

Developing Management Skills

Chapter 3: Solving Problems Analytically and Creatively

Learning Objectives

- Increase proficiency in analytic problem solving
- Recognize personal conceptual blocks
- Enhance creativity by overcoming conceptual blocks
- Foster innovation among others

A Model of Problem Solving

- Step 1: Define the Problem
 - Differentiate fact from opinion
 - Specify underlying causes
 - Tap everyone involved for information
 - State the problem explicitly
 - Identify what standard is violated
 - Determine whose problem it is
 - Avoid stating the problem as a disguised solution

A Model of Problem Solving

- Step 2: Generate Alternative Solutions
 - Postpone evaluating alternatives
 - Be sure all involved individuals generate alternatives
 - Specify alternatives that are consistent with goals
 - Specify both short- and long-term solutions
 - Build on others' ideas
 - Specify alternatives that solve the problem

A Model of Problem Solving

- Step 3: Evaluate and Select an Alternative
 - Evaluate relative to an optimal standard
 - Evaluate systematically
 - Evaluate relative to goals
 - Evaluate main effects and side effects
 - State the selected alternative explicitly

A Model of Problem Solving

- Step 4: Implement and Follow Up on the Solution
 - Implement at proper time and in the right sequence
 - Provide opportunities for feedback
 - Engender acceptance
 - Establish ongoing monitoring system
 - Evaluate based on problem solution

Constraints on the Analytical Problem-Solving Model

- Defining the problems
 - Lack of consensus on the problem
 - Acceptance of problem definition
 - Symptoms are often confused with the real problem
 - Confusing information

Constraints on the Analytical Problem-Solving Model

- Generating Alternatives
 - Alternatives are evaluated as they are proposed
 - Few possible alternatives are usually known
 - The first acceptable solution is usually accepted
 - Alternatives are based on what was successful in the past

Constraints on the Analytical Problem-Solving Model

- Evaluating and Select an Alternative
 - Information on alternatives is limited
 - Search for information occurs close to home
 - The type of information is constrained by other factors
 - Gathering information is costly
 - Preferences for the best alternatives are not always known

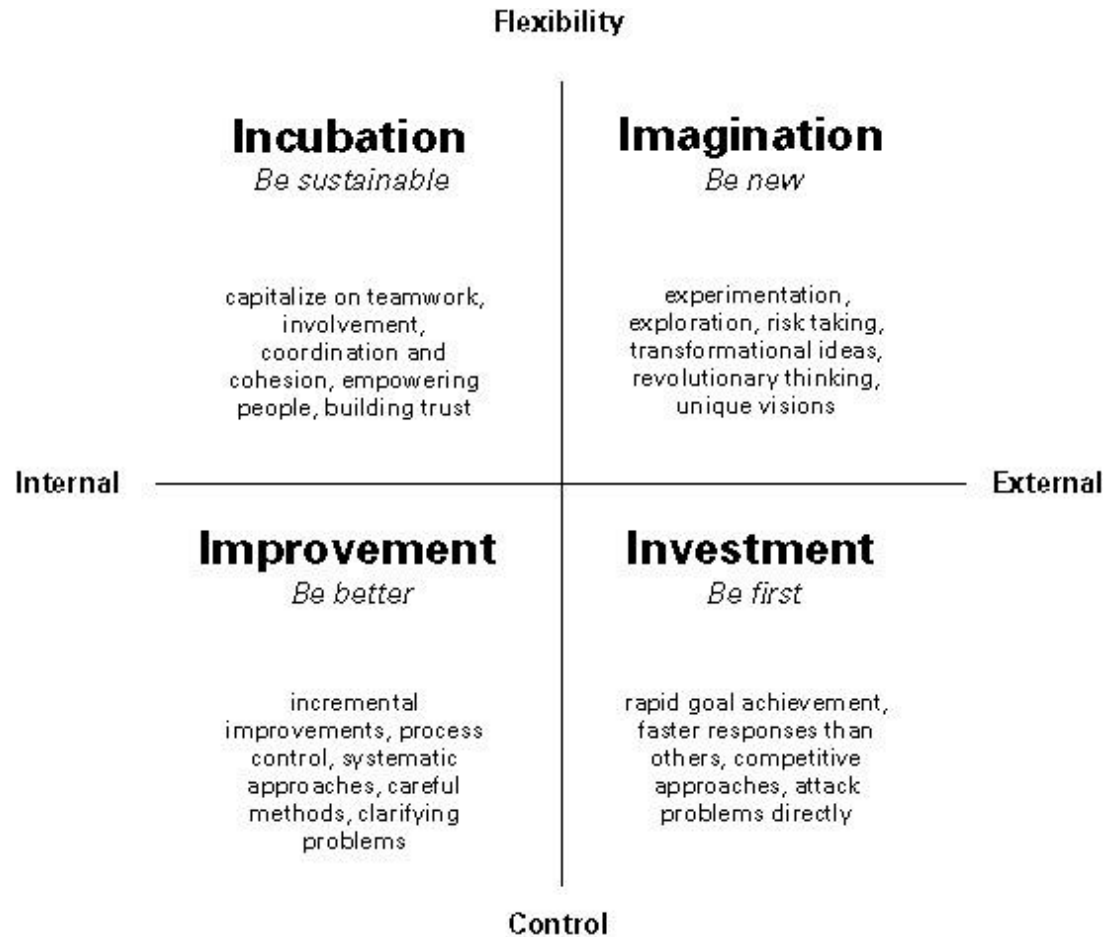
Constraints on the Analytical Problem-Solving Model

