

IN OUR EXAMPLE:

$$P = \begin{bmatrix} p_1 \\ p_2 \\ p_3 \end{bmatrix}$$

EACH p_i HAS DIRICHLET
PRIOR

$$p_{\tilde{n}} \sim \text{DIRICHLET}(1, 1, 1) \quad \tilde{n} = 1, 2, 3$$

POSTERIORES:

$$\underline{p_1 | \text{data}} \sim \text{DIRICHLET}(1+2, 1+2, 1+0)$$

$$p_2 | \text{data} \sim \text{DIRICHLET}(1+2, 1+1, 1+2)$$

$$p_3 | \text{data} \sim \text{DIRICHLET}(1, 3, 2)$$

x WHAT IS THE PREDICTION OF NEXT
STEP (CURRENT IS 1):
EXPECTATION OF DIRICHLET(3, 3, 1)
 $= \left(\frac{3}{7}, \frac{3}{7}, \frac{1}{7}\right)$