LaTeX for Economics and Business Administration

Thomas de Graaff

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Why this workshop?

- In the *social sciences* few attention to what tools to use (and why)
- LaTeX is used very much in the scientific world and *works* brilliantly together with
  - statistical packages, such as `Stata` and `R`,
  - markdown/HTML,
  - reference managers.
- Why *I* want to give this workshop
  - intrinsic interest
  - my goal: pre-conferences workshops / courses

What I want (and don't want) with this workshop

- Give a general introduction of why some tools work together
  - LaTeX
  - reference managers
  - (statistical) output
- Give an introduction to LaTeX
  - First the basics + using references
  - Next workshop: some advanced stuff
- What *I* do not want
  - Tell you what applications to use (**you** need to decide and make a **well-informed** decision)

Background

- TeX has been devised by Donald E. Knuth in the late 70's
- LaTeX is a set of macro's around TeX and devised in the 80's
- LaTeX is a *typesetting program*, not a *Word processor*
  - It is actually some code that needs to be compiled
  - Code is typed in by an editor
- So,
  - Huge differences between Word and LaTeX
  - for LaTeX you need an editor:
    - Specific editors: TexStudio, TexShop, RStudio
    - General editors: Sublime, TextMate, Notepad++, Vim, Emacs

Disadvantages

- Not WYSIWYG
- You nead to learn (quite) some commands
  - Learning curve, but
  - hurray for cheat sheets and Google
- Difficult to cooperate with people that went to the *dark side*
- *Basic* LaTeX has *difficulties* with incorporating new fonts (Hoefler, minion pro)
  - XeTeX
  - For the purists: LaTeX does it right (LaTeX vs Word)

Advantages

- Free (as in beer) and ubiquitous
- WYSIWYM
- Consistent lay-out throughout the whole document (including tables, appendices, formulas, source code, etc)
- Internal references are a breeze (references, ToC, ToT . . .)
- Forced to structure documents
- Macros, thus scriptable
- Large community, thus a package for almost everything (books, articles, presentation, posters, exams, musicscores)
- Superior typography & output
- Many free LaTeX templates

LaTeX versus Markdown

- Markdown (all variants): lightweight markup language that can export to `.doc`, `.html`, and `.pdf`.
- Much easier then LaTeX but less flexible
- Used by writers/blogs even for complete websites
- But good interaction with LaTeX; if not only for formula's

How does LaTeX work in practice?

- You edit a `.tex` file without thinking about how it looks
  - distraction free writing (yeah right)
- You then compile it
  - LaTeX is unforgiving: if there is an error, usually it does not compile
  - Typically, errors are missing brackets or parentheses.
- Typically, source `.tex` file is compiled into `.pdf`

