Metropolis Hastings

For k = 1, 2, …

- Sample x' from a wrong $Q(x^k \to x')$
- Accept proposal x' with probability $A(x^k \to x')$
- Otherwise stay at x^k

$$x^{k+1} = x^k$$

$$A(x \to x') = \min\left(1, \frac{\pi(x')Q(x' \to x)}{\pi(x)Q(x \to x')}\right)$$

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Choice of Q

$$Q(x \to x') > 0$$

Opposing forces:

- Q should spread out, to improve mixing and reduce correlation

- But then acceptance probability is often low