## Previously on MA40189:

- observations that classicists judge as independent (and identically distributed) judged as exchangeable by Bayesians
- $X_1, \ldots, X_n$ finitely exchangeable if

$$f(x_1, \ldots, x_n) = f(x_{\pi(1)}, \ldots, x_{\pi(n)})$$

  for all permutations $\pi$ defined on $\{1, \ldots, n\}$

## Today on MA40189:

- $X_1, X_2, \ldots$ infinitely exchangeable if every finite subsequence is finitely exchangeable
- not every finite exchangeable sequence can be extended to an infinite exchangeable sequence
- representation theorem for 0-1 exchangeable random quantities

$$f(x_1, \ldots, x_n) = \int_0^1 \left\{ \prod_{i=1}^{n} \theta^{x_i} (1-\theta)^{1-x_i} \right\} f(\theta)\, d\theta$$

- general representation theorem (simplified form)

$$f(x_1, \ldots, x_n) = \int_\theta \left\{ \prod_{i=1}^{n} f(x_i \,|\, \theta) \right\} f(\theta)\, d\theta$$