

I could only add to your response by saying that I believe that there's a typo in the original discussion prompt regarding the log-log link function. The textbook seems to say it's $\ln[-\ln(1 - p)]$, and if you think about it, this should be true. The reason is that the inner log function takes the natural log of a probability between 0 and 1, which would result in some negative value (excluding 1). Then, trying to take the natural log of a negative number would result in NaN's within R.

You mention a great point about the link functions which is the distribution of their errors. The idea seems to only be that we are choosing amongst some subtly different link functions, so a noteworthy way of analyzing any significant differences amongst them would be to look at their errors. I didn't know that they had different distributions, although intuitively this would be the case, since the textbook doesn't seem to mention it. I would guess then that perhaps in certain use cases, we would prefer one type of distribution in the errors over another. Or, it could really be that there's not much of a difference application-wise.