

Travels in T_EX Land: Consolidated notes on “thought breaks”

David Walden

Abstract In this column in each issue I muse on my wanderings around the T_EX world. In three of my columns I have considered what I think of as “thought breaks.” Now seems like a good time to bring together the content on thought breaks from those three previous columns plus a tiny bit more.

1 From issue 2005-4

In my writing of papers and books, I sometimes use a device that I think of as “thought breaks”—an extra vertical space and perhaps a few letters of font change at the beginning of a paragraph that begins a new topic but not a topic so different as to deserve its own chapter or section title.¹ I have not found an archive of various ways of doing thought breaks in T_EX, so I have been developing my own little library. For instance, see the way a thought break is indicated between this and the next paragraph.

I discussed the macro for this approach to a thought break in some detail in *TUGboat*, Vol. 25, No. 2, pp. 199–201. It is defined as follows:

```
\def\thoughtbreak#1{\bigskip\noindent{\Large #1}}
```

1. Of course, the typographic world talks about “dropped caps,” “raised caps,” “versals,” etc. However, these seem to have to do with the format of the leading letter or letters, not the logical concept of a space in the text indicating a change in topic.

A March 8, 2009, email from Juan Acevedo provided some additional names for the decorative marks that may be present with thought breaks (or elsewhere): floret, flower, printer’s flower, and fleuron. He also directed me to the part of Peter Wilson’s memoir manual where he talks about an “anonymous division” for what I am calling a thought break. His package includes commands for creating plainbreak (just a blank line without any decorations) and fancybreak (including decorations).

I used `\def` instead of `\newcommand` in this and the following examples because a) I [was] writing [my 2005-4] column using plain \TeX , and b) because in some cases I will use \TeX 's capability for having macro parameters be delimited with other characters than braces. Since the above definition uses `\Large`, it only works when I am using \LaTeX , but this is most of the time.

I also frequently have used a simpler version of this:

```
\def\thoughtbreak{\bigskip\noindent{}}
```

This version only adds an extra vertical space and inhibits indentation — no large letter.

The advantage of including something graphical as part of a thought break is that a thought break is still easily recognized at a page break. Karl Berry suggests inhibiting page breaks at thought breaks if thought breaks are only indicated with extra vertical space. In this case, he would rewrite the definition in the previous sentence to be something like:²

```
\def\thoughtbreak{\nobreak\bigskip\nobreak%
\noindent{}}
```

At present I am in the final stages of drafting a book, and I have been considering fancier typographic devices for thought breaks. For instance, I looked into the `lettrine` style, which works as follows in \LaTeX :

```
\usepackage{lettrine}
\def\thoughtbreak#1#2{\bigskip\noindent
\lettrine{#1}{#2}}
\thoughtbreak{T}{his is} the start of a paragraph
```

In this case the letter “T” becomes a dropped capital two lines high, and the letters “his is” are in small caps. I also use another version of this when I do not want to include more than the first word in the dropped-cap-small-caps group of letters:

2. Karl says, “The second `\nobreak` attempts to inhibit a page break at the `\baseskip` glue before the first line of the following paragraph. Undoubtedly there are cases this doesn’t handle, but this gives an idea of what might be done.”

```

\def\thoughtbreak#1#2 {\bigskip\noindent
\lettrine{#1}{#2}\ }
\thoughtbreak This is the start of a paragraph

```

In my book, I may end up using a small horizontal line to delimit the thought breaks, as above.³

```

\def\thoughtbreak{\vskip2pt
\centerline{$\{\vrule width2cm height .5pt\}$}
\vskip2pt\noindent}

```

A slight variation is to use *** or some other graphic instead of a rule.⁴

William Adams notes that there is a lot of flexibility in how the break indications may be placed and points to his use of the “Bordas” style of indicating paragraphs (see <http://members.aol.com/willadams/portfolio/typography/theriver.pdf>).

