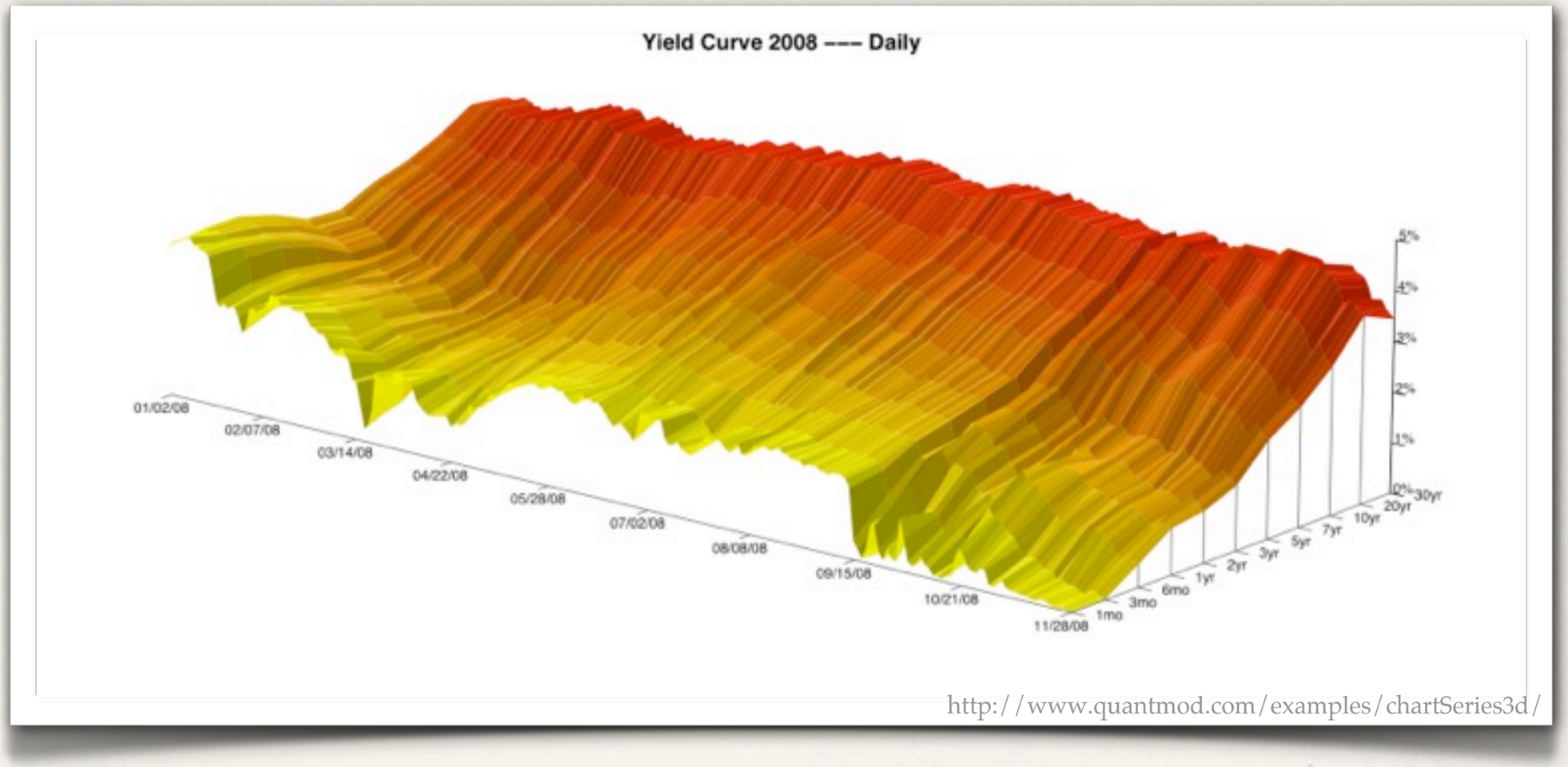


http://www.quantmod.com/examples/chartSeries3d/

Basic Graphics with R

Insight into building information graphics from scratch

Chicago R User Group. November 14, 2012

R Graphics Politics

http://xkcd.com/1095/

The new crowd is heavily shaped by this guy named Hadley, who's basically the Paris Hilton of the amateur plastic crazy straw design world.

The Professional Tools

If you could say it in words, there would be no reason to paint.

Edward Hopper

package: graphics

package: grDevices

The Professional Tools

Devices

Lines, Points, etc

Fine Tuning

Built-in Functionality

package: grid

Other tools: lattice, ggplot2

Devices

?dev.new

PDF

dev.new(pdf)

X11

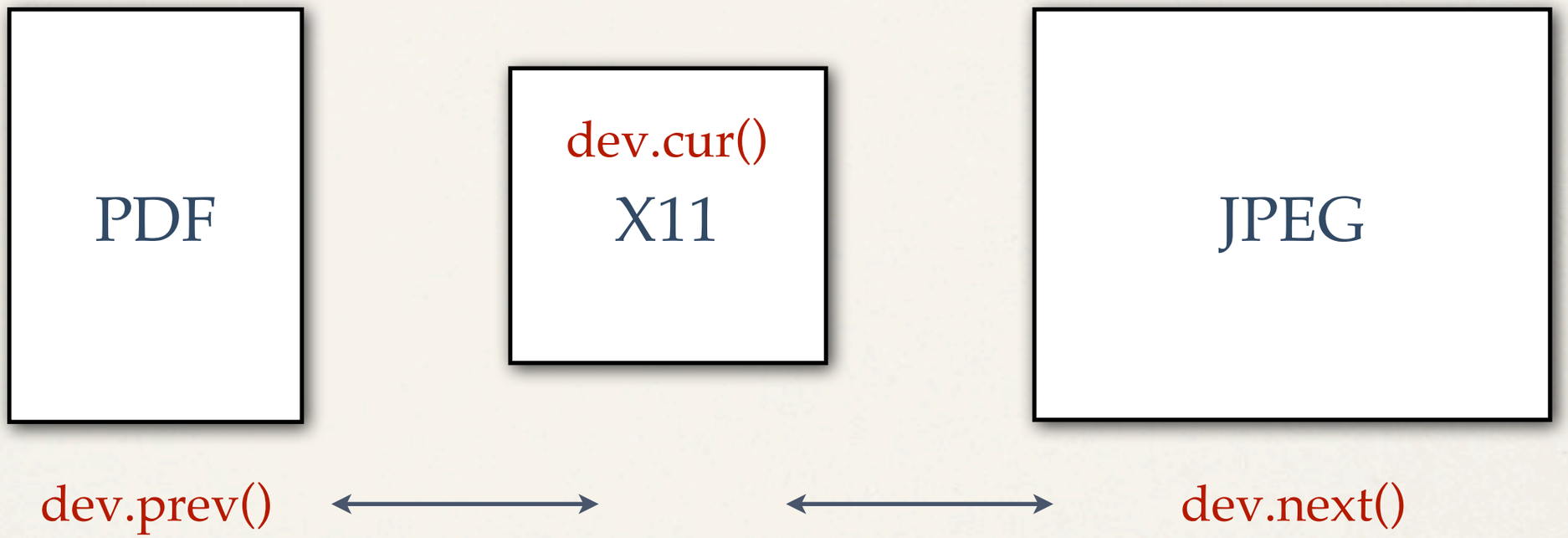
dev.new(x11)

