metapost
A letterhead in CONTEXT

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abstract

For years I have used a home–made logo in PICTEX within LATEX, together with name and address as letterhead. Separate versions for myself and my wife were pre–printed on an HP 300 DPI Laserjet. With METAPOST fully integrated in CONTEXT, we decided to convert to META-POST and print the letterhead with each letter automatically. I used the versatile CONTEXT layer mechanism and the mode option.

keywords

non–guru, CONTEXT, METAPOST, layers, mode command

Introduction

Years ago, I used PICTEX within LATEX to produce a personalized letterhead for the private correspondence of my wife and myself. With new versions of TEX and new printers coming our way, however, more maintenance appeared needed than I liked. We started with PCTEX but moved to 4TEX–the–magnificent, no longer available, as soon as we found out about it. We started with a 300 DPI HP Laserjet but upgraded to 600 DPI and obtained DeskJet's with 1200 by 600 DPI. With each change, almost, my letterhead moved an inch or less up or down, left or right, on the page. With a non–guru approach to LATEX, meaning feeling unable to write a style—now called class— I had a hard time to reposition. I often achieved what was wanted but never quite understood how exactly. Conversion to the DeskJet was given up as too much work all over again. Even more difficult appeared the typesetting of the letterhead and the letter text in one go. So we had a two step process, one: to print the letterhead and two: to print the letter itself on the preprinted paper.

Then, a few years ago I converted to CONTEXT which has both PICTEX [2] and META-POST [3] integrated in the language and in addition offers the layer mechanism for easy positioning and scaling of layers of printed material on the paper sheet, and modes to compile different printed outputs from the same source text using a switch on the command line. Since everything also seemed somewhat easier to accomplish in the CONTEXT language we now wanted everything integrated and automated. What follows is a narrative on how this was accomplished.

The logo in METAPOST

We had a logo as a PICTEX graph representing our front door as a design sketch, as we eventually would like to have it made. Done in PICTEX it turned out to be difficult to join an arc to a straight line with precision and the relative positioning of separate lines with respect to rectangles, for example, seemed slightly inexact. Whereas the arc was built of cmr5 sized dots, the straight lines seemed drawn more like a line and their thickness was hard to match to the dots in the arc. Arrows at the end of a line never seemed to be part of it but always appeared stuck on. This was not noticeable in a small size graph at 300 DPI but enlarging the graphic on screen only a few times revealed these inaccuracies. Thus, although PICTEX facilitated the drawing of very nice, professional looking, scientific diagrams and had an exceptionally clear and useful manual, when we were assured that METAPOST [1] offered greater precision, we decided to give it a try.

   In the mean time the door was built and deviated somewhat from the original logo
drawing, urging the need for a new drawing. The major features of the door were mea-
sured and rounded to cm, and put into METAPOST code. METAPOST has bp (big point)
as its default internal unit and the door dimensions in cm can be entered without any
dimensional conversion to give a drawing that fits an A4 sheet. What follows are a few
example lines of code from a file `mpdeur.tex` that produce the outline, the letter box and
a cassette.

```
% output=pdftex
\noheaderandfooterlines
\starttext
\ \  % print something (a space) or else no output
\definelayer[mpdeur][position=no] % door in metapost
\setupbackgrounds[page][background=mpdeur]
\setlayer[mpdeur][x=1mm,y=1mm]{% position 1 mm down and left
\startMPcode
   pickup pencircle scaled 1;
% kozijn buiten rand
   draw (  0,  0) -- (144,  0) -- (144,370) &
        (144,370) .. ( 72,380) .. (  0,370) &
        (  0,370) -- cycle;
% brievenbus rechts buiten en binnenrand
   draw ( 87, 97) -- (121, 97) -- (121,106) -- ( 87,106) -- cycle;
   draw ( 90, 99) -- (118, 99) -- (118,104) -- ( 90,104) -- cycle;
% bovenste cassette links  buiten en binnenrand
   draw ( 15,110) -- ( 65,110) -- ( 65,230) -- ( 15,230) -- cycle;
   draw ( 20,115) -- ( 60,115) -- ( 60,225) -- ( 20,225) -- cycle;
% etc, etc.
% downsizing for this manuscript, different from letter logo
   currentpicture:=currentpicture scaled .5;
\stopMPcode
} % end of \setlayer
\stoptext
```

