Lateral Thinking

• “Vertical Thinking” is sticking with the current approach, being rigid.
• “Lateral Thinking” is coming at a problem from a different (perhaps non-standard) direction.
• Often, just realizing that this should be done is enough to find a good solution (getting out of the old approach).
• Of course, it can be hard to tell when you are in the trap! It helps to have a “flexible” mindset.

Examples of Lateral Thinking

• Unsticking a car lock on a cold night
  – Approach 1: Heat the key
  – Approach 2: Unfreeze the lock (with alcohol)
• Need to iron a shirt, but no iron
  – Iron with something else (a frying pan)
• Sheep in front of the truck
  – Approach 1: Beep horn, try to push or scare sheep
  – Approach 2: Lead the sheep behind the truck
How to Facilitate Flexibility?

• Brainstorming
  – Generate ideas
  – Usually done in groups
  – Don’t judge – respect crude ideas
  – Quantity is important
• Brainstorming can be practiced/skill developed

The Intermediate Impossible

• For really hard problems
• Generate an impossible solution
• “Play with” that solution
  – Expand on it, modify it
• Thus, the “impossible” solution is an intermediate step to a feasible solution
Example Problems

• Unloading cargo ships takes a long time.
  – Unload at sea?

• New (taller) cargo ships cannot enter a port city due to a bridge.
  – Lower river?

• A factory dumps pollution into a river.
  – If the factory had to suffer from the pollution, they would be motivated to clean it up. So, put factory downstream from factory?

Random Associations

• Pick an (interesting) word out of the dictionary.
• Let it stimulate your mind.
• Problem: Noise pollution
• Word: Anthracite
  – Comes from underground
    • Put noise underground?
    • Put quiet places underground?
  – Black
    • Eyelids cover eyes… cover ears?
Analogies and Metaphors

• Many inventors take analogies from nature
  – Tunnels underwater: worms tunneling in wood
  – Microphone (for telephone) from the ear
  – Infection cause deduced from observing fermentation of wine
  – Spider nets lead to fishing nets

Sleep On It

• Passage of time can unstick many problems
• The mind “incubates” the problem.
  – Perhaps works on problem unconsciously
• Each of us has circumstances in which we are most creative
  – lying in bed, taking a shower, on the toilet
  – Take advantage of this.
• Must give yourself time to solve the problem.
• Example: debugging a computer program
Sleep On It (cont)

• It gives you a chance to come at the problem with another approach
  – Does the solution occur to you?
  – Perhaps a new approach that immediately leads to the solution?

• Promotes (allows) lateral thinking