JPEG

jpeg()

Devices

?dev.new

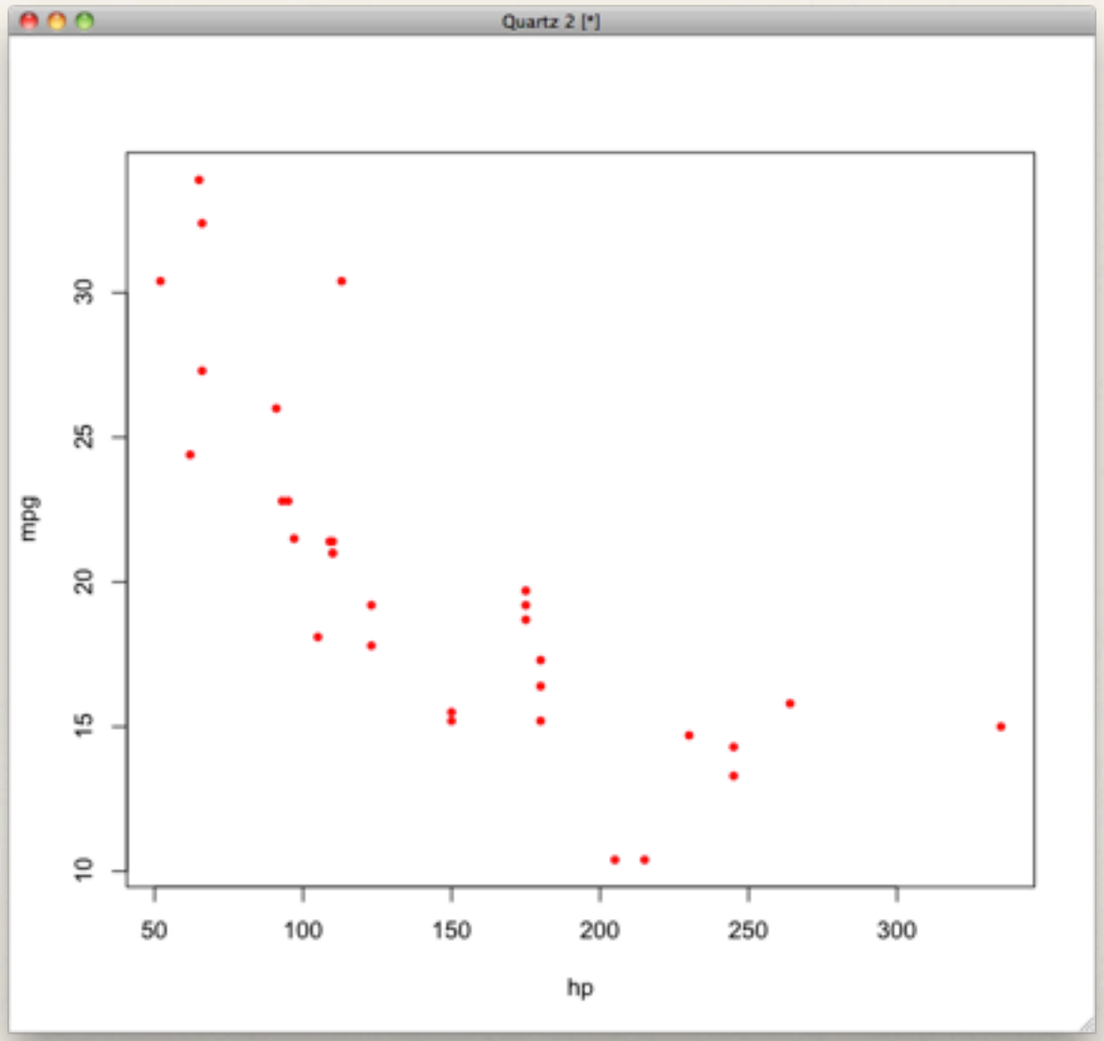


Tools

?plot

The Basics: plot()