Compile this with CONTEXT[1] and everything is taken care of. The door logo is output as
a `mpdeur.pdf` one page graphic ready for inclusion in a letter. With the full code the door
graphic ('deur' is Dutch for door) is shown immediately below at half the size.

---
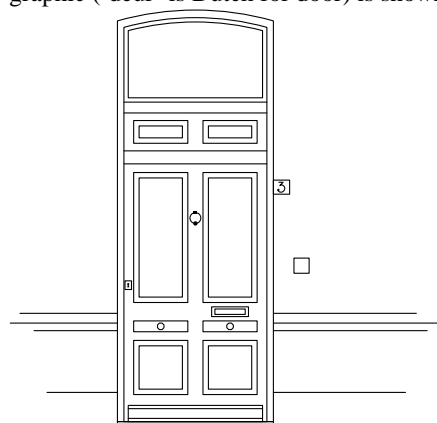
1. Type `texexec mpdeur`

The picture above follows the text without empty space, which is not pleasing to see, but shows the positioning. Normally in CONTEXT one would correct this joined placement with \startlinecorrection. The style of the door is in tune with what was common in The Hague between 1850 and 1870, although the letter box has todays mandatory dimensions.

A few words on the CONTEXT layer instructions surrounding the METAPOST graphic. Ordinary text, when typeset—like the door graphic above— is placed by TeX beginning top left in the *text* area. The text area begins about an inch from the top and an inch from the left but can be setup (with \setuplayout[options]). I prefer not to touch the settings of the original layout. Positioning of the door–logo should still be independent of the text area on the page. This calls for a CONTEXT layered layout:

```
\definelayer[mpdeur][position=no]
\setupbackgrounds[page][background=mpdeur]
\setlayer[mpdeur][x=1mm,y=1mm]{%
  \startMPcode
    ...
  \stopMPcode
} % end of \setlayer
```

First we define a layer with the logical name (mpdeur) having absolute positioning (\position=no) with respect to the upper left of the page, then we setup the background for a page printed with this layer, then we set the layer to a "value" which is here the METAPOST graphic embraced by \startMPcode ... \stopMPcode. The picture is located 1 mm to the lower right from the upper left corner of the page. This distance could have been made 0 mm but then the feeling that parts might have been printed off paper is hard to suppress. After compilation with CONTEXT we obtain a page mpdeur.pdf showing the background and viewable with Acrobat. But the picture, although useable as a full page background, is much too big for a logo, and must be downsized.

Placement of the logo in the letterhead

With the door drawn to the far upper left of the paper it can now be scaled and placed anywhere on a sheet. We decide to have the logo towards the upper left, followed by name and address. The logo placement is achieved as follows:

```
% output=pdftex
\noheaderandfooterlines
\starttext
\definelayer[logohead][position=no]
\setupbackgrounds[page][background=logohead]
\setlayer[logohead][x=1.8cm,y=2cm]{%
  \externalfigure[mpdeur.pdf][scale=220]
} % end of \setlayer
\stoptext
```

The layer calls are the same as before but the name of the layer is now logohead. To achieve a pleasing layout we had to play a little with the scale and the position of the door graphic. This and reuse for other purposes are also the reason for including the graphic indirectly via a PDF file. The page number is suppressed with \noheaderandfooterlines.

