

```
%  TEX SOURCE FILE FOR DEMONSTRATING THE
%  (MIS)BEHAVIOR OF THE MAGNIFICATION COMMAND
%  IN PLAIN TEX USING MACTEX, TEXSHOP AND PDFTEX.
```

```
\magnification = \magstep0
\parskip = 6 pt plus 6 pt
\parindent 0 pt
```

```
\centerline{The Plain TeX Magnification Problem}
\smallskip
```

```
{\bf What's in this PDF file:}
```

This page and the next page show the source file for a test to demonstrate the (mis?)behavior of the magnification command in Plain TeX using the MacTeX TeXShop and pdftex options. I have printed this source file to PDF using the built-in Print to PDF command in Mac OS 10.3.9 and used the resulting PDF files as the opening pages for this document which I have put on my personal web page as [URL deleted in typeset pages]

```
%
%  www.stanford.edu/~siegmán/magnification_problem.pdf
%
```

I have then typeset this source file four times, increasing the value of magstep in the magnification command above from 0 to 3; saved the PDF output page to my HD in each case; and then concatenated these pages behind these cover pages using Adobe Acrobat. Finally, I've added a copy of the console log files for the final job at the end of this PDF document.

I've done this typesetting using the MacTeX software as installed from TUG's TeX Collection 2005 DVD onto a several year old Mac iBook G4 with a vanilla installation of Mac OS 10.3.9. I used TeXShop Version v1.43, with "Plain TeX" selected in the drop down menu in the TeXShop edit window, and "Pdftex" selected in the TeXShop Format menu. The magnification in this particular test is `\the\mag \the\mag \the\mag \the\mag`.

What I think happens:

These typeset PDF pages do not have the appearance that I would expect from the magnification command in Plain TeX, based on my experience with other versions of TeX and on the description of the magnification command in The TeXbook.

I believe this problem results as follows: If I open each of the individual typeset PDF pages in Adobe Illustrator and use the position and dimension measurement capabilities in Illustrator, I find that `{\sl` the size of the typeset areas, and the top and left margins of each page (that is, the hoffset and voffset of the typeset area from the upper left corner of the PDF page) all seem to be exactly the same as for the magstep 0 page, while `{\sl` the type itself, and all internal dimensions such as skips in the typeset area are magnified by the "mag" parameter---which is exactly what I would expect should happen.

Illustrator also reveals, however, that the dimensions of the ``artboard" of the typeset page as shown in the ``File : Document Setup : Artboard Size" menu command, `{\sl}` have also been magnified by the mag factor for each successive typeset page}. As a result, if you open or print this PDF document in Adobe Acrobat or Reader (and probably also other applications), these apps demagnify the entire ``page" by the artboard dimensions before displaying or printing it, with the result that the typeset area appears ``scrunched up" into the upper left corner of the displayed or printed page.

In my personal opinion, this is `{\sl NOT}` what pdftex should do---it's neither useful nor sensible nor in agreement with Knuth's original intentions, as I read them. The magnification command was designed to blow up the text size within the typeset area, `{\sl}` without blowing up the size of the typeset area itself}. If a Plain TeX user wants to also magnify the size of the typeset area, he or she has to do this explicitly, using `hsize` and `vsize`. If the user also for some reason wants to magnify the artboard size by some ratio, for whatever reason, he or she should have to issue specific pdftex commands to make this happen (note that the user might well want to magnify the artboard area by some other magnification ratio than the TeX mag value). `{\sl}` Otherwise, pdftex should leave the artboard size of the PDF file at its default value of 8.5 X 11}---IMHO, anyway.

Resolving this problem is beyond my pay grade. My plea to TUG is that it either be resolved appropriately; or if some special non-Plain-TeX coding is now needed in Plain TeX source files to make magnification do the right thing, that a clear explanation or template for this be prominent in the next TUG CD.

Thanks, AES (siegman at stanford dot edu)

`\eject \end`

## The Plain TeX Magnification Problem

### What's in this PDF file:

This page and the next page show the source file for a test to demonstrate the (mis?)behavior of the magnification command in Plain TeX using the MacTeX TeXShop and pdftex options. I have printed this source file to PDF using the built-in Print to PDF command in Mac OS 10.3.9 and used the resulting PDF files as the opening pages for this document which I have put on my personal web page as [URL deleted in typeset pages]

I have then typeset this source file four times, increasing the value of magstep in the magnification command above from 0 to 3; saved the PDF output page to my HD in each case; and then concatenated these pages behind these cover pages using Adobe Acrobat. Finally, I've added a copy of the console log files for the final job at the end of this PDF document.