In a September 11, 2003, posting to `comp.text.tex`, John Culleton described what he called a “centered versal instead of a dropped cap versal.” Like the example from William Adams, Culleton’s method lets the thought break be in the middle of a line.

THIS is an example of using Colleton’s method. It is implemented with a macro such as the following:

```

\def\thoughtbreak#1#2{\noindent\hglue .4
\hsize{\tfd#1}{\sc#2}\ }

```

In the above definition, `\tfd` is a font command for a font like `\Large roman` in L^AT_EX, and `\sc` is small caps.

3. For a discussion of how to make a “swelled rule” for this purpose, see <http://www.tug.org/pracjourn/2005-4/peter/>.

4. The definition I would like someone to provide me with is the one where less space is left above the rule (or asterisks or whatever) when the right end of the line above is to the left of the left end of the rule.

The final thing I wanted to do in my trial of T_EX in this column was to try including a graphic. So I included the following image where we see a thought break that involves a vertical space with a stylish symbol and all caps on the first phrase of the following paragraph from Melanie Rehak's *Girl Sleuth: Nancy Drew and the Women Who Created Her*, Harcourt, 2005, p. 154.

"You may already know the NANCY DREW books." This latter was a rich display of false modesty if ever there was one, for by the end of 1931, there were very few people, especially people involved in the juvenile book world, who had not heard of Nancy Drew.



THE OPENING PAGES of Nancy Drew Mystery Story number seven, *The Clue in the Diary*, published in 1932, noted that, in addition to all of the teen sleuth's other stellar qualities, "in any crowd, she unconsciously assumed leadership." Even when her peer group

2 From issue 2008-1

In my column in issue 2005-4 I began using the words "thought breaks" to describe those points in the text of a book or article where a new train of thought begins without there being a section or subsection title. Such breaks are often indicated by some extra vertical space and some sort of ornament or by some extra vertical space and perhaps a different font face for a character, few characters, or few words, as shown at the beginning of the following paragraph (this particular style of thought break, including the seemingly odd half line indent, is used in the U.S. hardback edition of Robertson Davies' book *The Cunning Man*, published by Viking in 1994).

RECENTLY I spent some of my time reading *The Book of Salt* by Monique Truong. I read the paperback edition from the "A Mariner Book" imprint of Houghton Mifflin Company (Boston and New York) that was first published in 2004. This book used an ornament to indicate thought breaks (see page 36, for example) that I greatly admire. Thus, I thought I would

try to replicate it ...

bitter in the back of my throat. I point to a table on which several quinces sit yellowing in a blue and white china bowl. I shake my head in their direction, and I leave the room, speechless.



Paper-white narcissuses, one hundred bulbs in shallow pools of moistened pebbles, their roots exposed, clinging, pale anchors

... in some way that allowed me to use it with \TeX .

The easiest thing is to scan the ornament, clean it up a bit with Photoshop, and access it as a graphic, e.g.,

```
\noindent\hfil\scalebox{.12}  
{\includegraphics{salt-ornament-alone-3.jpg}}\hfil
```

which results in the following.



That looks pretty good (especially on the printed page — print it out). Blown up about eight times, it looks like this:



But those little imperfections aren't really visible in the size I would use it in a book, as shown above.

However, I thought that it might be “more pure” to somehow recreate the ornament in METAFONT, MetaPost, or some \LaTeX graphics package.

At this point, I got to chatting (via email) with issue editor, Yuri Robbers. He noted three possibilities that came to mind for him for creating the desired graphic:

1. using a large print on graph paper and hand coding the outline of the ornament

2. using `autotrace` and `pstoedit`
3. from MetaPost to METAFONT or an otherwise usable glyph or font

First approach

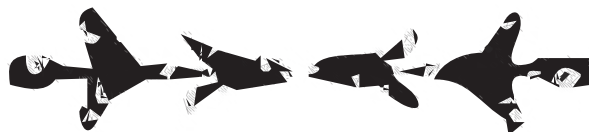
The first approach had already come to mind before I talked with Yuri. As Yuri noted, this was the approach used by Donald Knuth, and described in his *Digital Typography* book, to develop his early fonts and also used by Knuth with Zapf to develop the Euler Math Fonts. However, the 600 dpi scan I have would still need to be blown up by a factor of four or more to be big enough to measure and hand code its coordinates, but at that magnification it no longer is made up of smooth curves and straight lines—rather, it's made up of lots of pixels that would require lots of interpolation, e.g., using a French curve to draw the outline.