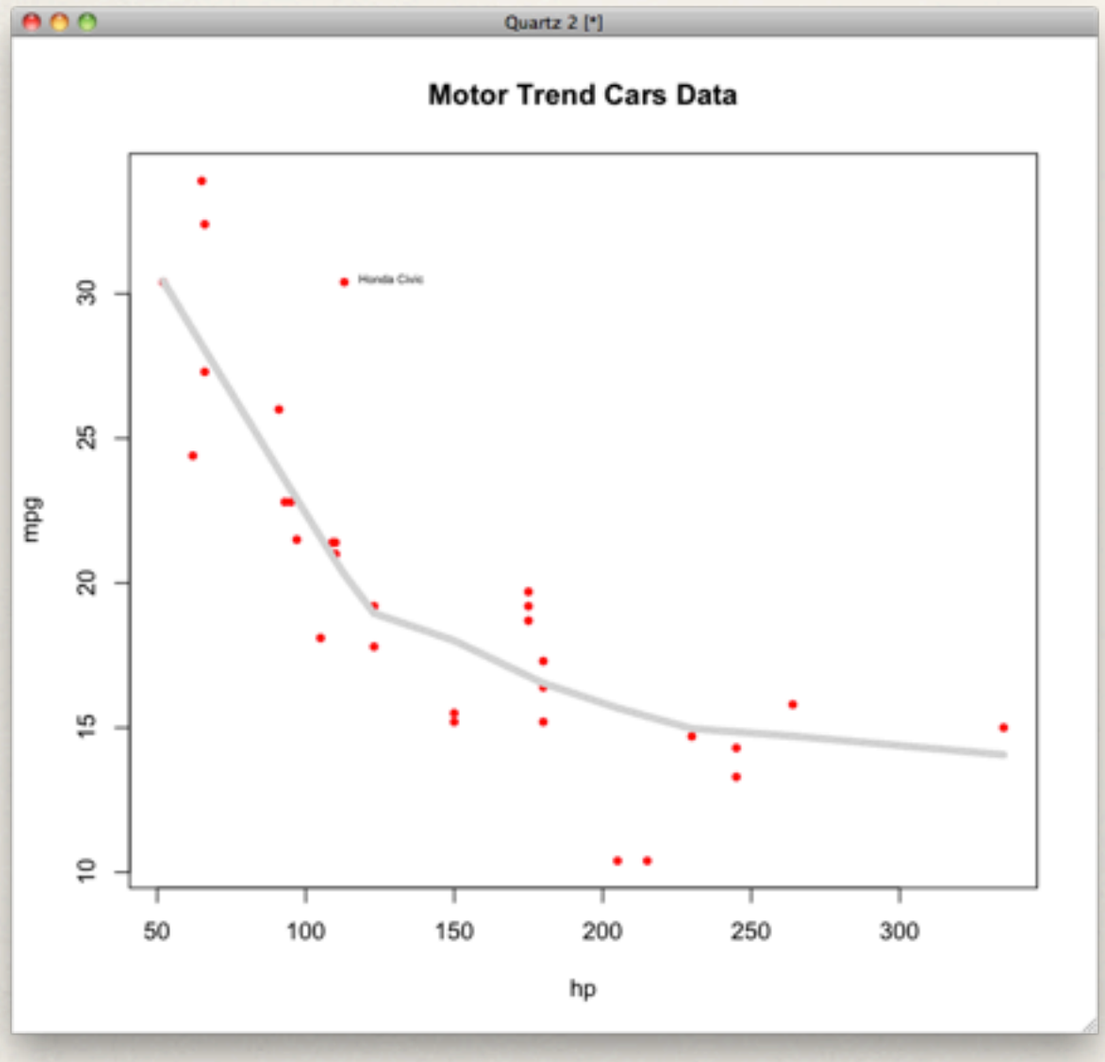
with(mtcars, plot(mpg~hp, col=2, pch=20))



Tools

?plot

The Basics: lines(), title(), text(), locator()

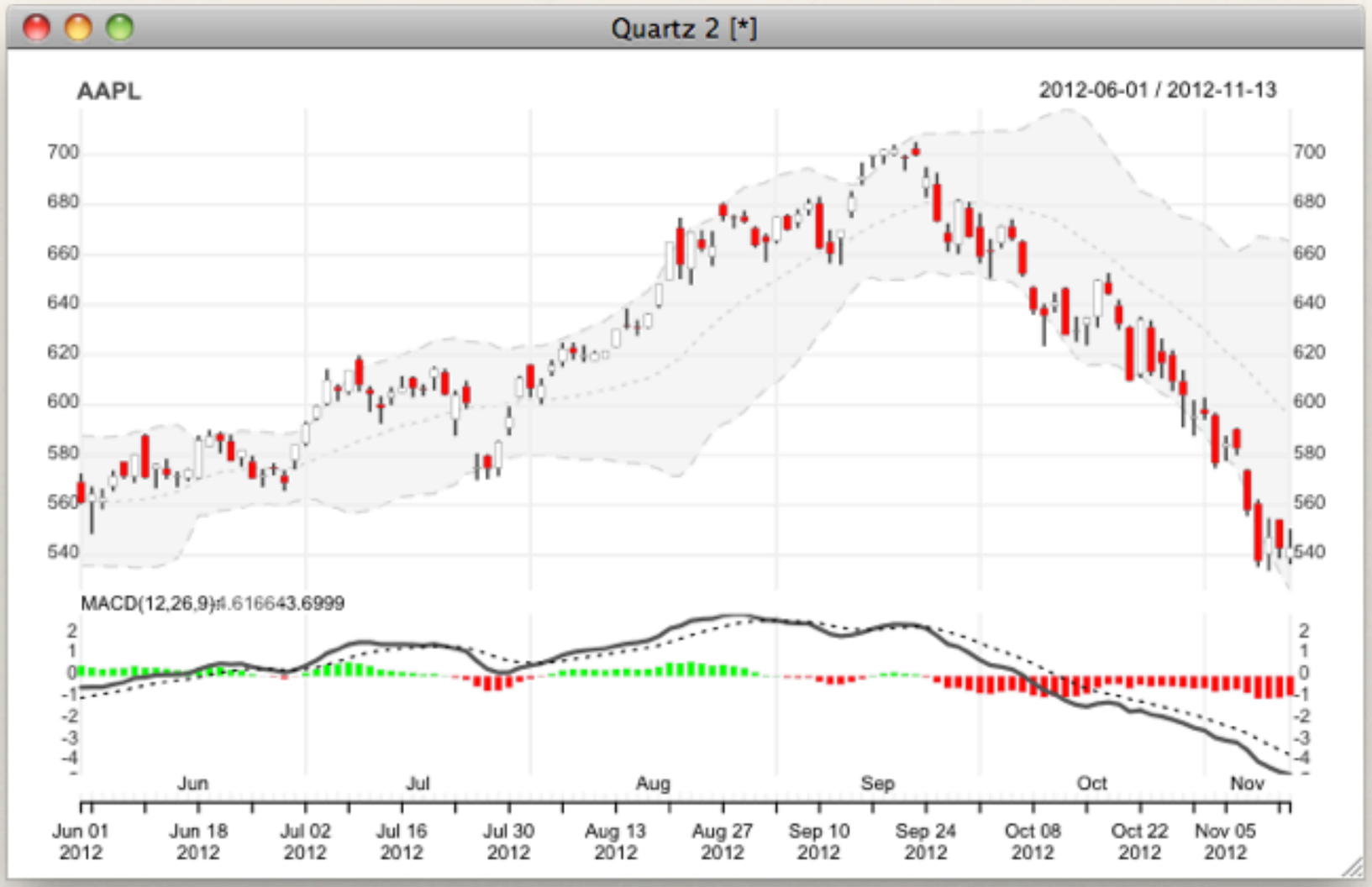



```
lines(
    lowess(
     cbind(mtcars$hp,
                mtcars$mpg)),
    col='lightgrey',
    lwd=5)

title("Motor Trend Cars Data")

text(locator(1),
      "Honda Civic",
       pos=4, cex=0.5)
```

