• Bike tires flat, so inflate them: means-end analysis
  ▪ General problem solver, or GPS
• Functional fixedness
  o Functional fixedness states that because people are fixed on representing an object according to its conventional function, they will fail to represent it as having a novel function
  o People don’t see the pliers as being a weight, making the string a pendulum
  o Use the matchbox case as a stand for the candle
  o Representation has an effect on operator selection
    ▪ People don’t see the matchbox case as a stand
    ▪ More people solved it when the matchbox case was empty
    ▪ Don’t see the pliers as a weight
• Set effects
  o A set effect is when people’s experiences can bias them to prefer certain operators when solving a problem
  o Water jug lab
    ▪ Participants are told to fill the jug to a certain level (starts out empty)
    ▪ When filling a jug from the tap, they must fill the jug to capacity
    ▪ When pouring the water from a jug, participants must empty the jug completely
  o You get a solution and then you tend to rely on it even when another solution would be more optimal
  o People solved the problem quicker when not having a mental set beforehand
  o Einstellung effect (mechanization of thought)
• Incubation and insight
  o Incubation effects are when people claim that after trying a problem and getting nowhere, putting it down for a couple of hours or days and then trying it again they will get a solution more quickly
    ▪ Time allows activated ideas to dissipate
    ▪ Things in environment may trigger alternative ideas
    ▪ We’re over thinking it
    ▪ We’re having set effects, where we’re stuck on a particular set and we need to forget it
  o Insight: aha moment
    ▪ Moments when people are not aware that they are close to a solution
    ▪ Tower of Hanoi is a non-insight problem; so is algebra
    ▪ Problems such as the cheap-necklace problem is an insight problem
    ▪ Insight solutions to problems are more accurate than analytical solutions
• The way that we represent a problem also helps us determine how easily we can solve it

Chapter 9
• Experts
  o Minimum 10 years of practice to be a genius