected@write\@auxout{}{\string\fao@partblobtop{\fao@currentpartnum}{\the\@fao@tocrule
      \parindent \z@ \rightskip \@pnumwidth
      \parfillskip -\@pnumwidth
      \leftskip180\p@
      {\leavevmode
       \color{@bgcolor}\bfseries\partname\space#1:
       \hfil \hb@xt@\@pnumwidth{\hss #2}}%
     \par\@draw@tocrule@part
       \nobreak
         \global\@nobreaktrue
         \everypar{\global\@nobreakfalse\everypar{}}%
    \endgroup
  \fi}
```

`\l@spart` This adds unnumbered part to TOC

```
\newcommand*\l@spart[2]{%
  \ifnum \c@tocdepth >-2\relax
    \addpenalty{-\@highpenalty}%
    \setlength\@tempdima{3em}%
    \begingroup
     \@fao@tocrule@start=\pagetotal
     \protected@write\@auxout{}{\string\fao@partblobtop{\fao@currentpartnum}{\the\@fao@tocrule
      \parindent \z@ \rightskip \@pnumwidth
      \parfillskip -\@pnumwidth
      \leftskip180\p@
```

```
      {\leavevmode
       \color{@bgcolor}\bfseries#1:
       \hfil \hb@xt@\@pnumwidth{\hss #2}}%
     \par\@draw@tocrule@part
       \nobreak
         \global\@nobreaktrue
         \everypar{\global\@nobreakfalse\everypar{}}%
    \endgroup
  \fi}
```

`\l@section` This prints the section in TOC:

```
\renewcommand*\l@section[2]{%
  \ifnum \c@tocdepth >-2\relax
    \addpenalty{-\@highpenalty}%
    \setlength\@tempdima{3em}%
    \begingroup
    \small
     \@fao@tocrule@start=\pagetotal
     \leftskip200\p@\relax\parskip\z@
      \parindent \z@ \rightskip \@pnumwidth
      \parfillskip -\@pnumwidth
      {\leavevmode\small\strut
       #1\hfil \hb@xt@\@pnumwidth{\hss #2}}\par\@draw@tocrule@section
       \nobreak
         \global\@nobreaktrue
         \everypar{\global\@nobreakfalse\everypar{}}%
    \endgroup
  \fi}
```

`\appendix` We do not draw colored rules in the TOC part of the appendix:

```
\renewcommand\appendix{%
  \bookmarksetup{startatroot}%
  \addtocontents{toc}{\string\let\string\@draw@tocrule@part\string\relax
    \string\let\string\@draw@tocrule@section\string\relax}}
```

We use special formatting of metadata in the lists of... This requires explicit `\pars` at the end:

```
\AtEndDocument{%
  \immediate\write\@auxout{\string\@writefile{loc}{\string\par}}%
  \immediate\write\@auxout{\string\@writefile{lot}{\string\par}}%
  \immediate\write\@auxout{\string\@writefile{lom}{\string\par}}}
```

`\nf@dottedtocline` This is like the standard `\@dottedtocline`, but with colored page numbers

```
\def\nf@dottedtocline#1#2#3#4#5{%
  \ifnum #1>\c@tocdepth \else
    \vskip \z@ \@plus.2\p@
    {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
     \parindent #2\relax\@afterindenttrue
     \interlinepenalty\@M
```

```
      \leavevmode
      \@tempdima #3\relax
      \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
      {#4}\nobreak
      \leaders\hbox{$\m@th
         \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
         mu$}\hfill
      \nobreak
      \hb@xt@\@pnumwidth{\hfil\normalfont\color{@bgcolor}#5}%
      \par}%
   \fi}
```

`\l@nonfloat` The generic listing of a nonfloat in a list

```
\newcommand*\l@nonfloat{\nf@dottedtocline{1}{\z@}{2.3em}}
```

`\numberline` The number in table of contents

```
\def\numberline#1{%
  \raisebox{\z@}[\z@][\z@]{%
    \fcolorbox{@bgcolor}{@bgcolor}{%
      \hb@xt@\@tempdima{\color{white}#1\strut\hfil}}}\hspace{2em}}
```

`\listofmaps` Our list of maps

```
\newcommand\listofmaps{\@generictoc{\listofmapsname}{lom}}
```

`\l@map` Entry in the list of maps

```
\let\l@map\l@nonfloat
```

`\listoftables` Our list of tables

```
\renewcommand\listoftables{\@generictoc{\listtablename}{lot}}
```

`\l@table` Entry in the list of tables

```
\let\l@table\l@nonfloat
```

`\listofcharts` Our list of charts

```
\newcommand\listofcharts{\@generictoc{\listofchartsname}{loc}}
```

`\l@chart` Entry in the list of charts

```
\let\l@chart\l@nonfloat
```

3.15 Metadata

`\metadatasection` The section for metadata:

```
\newcommand\metadatasection[1]{\clearspread\twocolumn\normalcolor
  \section{#1}}
```

`\metadata` This starts the metadata section. The commands inside are local to the metadata.

