





**MCMC SAMPLERS**

- Metropolis–Hastings algorithms (broad class of samplers, very general).
  - Most methods in the wild are some flavor of this.
- Reversible Jump MCMC (used in many phylogenetic packages).
  - Allows for posterior distributions with variable dimensionality.
- Usable non-mcmc methods: R-INLA - integrated nested Laplace approximation.
  - Great for structural equation modeling, much faster for some classes of models.

- Gibbs samplers.
  - Mostly surpassed, but still in wide use.
  - Can sample discrete parameters.
  - Requires particular types of priors.
  - Software: WinBugs, Bugs, Jags...
- Hamiltonian Monte Carlo samplers
  - Discrete parameters must be integrated.
  - Can fit dynamic models using differential equations.
  - Software: PyMC3, Edward, Stan (rethinking engine)...

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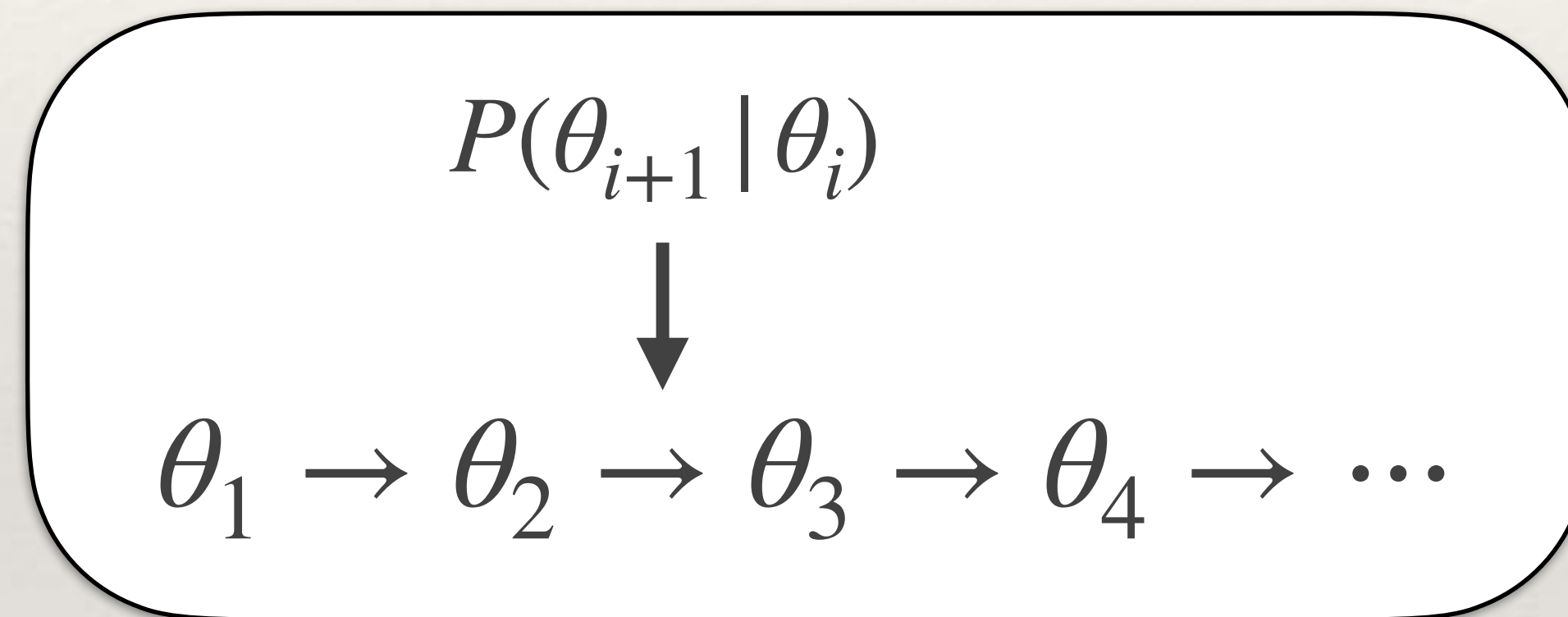
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# WHAT MAKES THESE SAMPLERS DIFFERENT?

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Basically the transition proposal distribution



We can visualize what is going on with different samplers:

<https://chi-feng.github.io/mcmc-demo/app.html>