Second approach

The second approach had immediate appeal because it sounded like a program would do the tracing for me, as described by Karl Berry in “Making outline fonts from bitmap images,” *TUGboat*, Volume 22 (2001), Number 4, pp. 281-295, which Yuri pointed me to. So, I downloaded an already-compiled Windows version of the `autotrace` program from <http://autotrace.sourceforge.net/>, unzipped it into a folder `autotrace`, opened `salt-ornament-alone-3.jpg` with Photoshop, saved it as a bitmapped file, `salt-ornament-alone-3.bmp` in the directory `autotrace`, read the README file a tiny bit, and gave the command

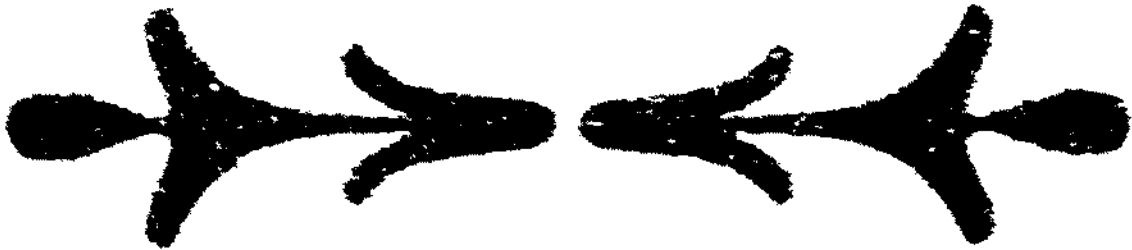
```
./autotrace.exe --output-format eps --output-file out.eps salt-ornament-alone.bmp
```

This ran to completion but produced the following file (blown up so you can see the details)

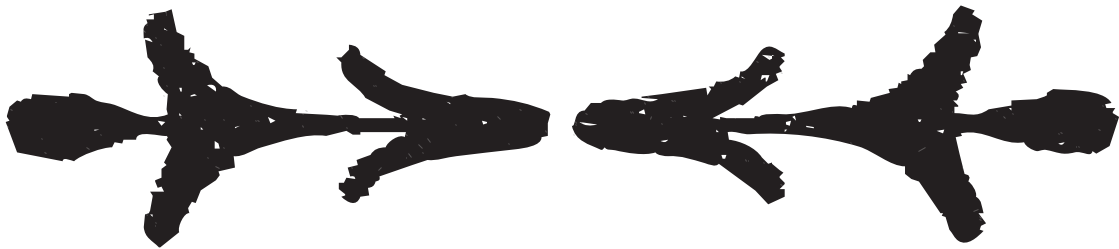


which is not usable. But it is sort of amazing that it managed to find the outline at all. To make `autotrace` do what I wanted was maybe going to take more reading of the options described in the README file.

But, before taking the big step of reading and understanding the autotrace man page (all the documentation it has, apparently), I decided to first bash ahead and see if a better scan of the ornament would help. I rescanned the ornament at 2400dpi (4 times more resolution than the first scan had) and specified for the scanner to directly output a bitmap image (rather than outputting a JPG which I later converted to a bitmap using Photoshop), and specified B&W rather than color (I had scanned the earlier image in color and later converted it to B&W in Photoshop). This resulted in approximately the following image



which has a few white spots and some non-smooth corners but looked pretty good. So I tried autotrace again, which resulted in the following as an EPS or PDF file.