```
\def\metadata#1{\bgroup
      \def\meta@key{@@@@}%
```

Now we define the commands for metadata:

`\key` This sets the key:

```
    \def\key##1{\NR@gettitle{##1}\phantomsection\label{##1}%
      \gdef\meta@key{##1}}
```

`\source` This typesets the source:

```
    \def\source##1{\emph{Source: }##1. }%
```

`\owner` This typesets the owner:

```
    \def\owner##1{\emph{Owner: }##1. }%

  \begin{list}{}{\topsep8\p@\labelwidth\z@
      \labelsep\z@\itemindent\z@\parsep0.4ex plus 0.5ex minus
      0.2ex\relax\listparindent\z@\leftmargin\z@\rightmargin\z@
    \partopsep\z@}%
  \item{\bfseries\textbullet~#1\par\penalty10000}}
```

`\endmetadata` This closes the environment:

```
\def\endmetadata{%
  \expandafter\ifx\csname
     metaback@\meta@key\endcsname\relax
  \else
    \emph{Referenced in: }
    \csname metaback@\meta@key\endcsname
  \fi
  \end{list}\egroup}
```

`\refMetadata` The way we actually reference the metadata:

```
\def\refMetadata#1{%
  \ifx\@captype\@undefined\def\@captype{table}\fi
    \if@filesw
      \immediate\write\@mainaux{%
        \string\fao@metaback{#1}{\@captype}{\csname the\@captype\endcsname}{\thepage}{\@curren
    \fi
}
```

`\fao@metaback` This reads the backreferences to metadata and prepares the the list. The arguments are: key, float type, number of float, page and hyperref

```
\def\fao@metaback#1#2#3#4#5{%
  \expandafter\ifx\csname metaback@#1\endcsname\relax
    \expandafter\gdef\csname metaback@#1\endcsname{%
    \hyper@linkstart{link}{#5}#2~#3\hyper@linkend}%
  \else
    \expandafter\g@addto@macro\csname metaback@#1\endcsname{,
    \hyper@linkstart{link}{#5}#2~#3\hyper@linkend}%
  \fi}
```

3.16 Further Reading

`\fitemize` This is the special version of `itemize` for further reading pages. Basically it is a patched kernel version.

```
\def\fitemize{%
  \ifnum \@itemdepth >\thr@@\@toodeep\else
    \advance\@itemdepth\@ne
    \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
    \expandafter
    \list
      \csname\@itemitem\endcsname
      {\def\makelabel##1{\color{@bgcolor}{##1}\space}%
        \itemsep\z@\labelwidth\z@
        \leftmargin\z@\labelsep\z@}%
  \fi}
```

`\endfitemize` This is standard:

```
\let\endfitemize =\endlist
```

`\freading` This is the "Further Reading environment"

```
\newenvironment{freading}{%
  \vfill\section*{Further reading}\par
  \vspace{-\baselineskip}{\color{@bgcolor}{\rule{\columnwidth}{1.5pt}}}\par
  \vspace{-\baselineskip}\bgroup
  \let\itemize=\fitemize
  \let\enditemize=\endfitemize}{\egroup}
```

3.17 Publications

`\@publicationskip` Skip between the publications. By default `\medskip`:

```
\newlength{\@publicationskip}
\define@key{fao}{publicationskip}{\setlength{\@publicationskip}{#1}}
\faoset{publicationskip=6pt plus 2pt minus 2pt}
```

`\@publicationparskip` Paragraph skip between the publications.

```
\newlength{\@publicationparskip}
\define@key{fao}{publicationparskip}{\setlength{\@publicationparskip}{#1}}
\faoset{publicationparskip=6pt plus 6pt minus 4pt}
```

`\publication` This typesets one publication:

```
\newenvironment{publication}[2][]{%
  \par{\bfseries#2\par}\begin{minipage}[t]{0.49\columnwidth}%
    \setlength\parskip{\@publicationparskip}%
    \gdef\@pub@cover{#1}%
    \long\def\pDescription##1{\par##1\par}%
    \def\pEdition##1##2{\par##1: ##2\par}%
    \def\pCycle##1{\par Publication cycle: ##1\par}%
    \def\pWeb##1{\par \raggedright Webpage: \url{##1}\par}}%
  {\end{minipage}%
```

```
  \ifx\@pub@cover\@empty\else
  \hspace{0.1\columnwidth}%
  \raisebox{\dimexpr\baselineskip-\totalheight}{%
    \includegraphics[width=0.4\columnwidth]{\@pub@cover}}\fi\par
  \vspace{\@publicationskip}}
```

3.18 Subscripts

`\textsubscript` This follows standard LaTeX:

```
\DeclareRobustCommand*\textsubscript[1]{%
  \@textsubscript{\selectfont#1}}
\def\@textsubscript#1{%
  {\m@th\ensuremath{_{\mbox{\fontsize\sf@size\z@#1}}}}}
```

3.19 LyX code

`\lyxlist` It seems Lyx wants this:

```
\newenvironment{lyxlist}[1]
{\begin{list}{}
{\settowidth{\labelwidth}{#1}
 \setlength{\leftmargin}{\labelwidth}
 \addtolength{\leftmargin}{\labelsep}
 \renewcommand{\makelabel}[1]{##1\hfil}}}
{\end{list}}
```

3.20 The final word

```
\setbgcolor{gray}\selectcolor
\loadgeometry{standard}%
\pagestyle{empty}
\normalsize\normalfont
⟨/class⟩
```

References

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