I've done this typesetting using the MacTeX software as installed from TUG's TeX Collection 2005 DVD onto a several year old Mac iBook G4 with a vanilla installation of Mac OS 10.3.9. I used TeXShop Version v1.43, with "Plain TeX" selected in the drop down menu in the TeXShop edit window, and "Pdftex" selected in the TeXShop Format menu. The magnification in this particular test is 1000 1000 1000 1000.

What I think happens:

These typeset PDF pages do not have the appearance that I would expect from the magnification command in Plain TeX, based on my experience with other versions of TeX and on the description of the magnification command in The TeXbook.

I believe this problem results as follows: If I open each of the individual typeset PDF pages in Adobe Illustrator and use the position and dimension measurement capabilities in Illustrator, I find that *the size of the typeset areas, and the top and left margins of each page (that is, the hoffset and voffset of the typeset area from the upper left corner of the PDF page) all seem to be exactly the same as for the magstep 0 page, while the type itself, and all internal dimensions such as skips in the typeset area are magnified by the "mag" parameter*—which is exactly what I would expect should happen.

Illustrator also reveals, however, that the dimensions of the "artboard" of the typeset page as shown in the "File : Document Setup : Artboard Size" menu command, *have also been magnified by the mag factor for each successive typeset page*. As a result, if you open or print this PDF document in Adobe Acrobat or Reader (and probably also other applications), these apps demagnify the entire "page" by the artboard dimensions before displaying or printing it, with the result that the typeset area appears "scrunched up" into the upper left corner of the displayed or printed page.

In my personal opinion, this is *NOT* what pdftex should do—it's neither useful nor sensible nor in agreement with Knuth's original intentions, as I read them. The magnification command was designed to blow up the text size within the typeset area, *without blowing up the size of the typeset area itself*. If a Plain TeX user wants to also magnify the size of the typeset area, he or she has to do this explicitly, using hsize and vsize. If the user also for some reason wants to magnify the artboard size by some ratio, for whatever reason, he or she should have to issue specific pdftex commands to make this happen (note that the user might well want to magnify the artboard area by some other magnification ratio than the TeX mag value). *Otherwise, pdftex should leave the artboard size of the PDF file at its default value of 8.5 X 11*—IMHO, anyway.

Resolving this problem is beyond my pay grade. My plea to TUG is that it either be resolved appropriately; or if some special non-Plain-TeX coding is now needed in Plain TeX source files to make magnification do the right thing, that a clear explanation or template for this be prominent in the next TUG CD.

Thanks, AES (siegman at stanford dot edu)

## The Plain TeX Magnification Problem

### What's in this PDF file:

This page and the next page show the source file for a test to demonstrate the (mis?)behavior of the magnification command in Plain TeX using the MacTeX TeXShop and pdftex options. I have printed this source file to PDF using the built-in Print to PDF command in Mac OS 10.3.9 and used the resulting PDF files as the opening pages for this document which I have put on my personal web page as [URL deleted in typeset pages]

I have then typeset this source file four times, increasing the value of magstep in the magnification command above from 0 to 3; saved the PDF output page to my HD in each case; and then concatenated these pages behind these cover pages using Adobe Acrobat. Finally, I've added a copy of the console log files for the final job at the end of this PDF document.

I've done this typesetting using the MacTeX software as installed from TUG's TeX Collection 2005 DVD onto a several year old Mac iBook G4 with a vanilla installation of Mac OS 10.3.9. I used TeXShop Version v1.43, with "Plain TeX" selected in the drop down menu in the TeXShop edit window, and "Pdftex" selected in the TeXShop Format menu. The magnification in this particular test is 1200 1200 1200 1200.

What I think happens:

These typeset PDF pages do not have the appearance that I would expect from the magnification command in Plain TeX, based on my experience with other versions of TeX and on the description of the magnification command in *The TeXbook*.

I believe this problem results as follows: If I open each of the individual typeset PDF pages in Adobe Illustrator and use the position and dimension measurement capabilities in Illustrator, I find that *the size of the typeset areas, and the top and left margins of each page (that is, the hoffset and voffset of the typeset area from the upper left corner of the PDF page) all seem to be exactly the same as for the magstep 0 page, while the type itself, and all internal dimensions such as skips in the typeset area are magnified by the "mag" parameter*—which is exactly what I would expect should happen.

Illustrator also reveals, however, that the dimensions of the "artboard" of the typeset page as shown in the "File : Document Setup : Artboard Size" menu command, *have also been magnified by the mag factor for each successive typeset page*. As a result, if you open or print this PDF document in Adobe Acrobat or Reader (and probably also other applications), these apps demagnify the entire "page" by the artboard dimensions before displaying or printing it, with the result that the typeset area appears "scrunched up" into the upper left corner of the displayed or printed page.

