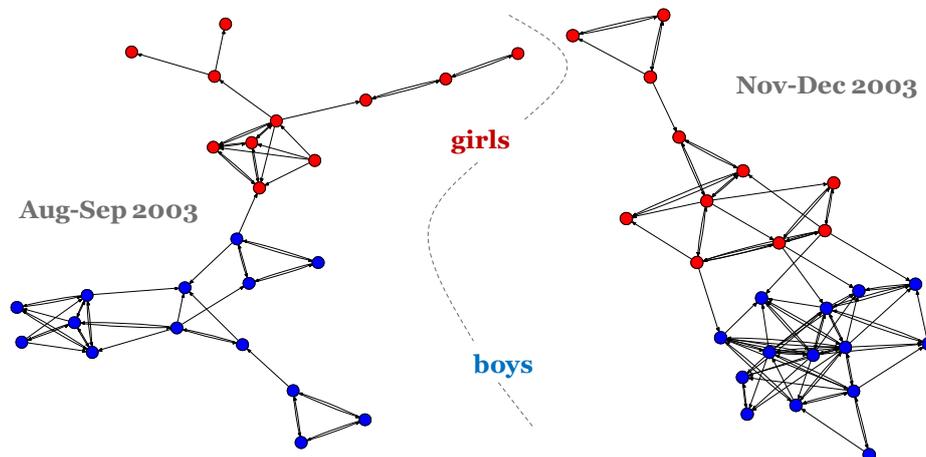


## Lab assignment: Studying segregation / homophily

In this assignment, we want to study segregation according to the sexes (or sex homophily) in the friendship networks measured in the school class *klas03e* which is one of the classes from Andrea Knecht's PhD dissertation (2008). The first two observations of the network evolution process that we are going to analyse look like this:



In stochastic actor-based modelling, the strength of sex homophily is captured by the parameter estimated for the “same sex” effect. The effect statistic is a simple count of same-sex ties.

As methodological lesson, this assignment illustrates how the omission of important determinants of network evolution in a model can affect conclusions about parameter size, i.e., bias the results. (Whether or not this bias in parameter size translates into a bias in effect size is not discussed here, but there is a follow-up exercise addressing this.)

The following steps are elaborated in the R-script “lab-segregation.R”, so it may be most convenient to just follow this script and make sure you understand how the RSiena commands in it work.

1. Create an RSiena session for the classroom data set *klas03e*. Choose the four friendship network measurements as dependent network variable; add the demographic data as actor covariates and the primary school friendship matrix as dyadic covariate.
2. Before proceeding, check in the output file generated by the function “print01Report” whether the data were correctly interpreted.
3. Fit a model specification that only includes outdegree, the main effect of primary school friendship, the sender and receiver effects of sex, and a sex homophily effect. You may want to switch to *unconditional method of moments estimation* for being able to estimate the rate parameter. What do the estimation results suggest?
4. Add reciprocity, transitivity (*transitive triplets* effect) as well as their interaction term to the model and re-estimate. What is the result for the three new effects? How do results for other effects change, in particular: sex homophily? How can the change be explained?

What you should see is high sensitivity of the *same sex* estimate to inclusion of the structural effects in step 4. Confidence intervals for the estimated parameters do not overlap.