Adding name and address

Next is to add the name and address of the sender. Both my wife and I want a separate letterhead. It seemed easiest if this could be specified on a command line perhaps as follows:

```
makeletter nameofletter withhead
```

A true windows panel with a name entering box and a series of buttons to choose the head type would perhaps have been nicer because then the exact name options of the `withhead` need not be remembered. Using Windows Commander, however, a small explanatory file could be placed in the same directory for counseling and be visibly present. Two batch files were made, one to start a new letter (`ML.BAT`) and one to edit an existing letter (`EL.BAT`). The first is:

```
: enter on a command line "ml nameofletter [karel|hanny]"
copy vb.tex %1.tex
ed.exe d:\mklt\%1.tex
texexec --mode=%2 %1
```

File `vb.tex` is a letter template that is copied to another name. We discuss `vb.tex` later. The file `ed.exe` is the PC–Write editor that I still prefer. When the letter has been prepared it must be compiled and this is done with a very versatile program `texexec` within the CONTEXT system that understands and is able to pass a mode to the CONTEXT compiler. The command line specification `--mode=karel` makes sure that my letterhead is typeset, `--mode=hanny` specifies hers. When I am ready to write my ninth letter to the city counsel all I do is type on the command line:

```
ml benw09 karel
```

Here is how the specified mode is used in the `vb.tex` letter template:

```
% output=pdftex
\noheaderandfooterlines
\setupbodyfont[12pt]
\starttext
\definelayer[logohead][position=no]
\setupbackgrounds[page][background=logohead]
\setlayer[logohead][x=1.8cm,y=2cm]{%
  \externalfigure[mpdeur.pdf][scale=220]
} % end of first \setlayer
\setlayer[logohead][x=4.4cm,y=2cm]{%
  \doifmode{karel}
    {Karel~H~Wesseling,~~Nieuwe
      Schoolstraat~3,~~2514~HT~Den~Haag}
  \doifmode{hanny}
    {J~W~M~Wesseling||Gommers,~~Nieuwe
      Schoolstraat~3,~~2514~HT~Den Haag}
} % end of second \setlayer
\stoptext
```

When CONTEXT scans the text it compares the command–line specified mode with the name within the first braces pair of `\doifmode` and if equal carries out the instructions between the next braces. This could have been accomplished instead with `\startmode[karel] Karel~H~Wes... \stopmode` which construct I prefer when more than one or two actions are to be taken. In the same `logohead` layer at the specified position the name and address is typeset in 12pt size CMR. It is not necessary to specify a new layer, just add the text to the layer already specified. Positioning of text or figures in a CONTEXT layer, thus, is not left to TeX but done by the designer.

Adding the signature

Although it is good practice to sign the letter manually, if only because it makes one scan the text briefly, with letters sent over the internet this is only possible when the letter is

first printed, then manually signed, then scanned, then transmitted. This seemed a few steps too many. The thought then occurred that a signature could be written on a blank sheet, scanned, turned into a picture and added preferably automatically at the end.

The signature was made and filed as `kh.png`. Portable Network Graphics, PNG, is one of the graphic formats preferred by CONTEXT. The signature is added to the letter only when the mode is `karel`:

```
\useexternalfigure[karelsign][kh][width=.2\textwidth]
\starttext
....
\blank[2*big]
% Here the signature
% ------------------
\doifmode{karel}{\externalfigure[karelsign]}
\stoptext
```

With `\useexternalfigure` the logical name `karelsign` is created and linked with a file name `kh.png` of which the extension need not be given, but not all formats are acceptable to CONTEXT. The width is also set and CONTEXT scales both figure dimensions proportionally for the width to fit a small fraction of the text width. The `\blank` instruction creates some room between the "greetings" and the signature. This signature inclusion has made me realize how easy it has become to email someone a letter under a forged signature.

