Thoughts on Anselin, Florax, and Rey (2004); Advances in Spatial Econometrics

* My own spatial probit problem – and whether I need to email Jude Hays
  + The problem I have concerns “the need to compute the determinant of the Jacobian of the spatial transformation,” that is at every iteration of the markov chain in the Bayesian model.
    - Note, this is (or is thought to be) mathematically impossible in a maximum likelihood framework since optimizing the objective function for a regression model which contains spatial dependencies involves solving an n-dimensional multivariate integral.
      * Ord (1975) has one possible solution – eigenvalue decomposition. However, this is not an ideal solution where n>1000.
      * Other alternatives that may be more tractable in these contexts include Choleski or LU decomposition for ***sparse*** matrices.
  + For more on this note see AFR page. 10
* ProbitSpatial in R
  + One problem I initially thought would persist with the spatial probit estimation in R through this package concerned the lack of functionality to extract residuals. However, this was a real oversight on my part as I can just estimate the predicted probability of an observation using the estimated model and then construct my own residuals from the model:
  + I still need to test this out, but it would be a far more tractable solution relative to estimating the full Bayesian model. Note that the probit spatial functions employ monte-carlo techniques that utilize R’s sparse matrix support which infinitely speeds up computation relative to using the full matrix of spatial weights.
* Scaled Dependent Variable – re: Ben’s scaled variable
  + Regardless of the ideal estimation strategy that emerges (i.e., Bayes or some Monte Carlo technique), I should perform my own Monte Carlo analysis of the consistency and efficiency of “scaling” a spatially-dependent over-dispersed count outcome variable and estimating a spatial regression using the continuous model specifications.