Tools

?plot

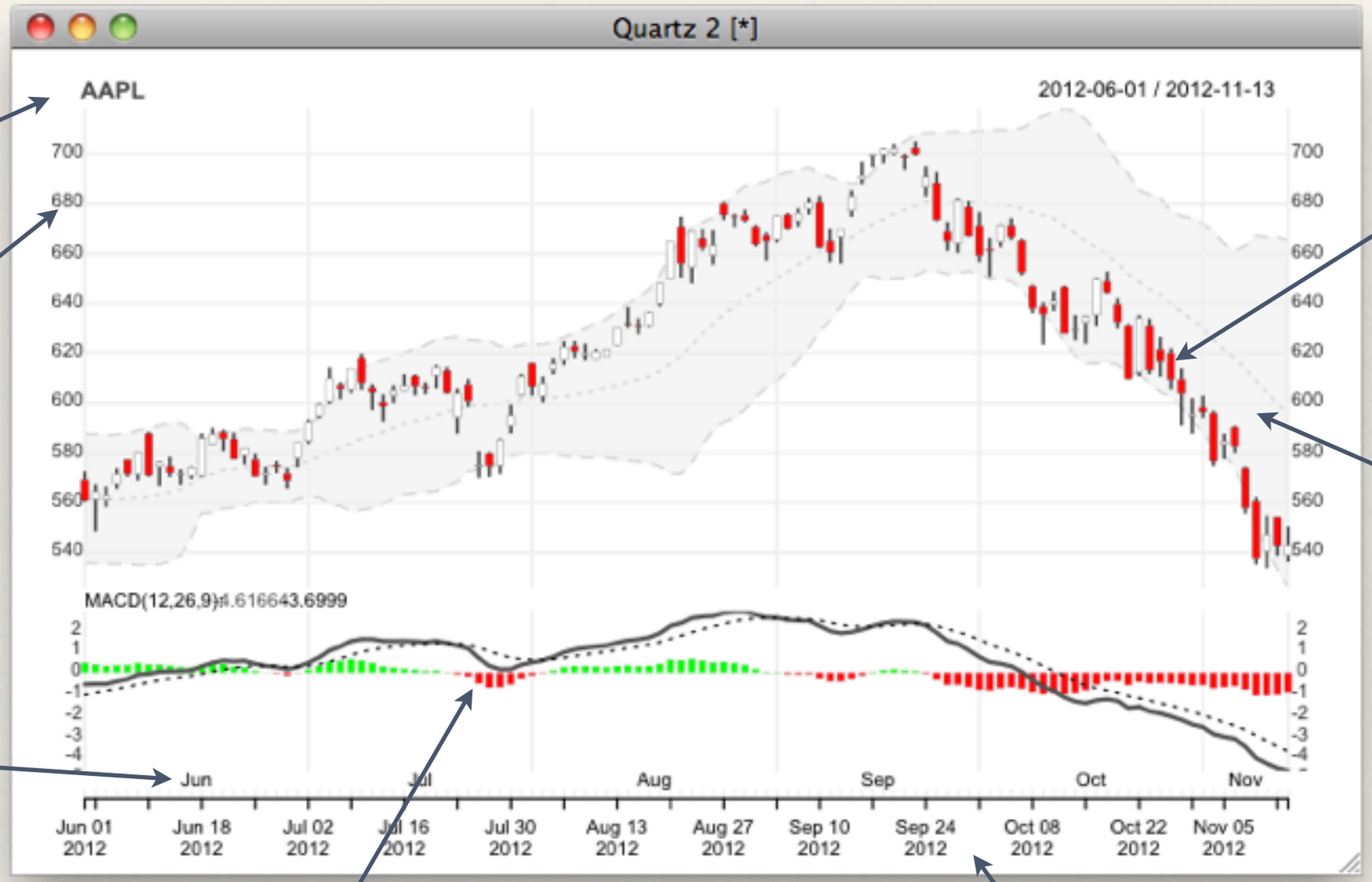
The Basics: rect(), polygon(), abline(), axis()



Tools

?plot

The Basics: rect(), polygon(), abline(), axis(), text() strwidth(), etc.



mtext()

axis()

segments()

polygon()

strwidth()

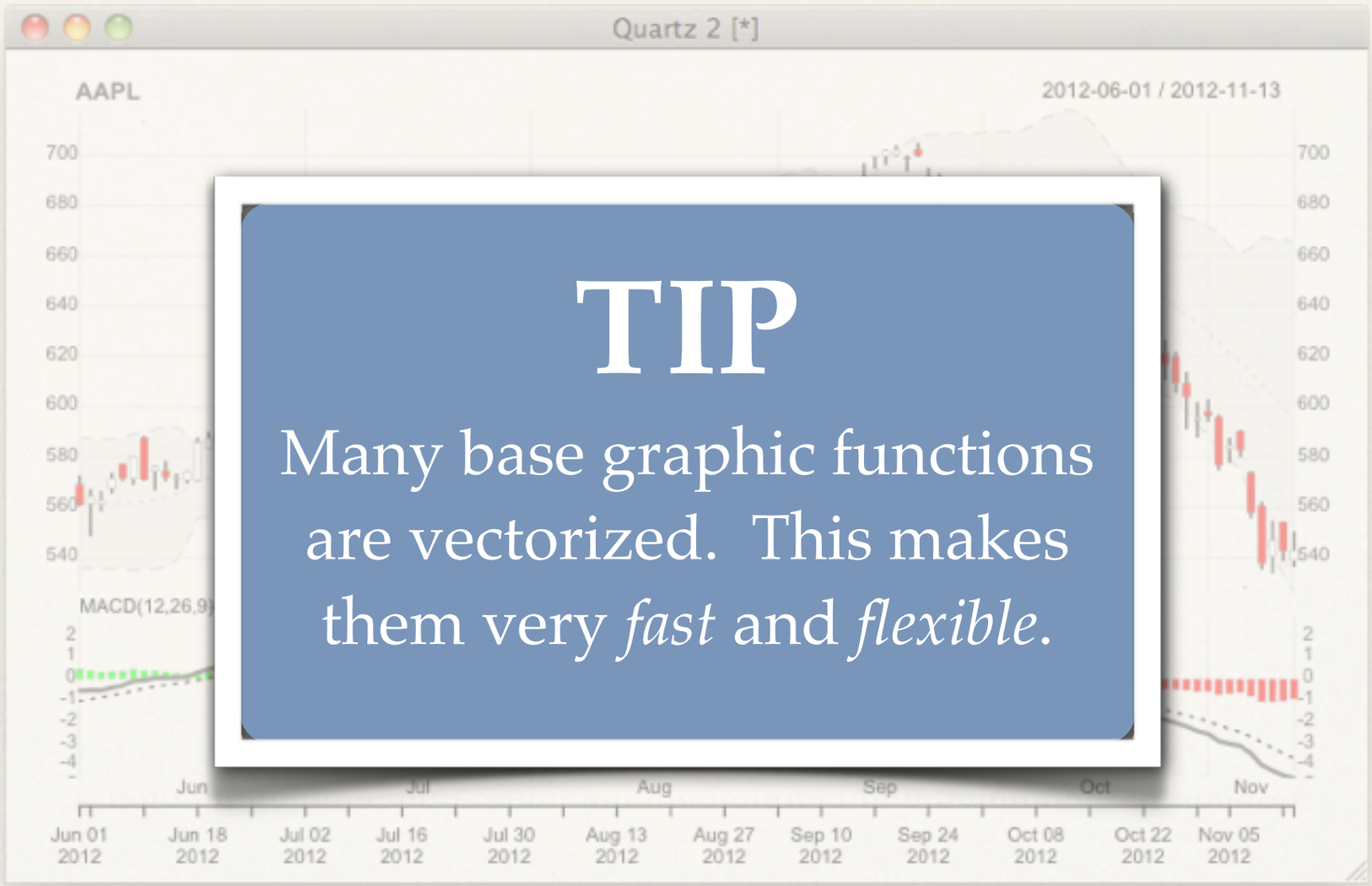
rect()