That's only slightly worse than the scan—which still leaves me sort of impressed with that capabilities of autotrace. But, of course, I could have just converted my improved bitmap to EPS or PDF with Photoshop and skipped using autotrace, so it was actually not much help in my situation versus just using the scan itself with `\includegraphics` embedded in a new `LATEX` command such as `\dropinornament`.

See also the Appendix.

Third approach

Thus, it seemed like it was time to try Yuri's third suggestion — trying to figure out some curves in MetaPost, for instance, that approximate the desired ornament.

I looked at the documentation in the *Graphics Companion* for a few minutes and got discouraged about figuring out how to find the points to generate splines, Bézier curves, etc. (like many or perhaps most people, I have a pretty short attention span for reading documentation). So I looked again at the high resolution scan of the previous section, this time with Illustrator. With Illustrator it was pretty easy to select the pen tool, touch points approximately on the outline of the scan (fuzzy though it was at the edges), and read the X-Y coordinates of the pen position from Illustrator's GUI display.

Thus, I collected points along the top half of the left half of the ornament. I put these into Excel, thinking that I would use Excel to create a reflected set of points with which to draw the bottom half of the left half of the ornament. In the end, I didn't need Excel for this, but it was handy to have the points in Excel for converting all of the points to positions where both their X and Y coordinates were positive (MetaPost apparently didn't like points with negative X values that I had recorded from the images position in Illustrator).

I next looked up how to use MetaPost to draw a set of connecting curves from point by looking at the first 20 or so pages of Hans Hagen's MetaFun manual (www.pragma-ade.com/general/manuals/metafun-p.pdf). I tried one small test using his instructions on page 9 for running MetaPost directly, but immediately switched over to running ConT_EXt's texexec, as also described on page 9, so I could easily go straight to a PDF without having to run Adobe's Distiller. (Of course, I could also have looked at MetaPost output using MiK_TE_X's YAP display of DVI files.)

It took me at least an extra hour to get all the X-Y coordinates typed correctly into my text editor (just using the scan directly is looking better all the time). Here is what I fed into MetaPost via texexec:

```
\starttext
\startuseMPgraphic{dummy}
  path p;
  p := (1,145)..
```


(4,156.5)..
(13.5,162.5)..
(27.5,164)..
(42,163)..
(55.5,160)..
(68.5,155)..
(83,149)..
(92,150)..
(96,160.5)..
(91,170)..
(86,182.5)..
(82.5,198.5)..
(84,207.5)..
(89,211.5)..
(96,211.5)..
(102,205)..
(107,193.5)..
(115,183)..
(125,172)..
(136.5,163.5)..
(155,155.5)..
(171.5,152)..
(187,150)..
(208.5,149.5)..
(221.5,148.5)..
(228,148.333)..
(233.167,148.5)..
(234.833,148.5)..
(235,149.667)..
(234.167,150.667)..
(230,151.883)..
(223.167,155)..
(212.833,161.333)..
(204.833,167.333)..
(199.5,175)..

```

(198.167,182.333)..
(199.833,186.667)..
(203.167,189.667)..
(208.167,189.667)..
(210.833,187)..
(216.5,180.667)..
(225.5,173.333)..
(233.833,168)..
(241.167,166)..
(251.167,164)..
(258.833,162.667)..
(267.167,161.333)..
(274.5,160.333)..
(284.167,160)..
(293.5,159)..
(304.5,158)..
(313.167,155.667)..
(317.833,153.667)..
(321.167,151)..
(322.5,145.667)..
(322.5,145)--cycle);
fill p withcolor black;
draw p;
path q;
q := p reflectedabout((0,145),(335,145));
fill q withcolor black;
draw q;

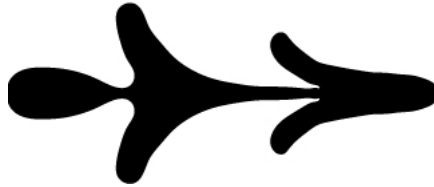
\stopuseMPgraphic
\useMPgraphic{dummy}
\stoptext

