> library(MEMSS)
> library(lme4)
> library(Matrix)
> library(lattice)

Attaching package: 'Matrix'

The following object(s) are masked from 'package:base':

   det

Attaching package: 'lme4'

The following object(s) are masked from 'package:stats':

   AIC, BIC

Warning message:
package 'MEMSS' was built under R version 2.14.2

> head(Orange) #get data
   Tree age circumference
1    A 118            30
2    A 484            58
3    A 664            87
4    A 1004           115
5    A 1231           120
6    A 1372           142

>   xyplot(circumference ~ age | Tree, Orange, type = c("g","b"),
+   index = function(x,y) coef(lm(y ~ x))[1],
+   xlab = "Age - 1968/12/31",
+   ylab = "Circumference (mm)", aspect = "xy")
> # connect-the-dots, frame-by-frame

>   xyplot(circumference ~ age, Orange, groups = Tree, type = c("g", "b"),
+   auto.key = list(space = "right", lines = TRUE), aspect = "xy",
+   xlab = "Age (days since 1968/12/31)", ylab = "Circumference (mm)")
> # random asymptote model, provide starting values
> m1 <- nlmer(circumference ~ SSlogis(age, Asym, xmid, scal) ~ Asym|Tree,
+    Orange, start = c(Asym = 190, xmid = 730, scal = 350))
> print(m1)
Nonlinear mixed model fit by the Laplace approximation
Formula: circumference ~ SSlogis(age, Asym, xmid, scal) ~ Asym | Tree
   Data: Orange
   AIC  BIC logLik deviance
1901 1908 -945.3     1891
Random effects:
 Groups     Name Variance Std.Dev.
   Tree     Asym 53985.687 232.348
   Residual 52.868   7.271
Number of obs: 35, groups: Tree, 5

Fixed effects:
   Estimate Std. Error t value
Asym   192.04     104.09   1.845
xmid   727.89      31.97  22.771
scal   347.97      24.42  14.252

Correlation of Fixed Effects:
   Asym  xmid
Asym  0.053
xmid -
> ranef(m1)
$Tree
   Asym
A -30.143978
B  32.352056
C -37.925243
D  41.016168
E  -5.299086

> fixef(m1)
      Asym     xmid     scal
192.0410 727.8908 347.9680

> #Independent random effects for each parameter
> nm2 <- nlmer(circumference ~ SSlogis(age, Asym, xmid, scal) ~
+               (Asym | Tree) + (xmid | Tree) + (scal|Tree), Orange,
+               start = c(Asym = 200, xmid = 770, scal = 120)),
Error: unexpected ',' in:
  "                   (Asym | Tree) + (xmid | Tree) + (scal|Tree), Orange,
               start = c(Asym = 200, xmid = 770, scal = 120)),",
>       corr = FALSE)
Error: unexpected ')' in "       corr = FALSE)"
> nm2 <- nlmer(circumference ~ SSlogis(age, Asym, xmid, scal) ~
+               (Asym | Tree) + (xmid | Tree) + (scal|Tree), Orange,
+               start = c(Asym = 200, xmid = 770, scal = 120))
> print(nm2)
Nonlinear mixed model fit by the Laplace approximation
Formula: circumference ~ SSlogis(age, Asym, xmid, scal) ~ (Asym | Tree) + (xmid | Tree) + (scal | Tree)
Data: Orange
AIC  BIC logLik deviance
1381 1392 -683.6     1367
Random effects:
 Groups   Name   Variance   Std.Dev.
    Tree   Asym  34037.991 184.4939
    Tree   xmid 201573.121 448.9690
    Tree   scal  42152.968 205.3119
 Residual          36.817   6.0677
Number of obs: 35, groups: Tree, 5

Fixed effects:
      Estimate Std. Error  t value
Asym    192.77      82.69   2.331
xmid    726.14     203.17   3.574
scal    355.44      94.71   3.753

Correlation of Fixed Effects:
       Asym   xmid    scal
 Asym  1.000  0.009   0.029
 xmid  0.009  1.000   0.029
 scal  0.029  0.029  1.000

> anova(nm2,m1)
Data: Orange
Models:
  m1: circumference ~ SSlogis(age, Asym, xmid, scal) ~ Asym | Tree
  nm2: circumference ~ SSlogis(age, Asym, xmid, scal) ~ (Asym | Tree) +
         (xmid | Tree) + (scal | Tree)
   Df   AIC   BIC logLik deviance Chisq Chi Df Pr(>Chisq)
 m1   5 1900.6 1908.4 -945.31
nm2  7 1381.2 1392.1 -683.62  523.38 523.3  2   < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 . ‘.’ 0.1 ‘ ’ 1
> ranef(nm2)
$Tree
   Asym      xmid      scal
A -38.24274 -96.198290  8.725296
B  26.38468 -25.135563 -22.259975
C -34.66581   4.204902 -22.259975
D  32.80133 -14.454234 -51.113890
E  13.21907 128.902165  20.808136

> fixed(nm2)
Error: could not find function "fixed"
> fixef(nm2)
  Asym  xmid  scal
    192.7677 726.1407 355.4370
> #Correlated random effects for Asym and scal only
> nm3 <- nlmer(circumference ~ SSlogis(age, Asym, xmid, scal) ~
  + (Asym + scal|Tree), Orange,
  + start = c(Asym = 200, xmid = 770, scal = 120))
> print(nm3)
Nonlinear mixed model fit by the Laplace approximation
Formula: circumference ~ SSlogis(age, Asym, xmid, scal) ~ (Asym + scal | Tree)
Data: Orange
AIC  BIC logLik deviance
  1573 1584 -779.7 1559
Random effects:
  Groups   Name Variance  Std.Dev. Corr
     Tree   Asym 36734.900 191.6635
           scal 93569.160 305.8908 -0.680
  Residual         42.887   6.5488
Number of obs: 35, groups: Tree, 5

Fixed effects:
  Estimate Std. Error t value
    Asym     194.09      85.89   2.260
     xmid     735.97      28.75  25.595
     scal     365.99     138.73   2.638

Correlation of Fixed Effects:
  Asym  xmid
     xmid  0.058
     scal -0.660  0.120
> ranef(nm3)
$Tree
  Asym   scal
     A -24.457746 69.93741
     B   32.088680 -12.03847
     C -35.066052 35.87508
     D  36.585858 -47.24177
     E  -9.175625 -46.86463
>