A process diagram

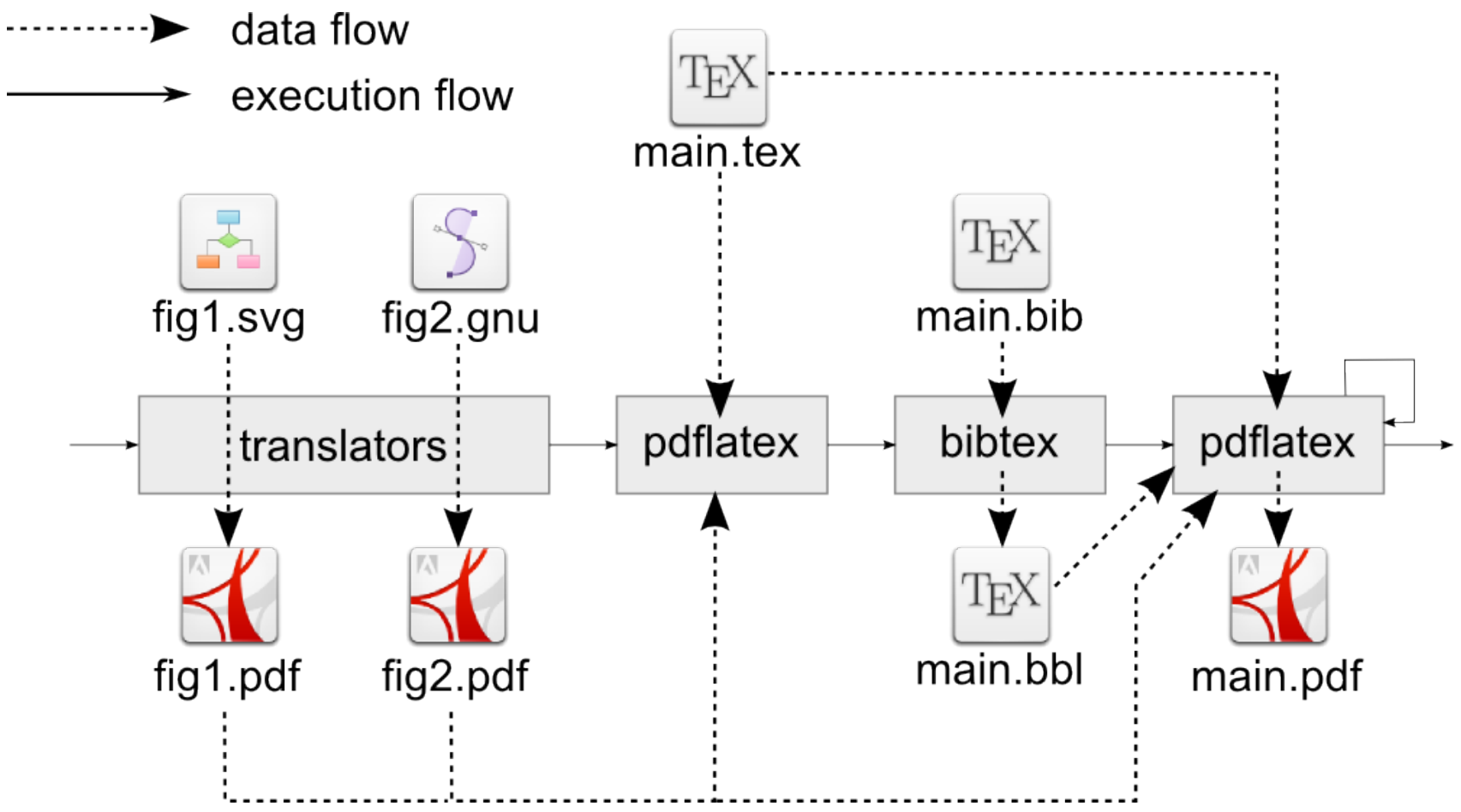

Figure: Process diagram

Code, documentation and output

1. Synonyms
2. All based on `.txt` files
3. Encompasses almost anything
   - data itself (`.csv`, `.txt`)
   - set of commands for data cleaning and statistical analysis (`.do`, `.R`)
   - database with references (`.bib`)
   - text for articles, presentations or websites (`.tex`, `.html`)
4. Only output is displayed/interpreted differently (e.g., in a browser or pdf viewer)

Folder structure of your new project (theses, paper, assignment & research)

- Think *a priori* about project set-up
  - Seperate analysis, data and output files
- Be careful with source data!
  - Seperate source and derived data files
  - Typically
    - you get/collect data
    - transform data
    - analyse data
  - Keep track of all these stages!

How to work with TeXstudio

A quick tour

- Preferences
- Keyboard shortcuts
- LaTeX dropdown menu

First: organize!

1. Create a specific workshop folder somewhere where you can find it.
2. Think about versioning system and a back-up system
3. E.g.: use dropbox and/or Time Machine

Exercise 1: Open from template and fill in!

```
\documentclass[]{article}
%opening
\title{}
\author{}

\begin{document}

\maketitle

\begin{abstract}

\end{abstract}

\section{}

\end{document}
```

Exercise 2: Create a paper structure

```
\section{}
\subsection{}
\subsubsection{}

```

Note that the following are used for books

```
\part{}
\chapter{}
```

And for bigger projects:

```
\include{}
\input{}
```

Intermezzo: preamble

Part before `\begin document` is called preamble

```
1 \documentclass[]{article}
2
3 % This is where packages are loaded
4 % and specific commands are given that
5 % determine how the lay-out!
6
7 \begin{document}
```

Intermezzo: white spaces and special characters

An empty line starts a new paragraph and consecutive white spaces are treated as one

```
1 One paragraph
2
3 Second       paragraph (just one white space)
```

The following characters are reserved # $ % & _ { } ~ \and should be used as follows

```
1 \# \$ \% \^ \& \_ \{ \} \~{} \textbackslash
```

So, with a backslash before except for the backslash (does this make sense?)

Exercise 3: Create a table of contents

More complex text structures are relatively easy, just insert (after `\begin document`)

```
1 \tableofcontents
2 \listoffigures
3 \listoftables
```

Lists

- Itemization

```
\begin{itemize}
        \item blue
        \item red
\end{itemize}
```

- Enumeration

```
\begin{enumerate}
        \item first item
        \item second item
\end{enumerate}
```

Further text control

- Bold

```
1 \textbf{bold}
```

- Emphasize

```
1 \textit{italics} or \emph{emphasized}
```

Formula's

content...

Tables

content...

Figures

content...

Referencing

content...

Baby-steps

BibTeX

content...