```

I learned about filling a closed cycle by glancing at Troy Henderson's "A beginner's guide to MetaPost for creating high-quality graphics" (<http://www.ursoswald.ch/metapost/tutorial.html>). I learned about creating the bottom half of the left half of the ornament by reflection in MetaPost from the same few pages at the

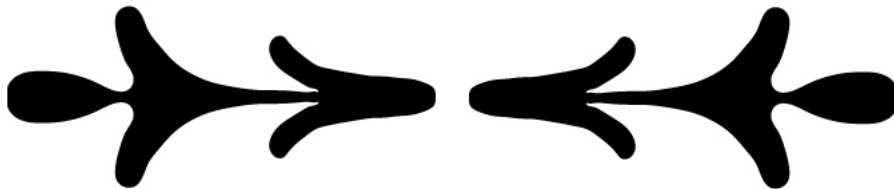
beginning of Hans' manual.⁵

The figure produced by the above MetaPost code is the following, which I converted into a JPG so I could include it here using `includegraphics`:



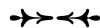
Obviously at this point I could have tuned up some of the coordinates in my MetaPost file to eliminate slight imperfections in the ornament. However, when the ornament is reduced to the appropriate size for use in a book or paper, I doubt these imperfections will show, and so I will not bother trying to make things more perfect.

Now I suppose I need to learn how to give a name to the above drawing in my MetaPost code and then rotate it about a vertical axis to get the other half of the ornament. And I also suppose I need to learn to input the Postscript from MetaPost into L^AT_EX file. However, it really is easy to just copy the half ornament in Photoshop, rotate it, paste the rotated copy, and save the pair of half-ornaments as a graphic, e.g.,



which I can insert into any text file by defining a macro with the appropriate scaling and with an appropriate name, e.g., into a `thoughtbreak` macro such as I illustrated in my 2005-4 column:

```
\newcommand{\thoughtbreak}{\vskip2pt
\centerline{\scalebox{.05}{\includegraphics{two-half-ornaments.jpg}}}
\vskip2pt\noindent{}}
```



5. You can get the file itself, `half-ornament.mp`, from the HTML page for this column.

This looks pretty good compared with the scan from the book on page 2, so I think I'll end this column now. The graphic for this ornament is in the file `two-half-ornaments.jpg` which can be accessed via this column's HTML page.

Postscript

The 2008 Major League Baseball season is about to start, and the *Red Sox Annual 2008* from Maple Street Press (Hanover, MA) has been published and uses the following ornament for its thought breaks.



I love it.

Addendum

After I thought I was finished with this column, I received an email from Aditya Mahajan who had read the column on the journal's staging website before this issue was officially posted for public viewing. He said, "I do not understand why, ultimately, you are using the ornament as a jpg. Since you have created the ornament from MetaPost, you can simply include either a pdf or eps into your document. That way, you retain the advantage of having the ornament as a vector graphic. A jpg is a bitmap format and will not look good when zoomed in; the pdf/eps format will look good even when zoomed in.

"Since you are using MetaPost inside ConT_EXt, you can just say

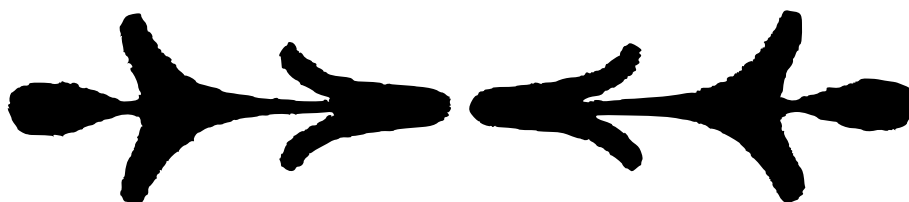
```
\starttext
\startMPpage
metapost code
\stopMPpage
\stoptext
```

and you will get a pdf whose page size is same as the size of the ornament."