- Implementation and Follow up
 - Acceptance is not always forthcoming
 - Resistance to change
 - Uncertainty about what part of solution to monitor
 - Political and organizational processes must be managed
 - It may take a long time to implement a solution

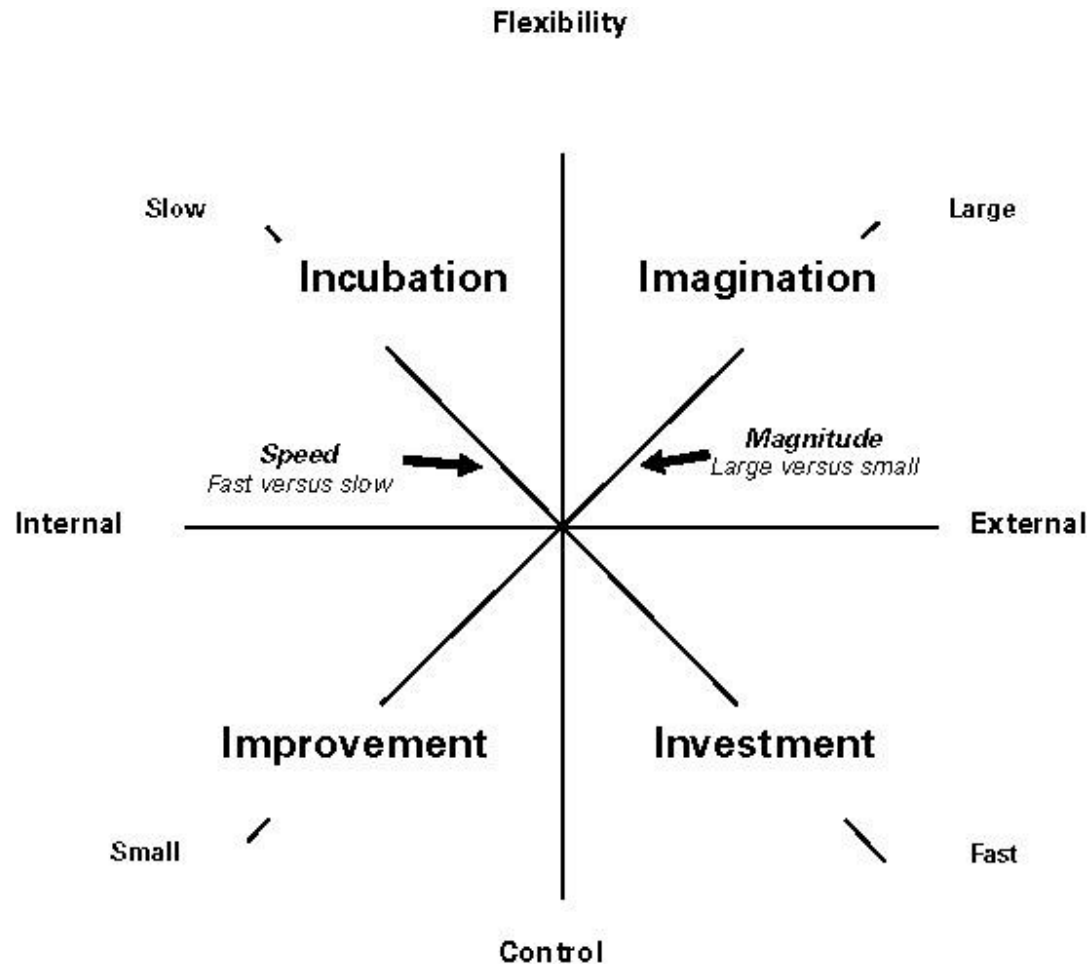
Impediments to Creative Problem Solving

- Most people assume creativity is one dimensional
- Almost everyone has created blocks that inhibit our creativity

