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 under ground
    - 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