Template listing

For the convenience of the reader I provide the complete listing of the letter template.

```
% output=pdftex
\setupwhitespace[big] % Separation between paragraphs
\useexternalfigure[karelsign][kh][width=.2\textwidth]
\noheaderandfooterlines
\setupbodyfont[12pt]

\starttext
\definelayer[logohead][position=no]
\setupbackgrounds[page][background=logohead]
\setlayer[logohead][x=1.8cm,y=2cm]{%
  \externalfigure[mpdeur.pdf][scale=220]
} % end of first \setlayer
\setlayer[logohead][x=4.4cm,y=2cm]{%
  \doifmode{karel}
    {Karel~H~Wesseling,~~Nieuwe
      Schoolstraat~3,~~2514~HT~Den~Haag}
  \doifmode{hanny}
    {J~W~M~Wesseling||Gommers,~~Nieuwe
      Schoolstraat~3,~~2514~HT~Den~Haag}
} % end of second \setlayer
\language[nl]

\blank[small,force]
\rightaligned{\currentdate[day,month,year]}
\blank[medium]
% Hier de adressering % The address
%--------------------
\rightaligned{}
```

```
\rightaligned{}
\rightaligned{}
\blank[medium]
% Hier het onderwerp % The subject
%-------------------
\rightaligned{}

\blank[2*big]
% Hier de aanhef % Dear
%--------------
\blank[2*big]
% Hier de tekst % The body
%-------------
\blank[2*big]
% Hier de groet % Sincerely
%-------------
\blank[2*big]
% Hier de ondertekening % The signature
%---------------------
\doifmode{karel}{\externalfigure[karelsign]}
\stoptext
```
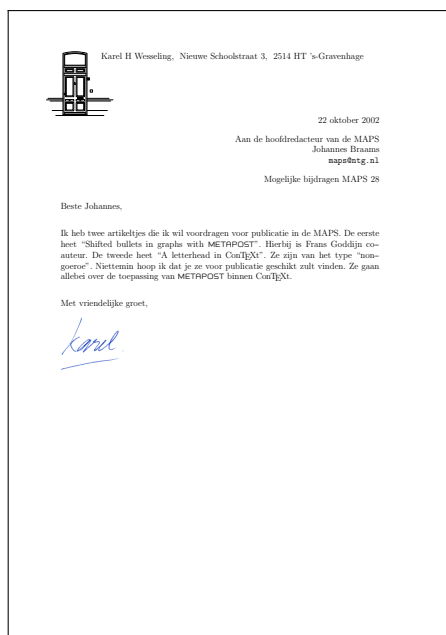
An example letter used to offer this manuscript to the editor–in–chief of the MAPS
follows:

Note in the listing that only a small selection (13) of the many available CONTEXT
instructions is used. Counting a `start/stop` pair as one instruction we get:

```
\blank \definelayer \doifmode \externalfigure \language
\noheaderandfooterlines \rightaligned \setlayer \setupbackgrounds
\setupbodyfont \setupwhitespace \starttext
\useexternalfigure
```

Still, a lot is accomplished. Not that it is always easy to find the right instruction for a task. In particular when coming from LATEX (as I did) it is hard to suppress typing `\underline` and type `\underbar` instead, or `\begin{itemize}` and type `\startitemize`. On the other hand, instructions are often easy to find by searching the documentation [2] for "underline" or "itemize". This has the side benefit that one then learns of `\underbars` which underlines word for word and breaks between words at the end of a line.

Acknowledgement

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References

1. Hobby J D: Drawing graphs with MetaPost.
   `\texmf\doc\metapost\base\mpgraph.pdf`
2. Hagen H: Context, the manual.
   `cont-eni.pdf`
3. Hagen H: Metafun.
   `metafun-s.pdf`
4. Otten T, Hagen H: Context, an excursion.
   `ms-cb-en.pdf`

For the CONTEXT and MetaFun manuals I chose the screen/interactive versions in English. A4 paper printable and Dutch versions are also available, usually in the same subdirectory.

Some CONTEXT and MetaFun manuals and the CONTEXT software can be found on the TEXLive CDROM, Volume 1, now in its 7th edition. Find the subdirectory `\texmf\doc\context\`. They are also available from http://www.pragma-ade.com/, a CTAN site, or from the site of the Dutch–speaking TEX Usersgroup, NTG, at www.ntg.nl.