In my personal opinion, this is *NOT* what pdftex should do—it's neither useful nor sensible nor in agreement with Knuth's original intentions, as I read them. The magnification command was designed to blow up the text size within the typeset area, *without blowing up the size of the typeset area itself*. If a Plain TeX user wants to also magnify the size of the typeset area, he or she has to do this explicitly, using hsize and vsize. If the user also

for some reason wants to magnify the artboard size by some ratio, for whatever reason, he or she should have to issue specific pdftex commands to make this happen (note that the user might well want to magnify the artboard area by some other magnification ratio than the TeX mag value). *Otherwise, pdftex should leave the artboard size of the PDF file at its default value of 8.5 X 11—IMHO, anyway.*

Resolving this problem is beyond my pay grade. My plea to TUG is that it either be resolved appropriately; or if some special non-Plain-TeX coding is now needed in Plain TeX source files to make magnification do the right thing, that a clear explanation or template for this be prominent in the next TUG CD.

Thanks, AES (siegman at stanford dot edu)

## The Plain TeX Magnification Problem

### What's in this PDF file:

This page and the next page show the source file for a test to demonstrate the (mis?)behavior of the magnification command in Plain TeX using the MacTeX TeXShop and pdftex options. I have printed this source file to PDF using the built-in Print to PDF command in Mac OS 10.3.9 and used the resulting PDF files as the opening pages for this document which I have put on my personal web page as [URL deleted in typeset pages]

I have then typeset this source file four times, increasing the value of mag-step in the magnification command above from 0 to 3; saved the PDF output page to my HD in each case; and then concatenated these pages behind these cover pages using Adobe Acrobat. Finally, I've added a copy of the console log files for the final job at the end of this PDF document.

I've done this typesetting using the MacTeX software as installed from TUG's TeX Collection 2005 DVD onto a several year old Mac iBook G4 with a vanilla installation of Mac OS 10.3.9. I used TeXShop Version v1.43, with "Plain TeX" selected in the drop down menu in the TeXShop edit window, and "Pdftex" selected in the TeXShop Format menu. The magnification in this particular test is 1440 1440 1440 1440.

What I think happens:

These typeset PDF pages do not have the appearance that I would expect from the magnification command in Plain TeX, based on my experience with other versions of TeX and on the description of the magnification command in The TeXbook.

I believe this problem results as follows: If I open each of the individual typeset PDF pages in Adobe Illustrator and use the position and dimension measurement capabilities in Illustrator, I find that *the size of the typeset areas, and the top and left margins of each page (that is, the hoffset and voffset of the typeset area from the upper left corner of the PDF page) all seem to be exactly the same as for the magstep 0 page, while the type itself, and all internal dimensions such as skips in the typeset area are magnified by the "mag" parameter*—which is exactly what I would expect should happen.

Illustrator also reveals, however, that the dimensions of the “artboard” of the typeset page as shown in the “File : Document Setup : Artboard Size” menu command, *have also been magnified by the mag factor for each successive typeset page*. As a result, if you open or print this PDF document in Adobe Acrobat or Reader (and probably also other applications), these apps demagnify the entire “page” by the artboard dimensions before displaying or printing it, with the result that the typeset area appears “scrunched up” into the upper left corner of the displayed or printed page.

In my personal opinion, this is *NOT* what pdftex should do—it’s neither useful nor sensible nor in agreement with Knuth’s original intentions, as I read them. The magnification command was designed to blow up the text size within the typeset area, *without blowing up the size of the typeset area itself*. If a Plain TeX user wants to also magnify the size of the typeset area, he or she has to do this explicitly, using hsize and vsize. If the user also for some reason wants to magnify the artboard size by some ratio, for whatever reason, he or she should have to issue specific pdftex commands to make this happen (note that the user might well want to magnify the artboard area by some other magnification ratio than the TeX mag value). *Otherwise, pdftex should leave the artboard size of the PDF file at its default value of 8.5 X 11—IMHO, anyway.*

Resolving this problem is beyond my pay grade. My plea to TUG is that it either be resolved appropriately; or if some special non-Plain-TeX coding is now needed in Plain TeX source files to make magnification do the right thing, that a clear explanation or template for this be prominent in the next TUG CD.