mtext()

Tools

?plot

The Basics: rect(), polygon(), abline(), axis()



TIP

Many base graphic functions are vectorized. This makes them very *fast* and *flexible*.

Tools

?par

Fine Tuning

Nearly everything in base graphics can be “fine-tuned” to match the requirements of your design.

Start your search by reading **?par**. Then re-read. Then read again.

TIP

Experimenting is key

Tools

Fine Tuning

?par

Some “par” settings that I have found useful over the years:

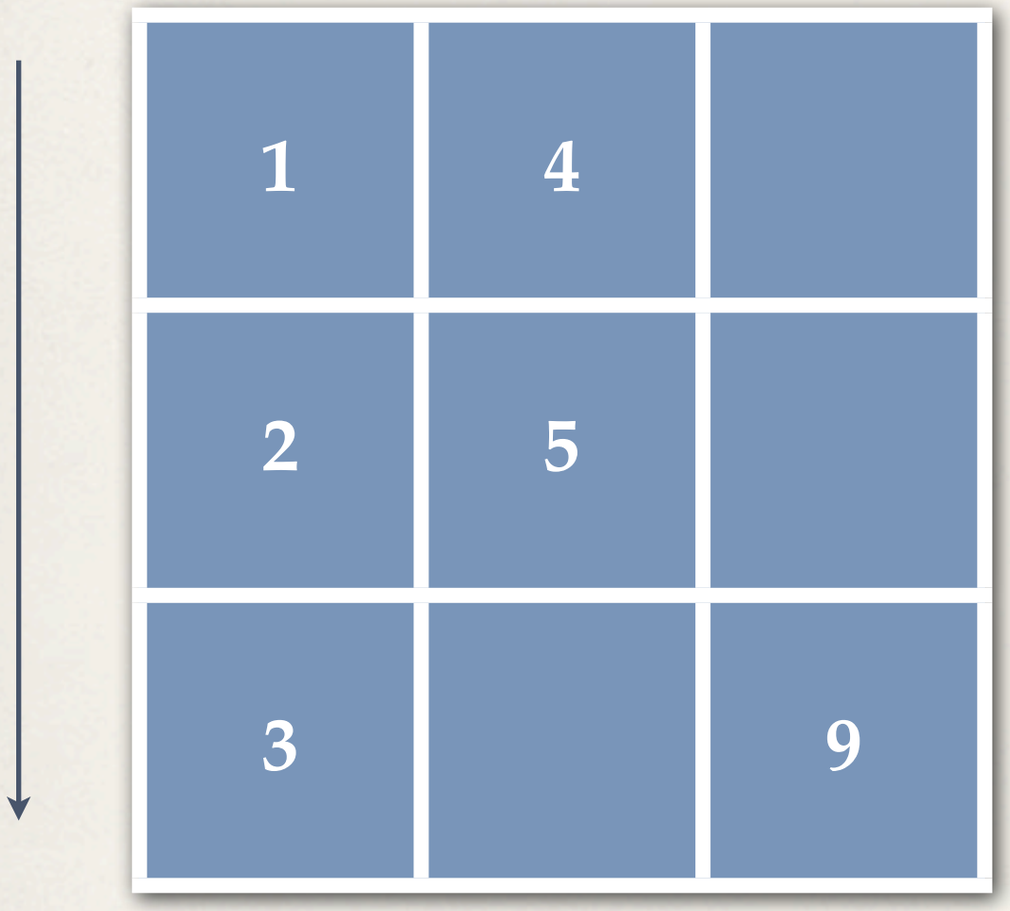
Margins: oma, usr, xpd

Strings: pch, cex, cex.*, adj, srt

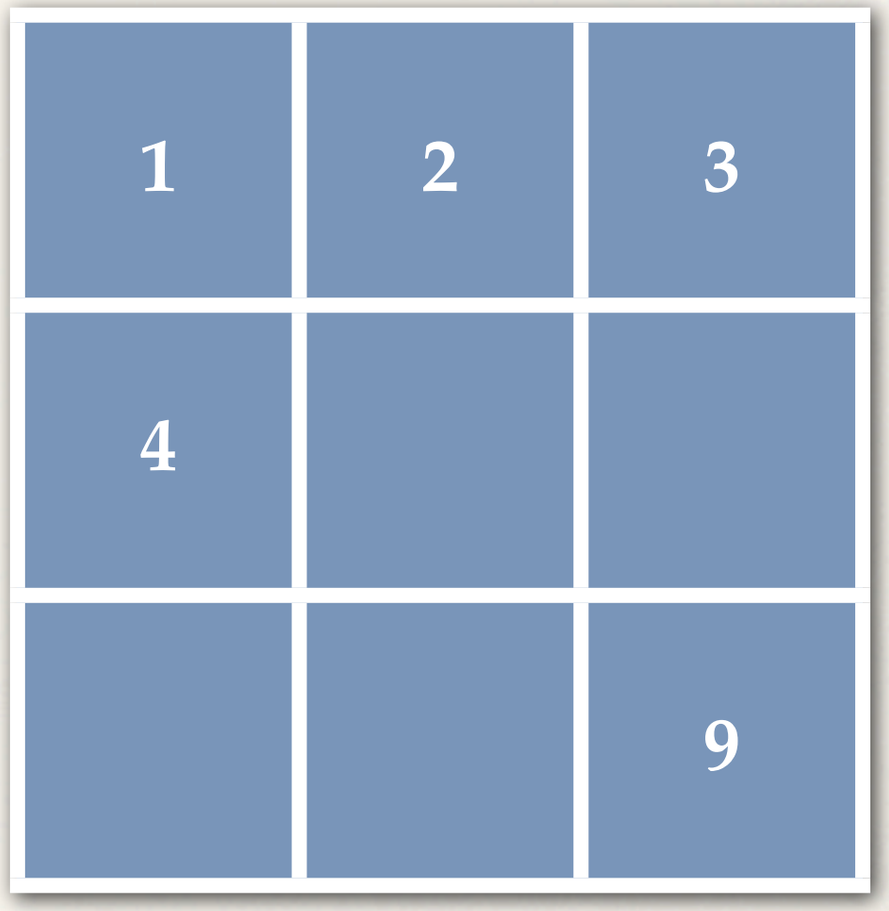
General: bty, bg, las, lend

Tools

Layout: multiple graphics on one device



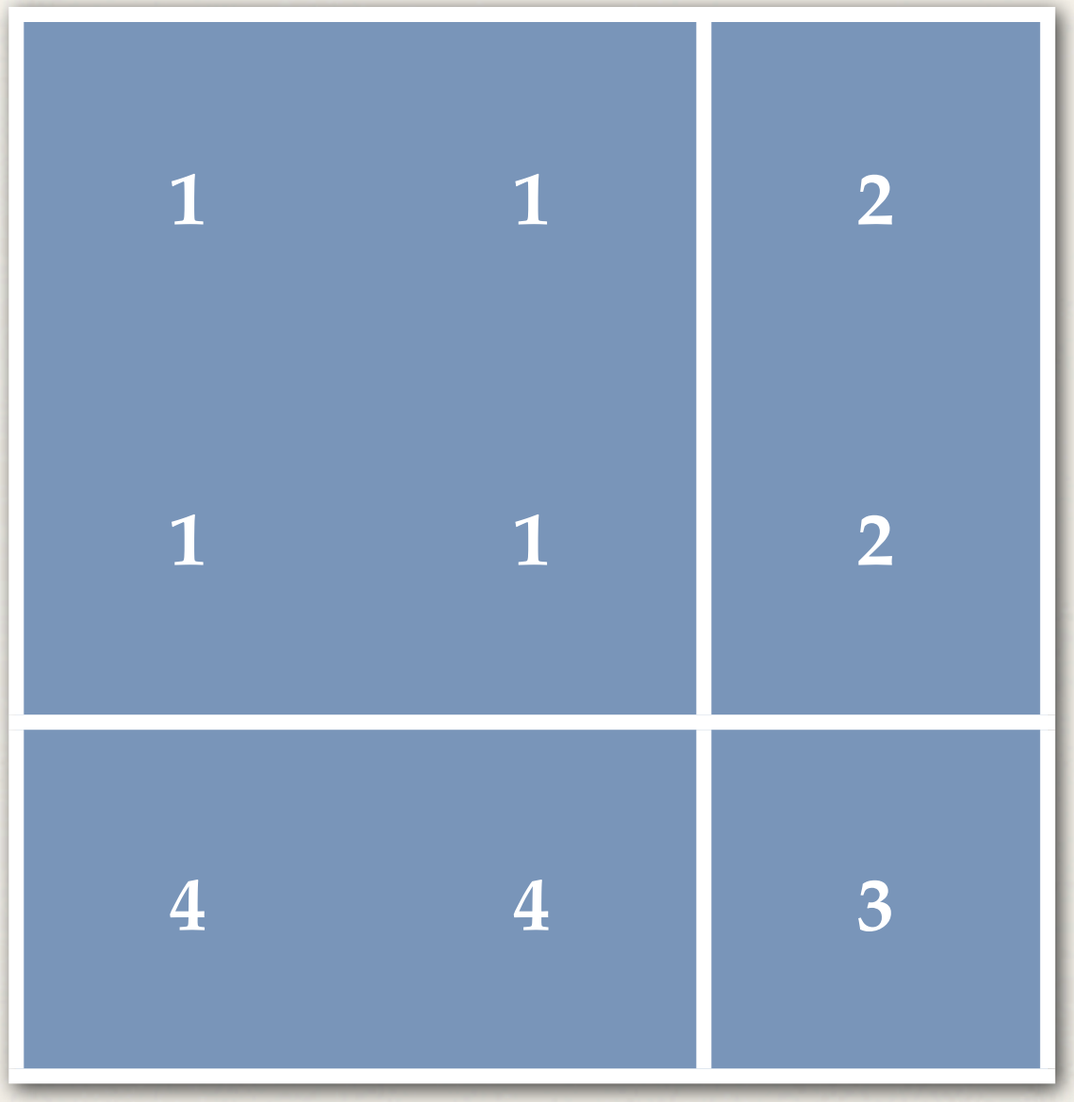
par(mfcol=c(3,3))



par(mfrow=c(3,3))

Tools

Layout: multiple graphics on one device




```
m <- matrix(c(1,1,4,
              1,1,4,
              2,2,3), ncol=3)
```