There were two reasons why I used a jpg. First, I only created half the ornament in MetaPost, and it was easier for me to use Photoshop to create the other half of the ornament and save the two halves as a jpg than it was to learn how to create the other half of the ornament using some symmetry operation in MetaPost. Second, I did not know how to get a PDF page which was only as big as the ornament when included as a graphic; Aditya Mahajan's set of commands above apparently solves that problem.

Appendix — Yuri's experiment with autotrace

After reading the subsection on my efforts with the second approach, Yuri Robbers tried the second approach himself using my 2400dpi scan. He cleaned up the scanned image using Gimp (the free equivalent of me using Photoshop) and then ran autotrace. The autotrace processing created the file `yuri.mp`, which in turn was converted into an EPS file which produce the following image:



His result is not quite as good as my result from using the third approach, but it is obviously a pretty good result.

The content of Yuri's MetaPost file (`yuri.mp`) can be seen by looking at the link on the HTML page for this column.

3 From issue 2008-2

In my column in TPJ issue 2008-1, I once again discussed what I call "thought breaks," which I previously had discussed in issue 2005-4.

I am becoming more and more sensitive to these ornaments used for typesetting such thought breaks. A few weeks ago I came upon another ornament that I particularly like — in Jeanette Winterson's book *Oranges Are Not the Only Fruit*,

Grove Press, New York, 1987. This book uses a variation of the same symbol for smaller and bigger thought breaks, as follows.

Smaller break example:

'You'd better go,' said Mrs Vole. 'I shall be writing to your mother.'



I was very depressed. What was all the fuss about? Better to hear about Hell now that burn in it later. I walked past Class 3's

Bigger break example:

these days and people were not kind. She liked to speak French and to play the piano, but what do these things mean?



Once upon a time there was a brilliant and beautiful princess, so sensitive that the death of a moth could distress her for weeks

4 Added for this composite discusson

I found the approach to “dropped caps” shown here in an October 10, 2003, `comp.text.tex` item from “Rod” [no last name]. Obviously making a dropped cap work is more complex than making a raised cap work. What I found at `comp.text.tex` is shown verbatim below.

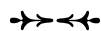
```
\newfont{\tmpfont}{cmb17 scaled 3000}{\tmpfont A}\vspace*{-8.3ex}
```

```
\hangindent=1em \hangafter=-3 \noindent ND THEN YOUR TEXT
```

I tweaked that to make it work here, as shown here:

```
\bigskip      %after \section command
\newfont{\tmpfont}{cmb17 scaled 2000}
\raisebox{6pt}{\{\tmpfont I\}}\vspace*{-6.6ex}
```

```
\hangindent=1.3em \hangafter=-2 \noindent found the approach shown
```



I also recently noticed another stylish form of highlighting these thought breaks, as shown on the following page. Figuring out how to create this wrap-around format in L^AT_EX would be an interesting exercise.

Acknowledgments

Column 2005-1: William Adams helped with a question I had about typography, and Karl Berry helped more generally. The two anonymous reviewers provided many helpful comments and caught a good number of typos.

Column 2008-1: Issue editor Yuri Robbers provided editorial and editing help and other guidance and ideas. Karl Berry caught several typos and made other useful suggestions.

Column 2008-2: Yuri Robbers made several suggestions for improving the final manuscript.

Biographical note

David Walden is retired after a career as an engineer, engineering manager, and general manager involved with research and development of computer and other high tech systems. He holds an undergraduate math degree and completed a graduate school sequence of courses in computer science. More history is at www.walden-family.com/dave.

meant to determine which of the country's leading institutions of higher learning over the past fifty years has done the most damage to the health and happiness of the American people.

