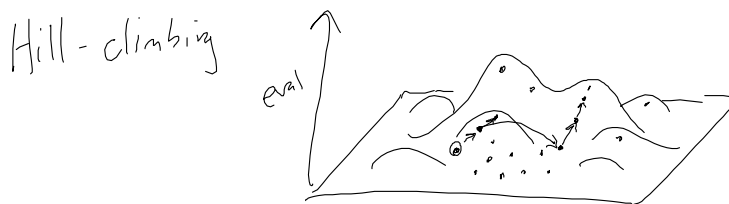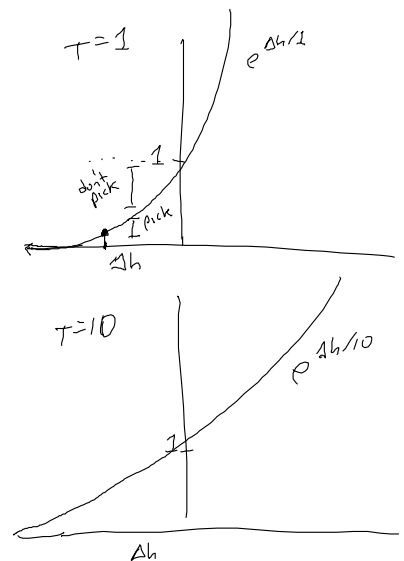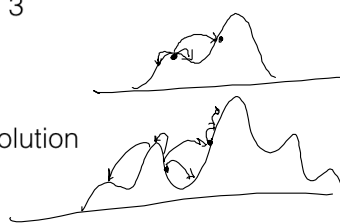Simulated annealing
Monday, September 19, 2016   9:28 AM

1. T <— starting temperature

⇒ 2. current <— random starting node

3. next <— pick ~~a random move and apply it~~   *1 neighbor*

4. $\boxed{\Delta h}$ <— h(next) - h(current)

5. If $\Delta h > 0$ then current <— next, goto 3

6. current <— next with probability $e^{\Delta h/T}$ or goto 3

7. Reduce T by some given schedule

8. If T > 0 goto 3, or terminate with current as solution

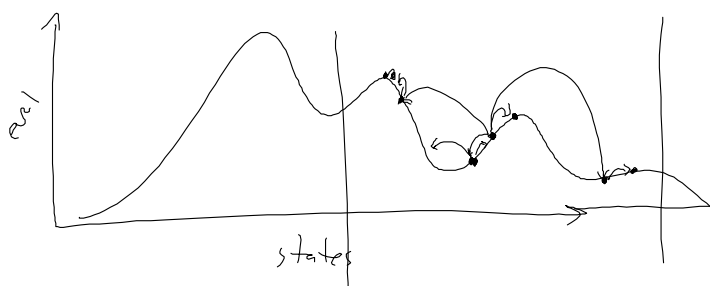current •
next •

downhill is negative Δh

Uphill is positive Δh

$T = 1$ $e^{\Delta h/1}$

don't pick   I pick Δh

$T = 10$ $e^{\Delta h/10}$

Δh

Hill - climbing

eval

Random downhill move

Simulated Annealing
- Define a neighborhood
- If you find a successor ~~better~~ do it
- Prob you also move downhill
  ↳ decreases as time goes on

eval

states

Temperature variable — decreases over time
How fast to decrease?

Tradeoff: time & quality of solution

Decrease slow enough → increase likelihood
of a good solution

Satisficing Search — any alg where more time →
                                          better quality solution
                    — okay to return sub-optimal solutions

Just-in-time — Can be interrupted at any time
                and still return _some_ solution