

# Plotting Haplotype Networks with **pegas**

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## 1 Background

### 1.1 Layout Algorithm

```
R> data(woodmouse)
R> d <- dist.dna(woodmouse, "N")
R> nt <- rmst(d, quiet = TRUE)
```

## 2 New Features in **pegas** 1.0

### 2.1 Improved “Replotting”

### 2.2 Haplotype Symbol Shapes

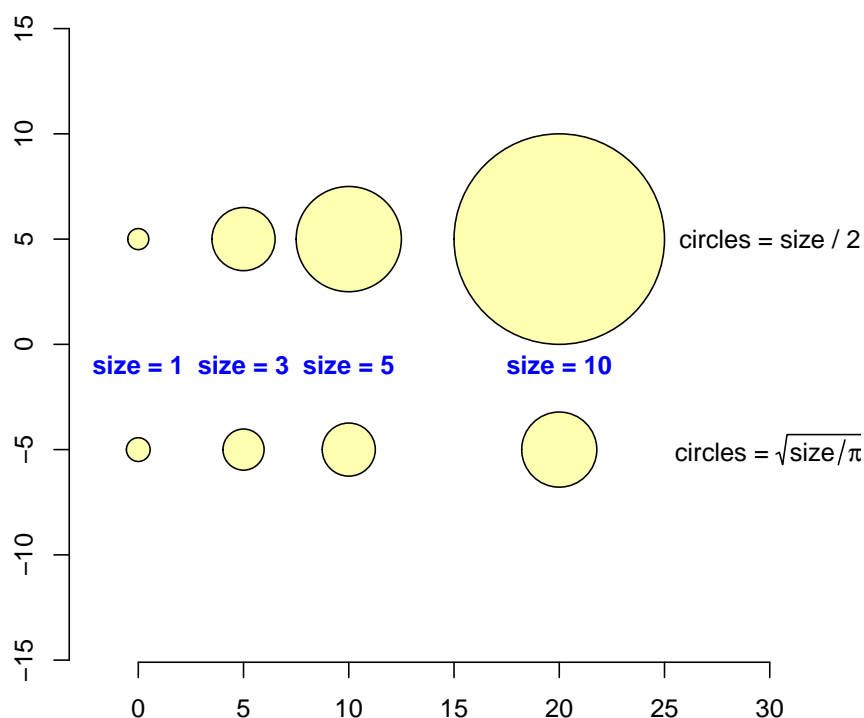
The area of a disc is  $\pi r^2$  with  $r$  being the radius of the disc, so if we want the area of the symbols to be proportional to **size**, we should square-root them. However, in practice this masks differences if most values in **size** are not very different (see below). Instead, the diameters of the symbols ( $2r$ ) are equal to the values in **size**. If these are very heterogeneous, they could be transformed with **size** = **sqrt**(... keeping in mind that the legend will be on this new scale.

```
R> par(xpd = TRUE)
R> size <- c(1, 3, 5, 10)
R> x <- c(0, 5, 10, 20)
R> plot(0, 0, type="n", xlim=c(-2, 30), asp=1, bty="n", ann=FALSE)
```

```

R> other.args <- list(y = -5, inches = FALSE, add = TRUE,
+                    bg = rgb(1, 1, 0, .3))
R> o <- mapply(symbols, x = x, circles = sqrt(size / pi),
+             MoreArgs = other.args)
R> other.args$y <- 5
R> o <- mapply(symbols, x = x, circles = size / 2,
+             MoreArgs = other.args)
R> text(x, -1, paste("size =", size), font = 2, col = "blue")
R> text(30, -5, expression("circles = " * sqrt(size / pi)))
R> text(30, 5, "circles = size / 2")

```



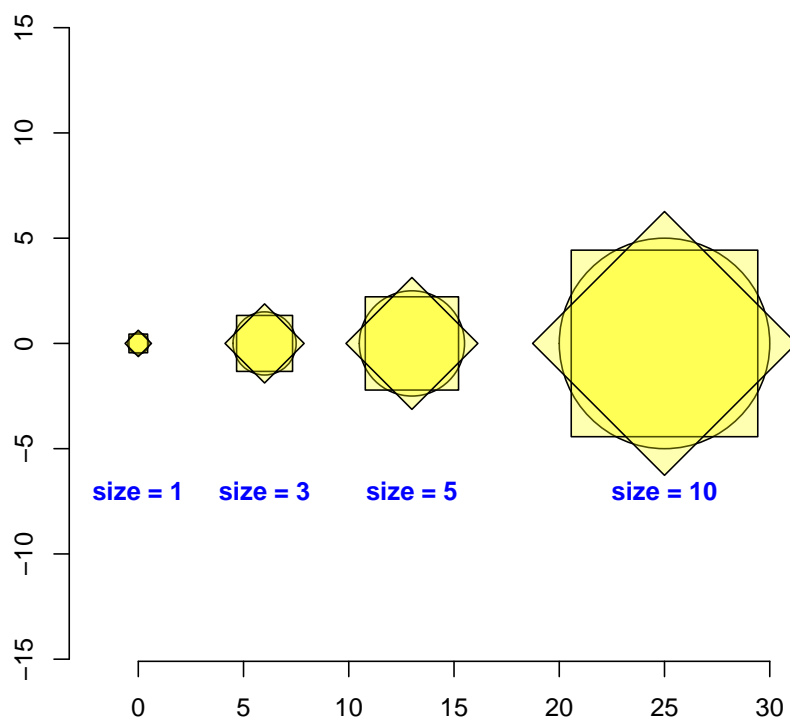
For squares and diamonds, their areas are equal to the discs for the same values given to size:

```

R> x <- c(0, 6, 13, 25)
R> plot(0, 0, type="n", xlim=c(-2, 30), asp=1, bty="n", ann=FALSE)
R> other.args$y <- 0
R> o <- mapply(symbols, x = x, circles = size/2, MoreArgs = other.args)
R> other.args$col <- "black"
R> other.args$add <- other.args$inches <- NULL
R> o <- mapply(pegas:::square, x = x, size = size, MoreArgs = other.args)

