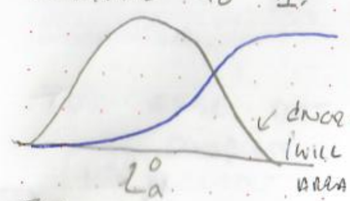
HERE IS THE CORRECT EQN:

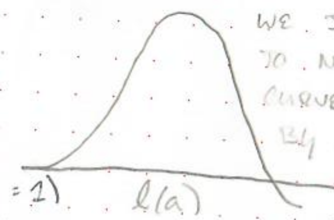
$$L(D|\theta) = \frac{\prod S_L^0 \frac{1}{2\pi\sigma a_i} e\left[-(L_i^0 - \hat{L}_i)/2(\sigma a_i)^2\right]}{\int_{-\infty}^{\infty} S_l \frac{1}{2\pi\sigma a_i} e\left[-(\hat{L}_i - l)/2(\sigma a_i)^2\right] dl}$$

WHERE L_i^0 IS OBS, S IS SELEX, + l IS ALL POSSIBLE LENGTHS.

THE NUMERATOR OF THIS EQN IS SIMPLY OUR PRE-EXIST[...] DNORM (USED IN IBM) MULTIPLIED BY THE KNOWN S[...] FOR THOSE OBS. DUE TO $\prod$ WE YIELD A DISTRIBUT[...] (ALL PTS), BUT DUE TO S_L^0 THE RESULTANT DIST. DOES[...] INTEGRATE TO 1:

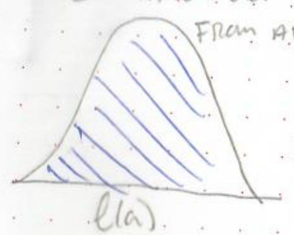


DNORM (WILL HAVE AREA = 1 IF $S_L = 1$) $\xrightarrow{\text{MULT}}$



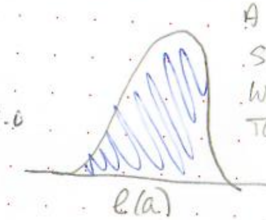
WE JUST NEED TO NORMALIZE [...] CURVE BY DIV[...] BY THE AREA BENEATH [...]

THE AREA BENEATH IT IS GIVEN BY THE DENOMINA[...] + WILL VARY W/ EACH PREDICTED LENGTH. WE NEED TO ENSURE THE RIGHT THINGS ARE DIVIDED INTO ONE ANOTHER.



DIVIDE BY BLUE $\rightarrow$

WHICH IS = 1.0 WHEN S_L^0 CONSTANT.



A "SHORTER" DIST[...] SPECIFIC TO $\hat{L}_i$ WHICH DOES INTEG[...] TO 1.

SO TO MINIMIZE FUNCTION CALLS OF INTEGRATE, SIMPLY MAKE A "LOOKUP TABLE" OF ALL POSS DENOMINATOR[...] GIVEN $\hat{L}_i$. A SANITY CHECK IS THAT THE DENOM SHO[...] BE 1 IN THE ABSENCE OF S_L (THIS IS HOW IT "GOES AWAY" FOR WC, AC; $S_L^0 = 1$ $S_l = 1$ $\int_{-\infty}^{\infty} x = 1$)