It's conceivable that the Obama Administration will prove itself the exception to the rule, but when the president says that his vision for change "comes from me" he leaves open the question as to whether he intends to generate it *ex cathedra* or *ex nihilo*. Neither method offers much chance of success if what is wanted or required is a recasting of the American democracy on a scale comparable to Franklin Roosevelt's New Deal. Socioeconomic alterations of a magnitude sufficient to be recognized as such tend to be collective enterprises, usually brought about by powers of mind and forces of circumstance outside, not inside, the circle of A-list opinion—the barbarians at the gates of fifth-century Rome, the sixteenth-century Protestant Reformation *personae non graue* at the Vatican, the authors of the American Constitution far removed from the certain truths seated on velvet cushions in eighteenth-century London. Ulysses S. Grant, perhaps Lincoln's most effective general, was virtually unknown to the War Office in Washington before the bombardment of Fort Sumter; during the Great Depression of the 1930s, FDR composed a "Brain Trust" of individuals (some of them academics, others not,

world. They could afford to take chances, to read or not to read the next day's letter from Virginia Woolf or Julius Caesar, to mess up the protocols of political correctness, worship false gods, maybe go to Paris to try their luck with abstinence, their hand and eye at modern art or ancient decadence. If they strayed into the wilderness of politics, they did so in the manner of both Theodore and Franklin Roosevelt, with the enthusiasm of the amateur explorer.

The amateur spirit, which is also the democratic spirit, didn't survive the rising of the American nation-state from the ashes of Dresden and Hiroshima. The Cold War with the Russians brought with it the lesson that even the most amiable and well-intentioned of republics can't afford to leave home without a "meritocracy" so lacking in a disrespectful turn of mind as to be fit for service not only at the White House and the CIA but also with General Motors and the *New York Times*. The doctrines of egalitarianism forbid the convenience of a ruling elite present at birth. The product must be fabricated, not in the same volume as the light trucks made in Detroit, or the cattle fattened in the Omaha feed lots, but as a priority deemed equally essential to the homeland security. After some trouble with the realignment of the educational objective during the excitements of the 1960s, the universities accepted their mission as way stations on the pilgrim road

fers electives in the examined life, but the consolations of philosophy hold little value for a novitiate encouraged to believe that its acceptance into a company of the elect dispenses with the unwelcome news that there might be more things in heaven and earth than those accounted for in *Forbes* magazine's annual list of America's top 400 fortunes. Achieverons learn to work the system, not to change it, to punch up the PowerPoints for Citigroup and Disney and figure the exchange rate between an awkward truth and a user-friendly lie. Where is the percentage in overthrowing the idols of the marketplace or the tribe? If you're not in, you're out, and when was out the better place to be?

Which isn't to say that Hillary Clinton hasn't read the letters of Abraham Lincoln, or that Tim Geithner doesn't know how to analyze (in three languages and five currencies) a Four Seasons hotel bill; that Robert Gates isn't familiar with the theory of Admiral Alfred Thayer Mahan, or that Larry Summers might make the mistake of turning to face Jerusalem instead of Mecca when begging money from a Saudi prince. What it does suggest is that President Obama's household staff, in accordance with the protocols observed by "the best of the Washington insiders," can be counted upon to place their own self-interest first and foremost and to avoid fooling around with initiatives that

painted his portrait of the evil Soviet empire to match the one walking around in Ronald Reagan's head, unwilling to believe that the Red Menace was mortal until the collapse of the Berlin Wall in 1989 exposed his intelligence estimates as works of science fiction; Summers in 1998 as President Bill Clinton's deputy secretary of the Treasury served as one of the principal sponsors of our current financial debacle, facilitating repeal of the Glass-Steagall Act and joining with Secretary Robert Rubin (Harvard, Yale Law) and Federal Reserve Bank Chairman Alan Greenspan (New York University) to force the resignation of Brooksley Born, chair of the Commodities Futures Trading Commission, who urged regulation of the markets in new derivatives. The motion to block the large-scale accumulation of toxic debt ran counter to the belief, then all the rage among the bankers at JPMorgan Chase and Goldman Sachs as among the members of the Palm Beach Country Club, that money, deftly cultivated by its

cronies, grows on trees. Obama, in his custom-tailored personae both as a United States senator and as a presidential candidate, draped himself in the same accommodating cloth—careful to avoid offending the people who count, content to leave the management of the country's finances to the discretion of the Wall Street banks, its Middle Eastern policy to the judgment of the