b) yes let us continue to move forward on the analytics.

   b.1) can u continue to push forward on the cts RV stuff?  in light of our convo do u think you could:

   b.1.1) generate samples from a discrete markov chain X and (new part) for any state x, generate samples from p(y|x) now where Y is continuous?  For now assume X =1 or X=2.  Let us assume that if X=1 then Y is gaussian with expectation mu1 and variance var1; analogously, if X=2 then Y is gaussian with expectation mu2 and variance var2.   For now, just arbitrarily pick the four parameters: mu1 mu2 var1 var2.  mu1 and mu2 can be positive or negative; var1 and var2 have to be positive.  You can start to tweak things when you watch.  For example, if you make the var1 and var2 the same but make mu1 and mu2 far apart, you can almost "see" the state X in y.  On the flip side, if mu1 and mu2 are closer tomorrow, when you generate the samples, it will be harder to see what the values are.  this comes from beng100 and the notion of SNR in hypothesis testing.  don't dive too much into that but just heuristically start to see that.-**done coding; want to plot as well; compare coding strategy with how todd would do it. Update: have now done it properly based on Todd code**

  b.1.2) try to implement the one-step prediction update (**does it change here**?) and the hayes rule for this setting where X is discrete and Y is cts.  In light of our convo the other day, when we walked away, i think u had it clear in your head.

for training, i am thinking of training you in parallel on 3 fronts (1: HMM stuff; 2: nicole/keerthiga/marianne; 3: control w alison and diego).  Creating a ppt doc now to explain my idea of the training for you and how the 3 all are very intertwined.  Any suggestions you have, or how you want to prioritize, please share.