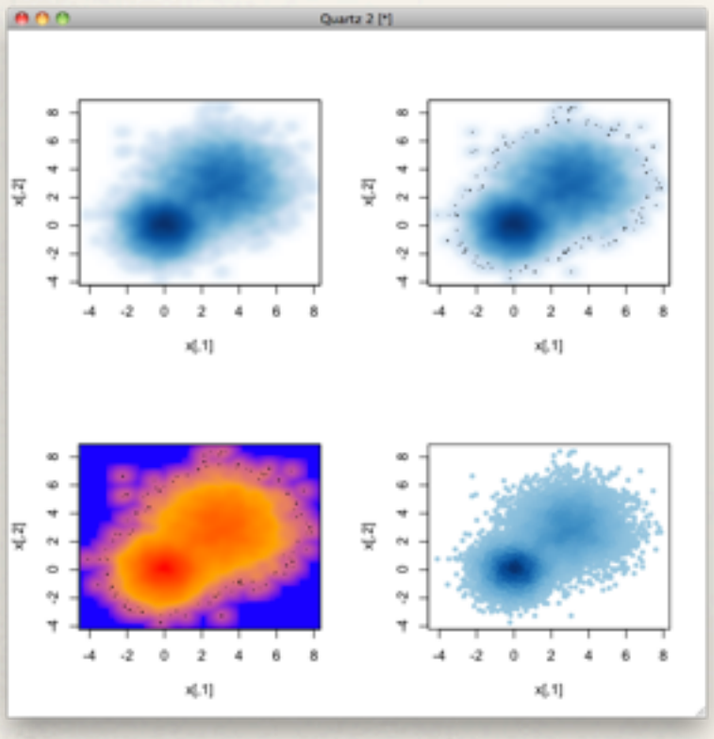
```
     [,1] [,2] [,3]
[1,]    1    1    2
[2,]    1    1    2
[3,]    4    4    3
```

