1127-92-364 **Keenan M.L. Mack*** (keenan.mack@mail.ic.edu) and **Jeremy F. Alm**. *Small network assembly and degree correlation.* Preliminary report.

In their landmark study, Barabási and Albert showed how preferential attachment could provide a first-principles algorithmic mechanism to explain the observed power-law degree distribution found in many naturally occurring networks. However, naturally occurring networks have other important characteristics, such as degree correlation, that cannot be explained by preferential attachment. Thus, developing a first-principles network assembly algorithm that can generate degree correlation while preserving the power-law degree distribution would be an important step towards understanding how real world networks are assembled. One of the artificialities of preferential attachment is that all links are permanent and added only to new individuals. By allowing connections to be broken and added throughout the assembly process, degree correlation can be generated. However, in doing so, the power-law distribution is necessarily eroded and replaced with a distribution that appears lognormal. While this mechanism cannot explain the degree correlation observed in many naturally occurring networks with a known power-law degree distribution, it seems likely to explain degree distribution and correlation in small social networks, such as face-to-face friendship networks. (Received February 07, 2017)