```

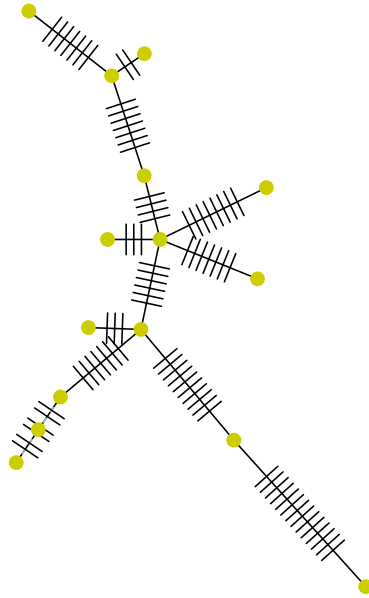
```
R> o <- mapply(pegas::diamond, x = x, size = size, MoreArgs = other.args)
R> text(x, -7, paste("size =", size), font = 2, col = "blue")
```



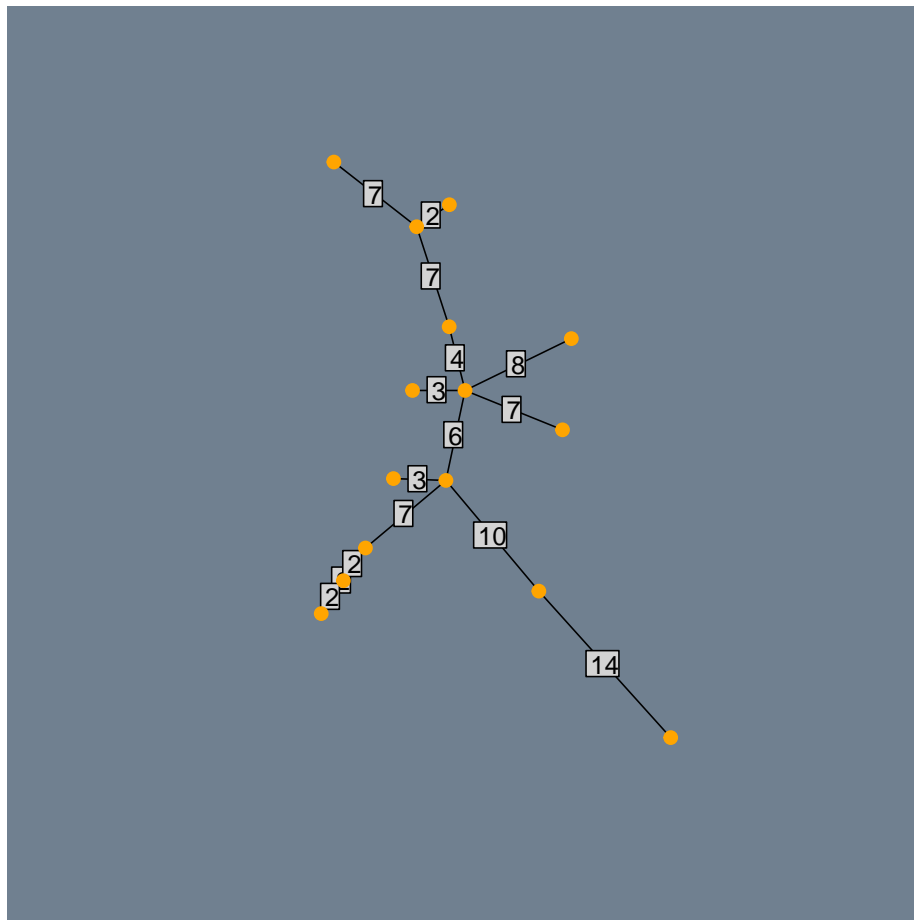
A diamond is simply a square rotated  $45^\circ$  around its center.

## 2.3 Themes

```
R> plot(nt)
```



```
R> setHaploNetTheme("puma")  
R> plot(nt)
```



```
R> setHaploNetTheme("tiger")  
R> plot(nt)
```