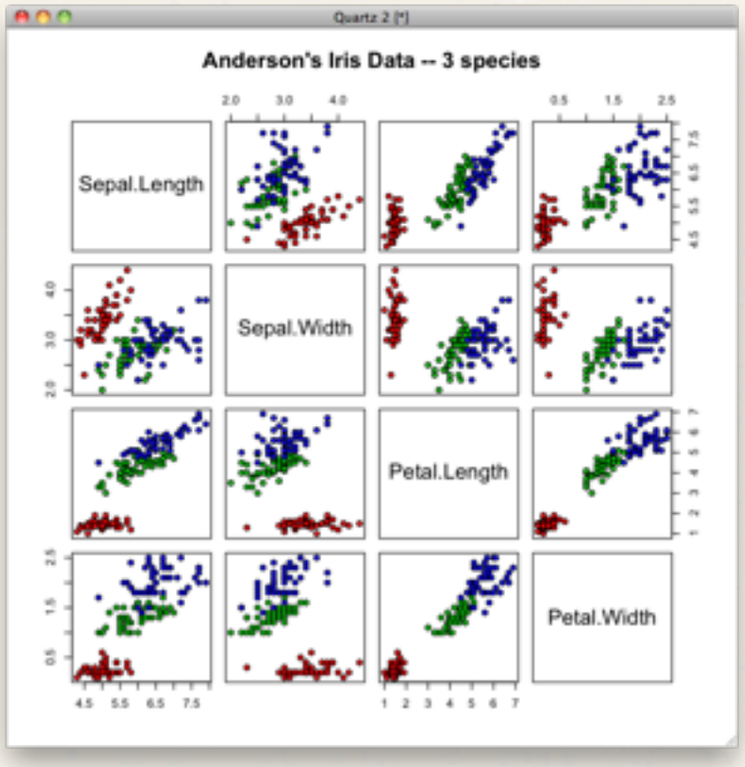
```
layout(m)
```

Built In Graphics

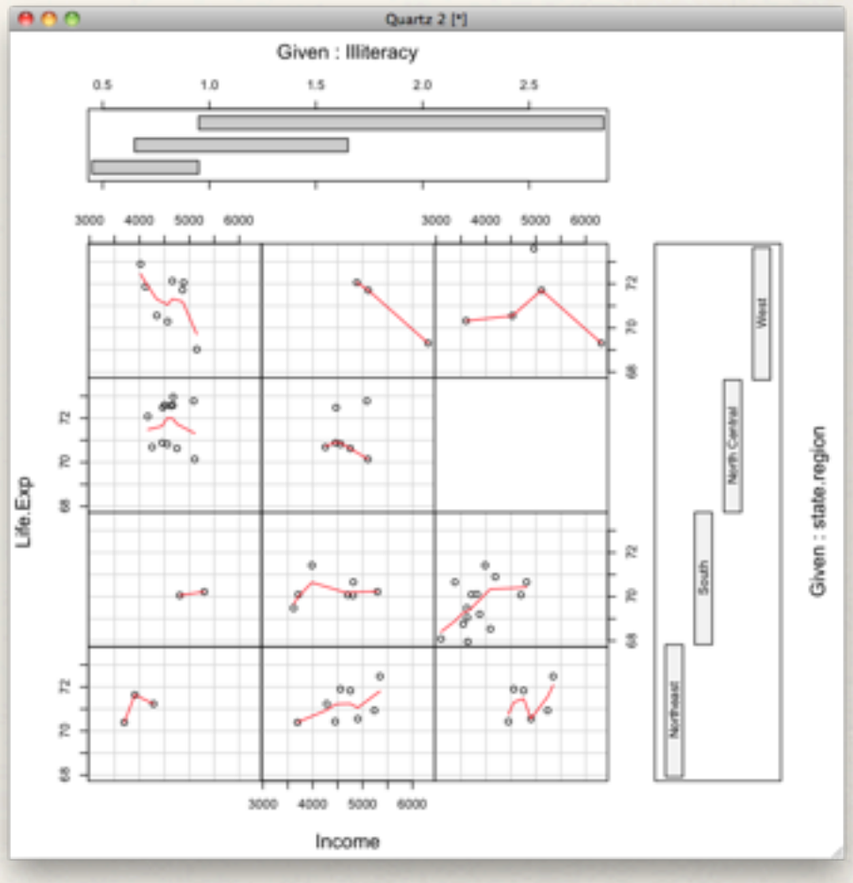
Visualization Tools Within R

smoothScatter





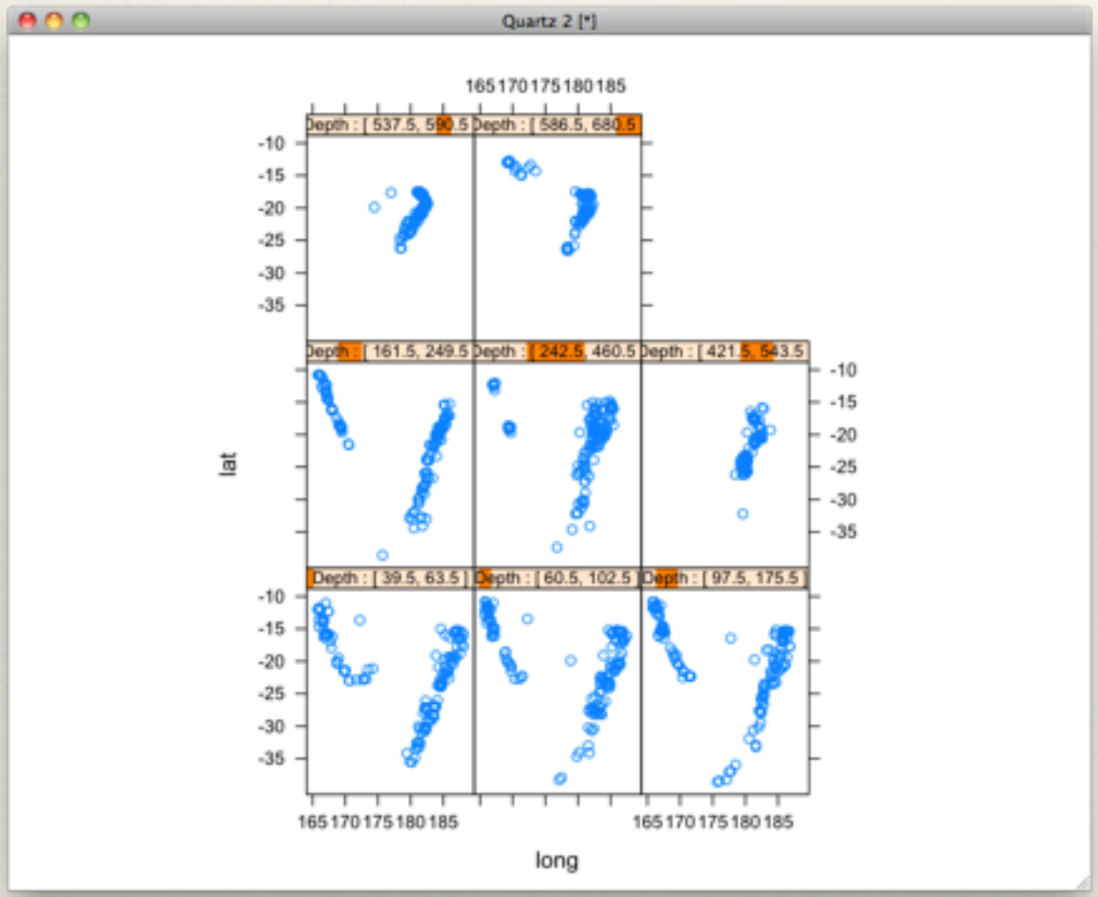
pairs



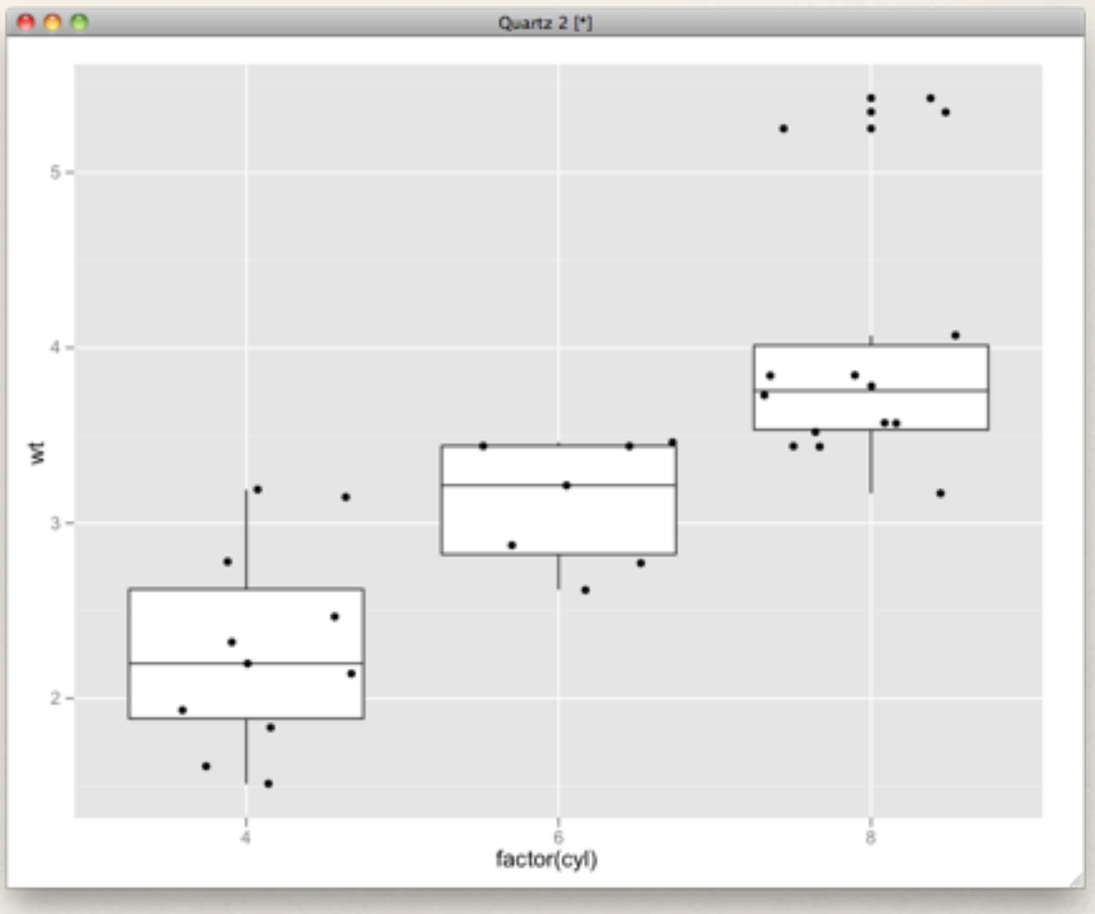
coplot

Additional Tools

More functionality, steeper learning curve.



package: lattice



package: ggplot2

Device: letterpress(bcard)


```
lemnica_grid <- function() {
  # Copyright 2010 lemnica corp.

  f <- function(x,y) {
         sin(0.75 * x^2 * y)
       }

  y <- x <- seq(-1.3,1.3,0.07)

  persp(x,y, outer(x,y,f),
    shade=NA,
    border="#CC7722",
    theta=50,
    phi=8,
    box=FALSE,
    lwd=0.2,
    col=NA,
    zlim=c(-2,2),
    xpd=TRUE)
}
```