Thanks, AES (siegman at stanford dot edu)

## The Plain TeX Magnification Problem

### What's in this PDF file:

This page and the next page show the source file for a test to demonstrate the (mis?)behavior of the magnification command in Plain TeX using the MacTeX TeXShop and pdftex options. I have printed this source file to PDF using the built-in Print to PDF command in Mac OS 10.3.9 and used the resulting PDF files as the opening pages for this document which I have put on my personal web page as [URL deleted in typeset pages]

I have then typeset this source file four times, increasing the value of mag-step in the magnification command above from 0 to 3; saved the PDF output page to my HD in each case; and then concatenated these pages behind these cover pages using Adobe Acrobat. Finally, I've added a copy of the console log files for the final job at the end of this PDF document.

I've done this typesetting using the MacTeX software as installed from TUG's TeX Collection 2005 DVD onto a several year old Mac iBook G4 with a vanilla installation of Mac OS 10.3.9. I used TeXShop Version v1.43, with "Plain TeX" selected in the drop down menu in the TeXShop edit window, and "Pdftex" selected in the TeXShop Format menu. The magnification in this particular test is 1440 1440 1440 1440.

What I think happens:

These typeset PDF pages do not have the appearance that I would expect from the magnification command in Plain TeX, based on my experience with other versions of TeX and on the description of the magnification command in The TeXbook.

I believe this problem results as follows: If I open each of the individual typeset PDF pages in Adobe Illustrator and use the position and dimension measurement capabilities in Illustrator, I find that *the size of the typeset areas, and the top and left margins of each page (that is, the hoffset and voffset of the typeset area from the upper left corner of the PDF page) all seem to be exactly the same as for the magstep 0 page, while the type itself, and all internal dimensions such as skips in the typeset area are magnified by the "mag" parameter*—which is exactly what I would expect should happen.

Illustrator also reveals, however, that the dimensions of the “artboard” of the typeset page as shown in the “File : Document Setup : Artboard Size” menu command, *have also been magnified by the mag factor for each successive typeset page*. As a result, if you open or print this PDF document in Adobe Acrobat or Reader (and probably also other applications), these apps demagnify the entire “page” by the artboard dimensions before displaying or printing it, with the result that the typeset area appears “scrunched up” into the upper left corner of the displayed or printed page.

In my personal opinion, this is *NOT* what pdftex should do—it’s neither useful nor sensible nor in agreement with Knuth’s original intentions, as I read them. The magnification command was designed to blow up the text size within the typeset area, *without blowing up the size of the typeset area itself*. If a Plain TeX user wants to also magnify the size of the typeset area, he or she has to do this explicitly, using hsize and vsize. If the user also for some reason wants to magnify the artboard size by some ratio, for whatever reason, he or she should have to issue specific pdftex commands to make this happen (note that the user might well want to magnify the artboard area by some other magnification ratio than the TeX mag value). *Otherwise, pdftex should leave the artboard size of the PDF file at its default value of 8.5 X 11—IMHO, anyway.*

Resolving this problem is beyond my pay grade. My plea to TUG is that it either be resolved appropriately; or if some special non-Plain-TeX coding is now needed in Plain TeX source files to make magnification do the right thing, that a clear explanation or template for this be prominent in the next TUG CD.

Thanks, AES (siegman at stanford dot edu)

This is pdfTeX, Version 3.141592-1.30.4-2.2 (Web2C 7.5.5) (format=pdfTeX 2005.11.9) 24 NOV 2006 15:42

entering extended mode

\write18 enabled.

\*\*tex\_magnification\_3.tex

(./tex\_magnification\_3.tex [1{/usr/local/texlive/texmf-local/fonts/map/pdftex/updmap/pdftex.map}])

Underfull \vbox (badness 10000) has occurred while \output is active

\vbox(446.66776+2.5)x326.21849, glue set 6.59265

.\glue(\topskip) 3.05556

.\hbox(6.94444+1.94444)x326.21849, glue set 0.20293

..\hbox(0.0+0.0)x0.0

..\tenrm l

..\tenrm l

..\tenrm l

..\tenrm u

..etc.

.\penalty 150

.\glue(\baselineskip) 3.11111

.\hbox(6.94444+1.94444)x326.21849, glue set - 0.19615

..\tenrm t

..\tenrm h

..\tenrm e

..\glue 3.33333 plus 1.66666 minus 1.11111

..\tenrm t

..etc.

.etc.

[2] </usr/local/texlive/texmf-fonts/type1/bluesky/cm/cmsl10.pfb></usr/local/texlive/texmf-fonts/type1/bluesky/cm/cmbx10.pfb></usr/local/texlive/texmf-fonts/type1/bluesky/cm/cm10.pfb>  
Output written on tex\_magnification\_3.pdf (2 pages, 37939 bytes).