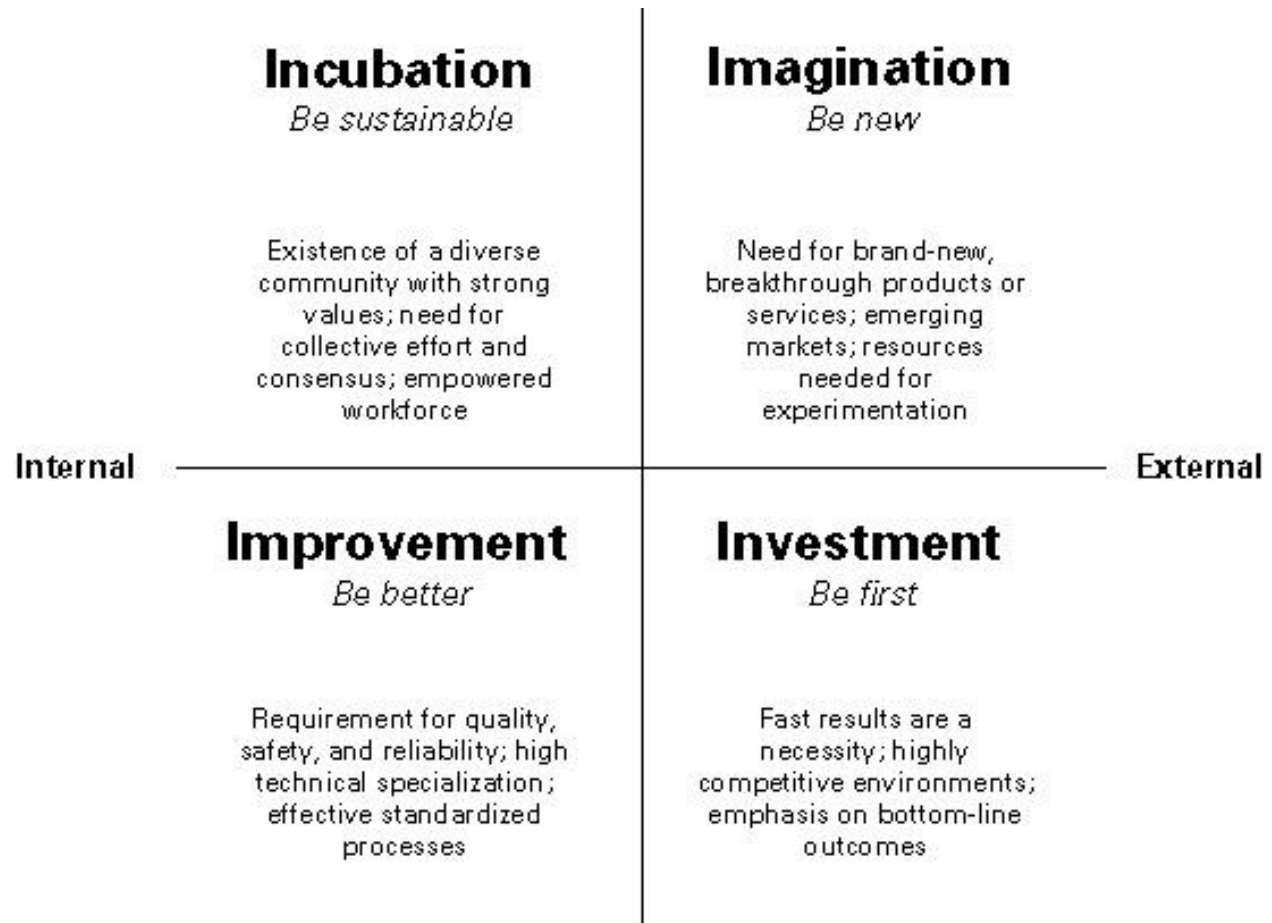
Four Types of Creativity



Key Dimensions of the Four Types



Examples for Four Types



Conceptual Blocks

Mental obstacles that constrain the way problems are defined.

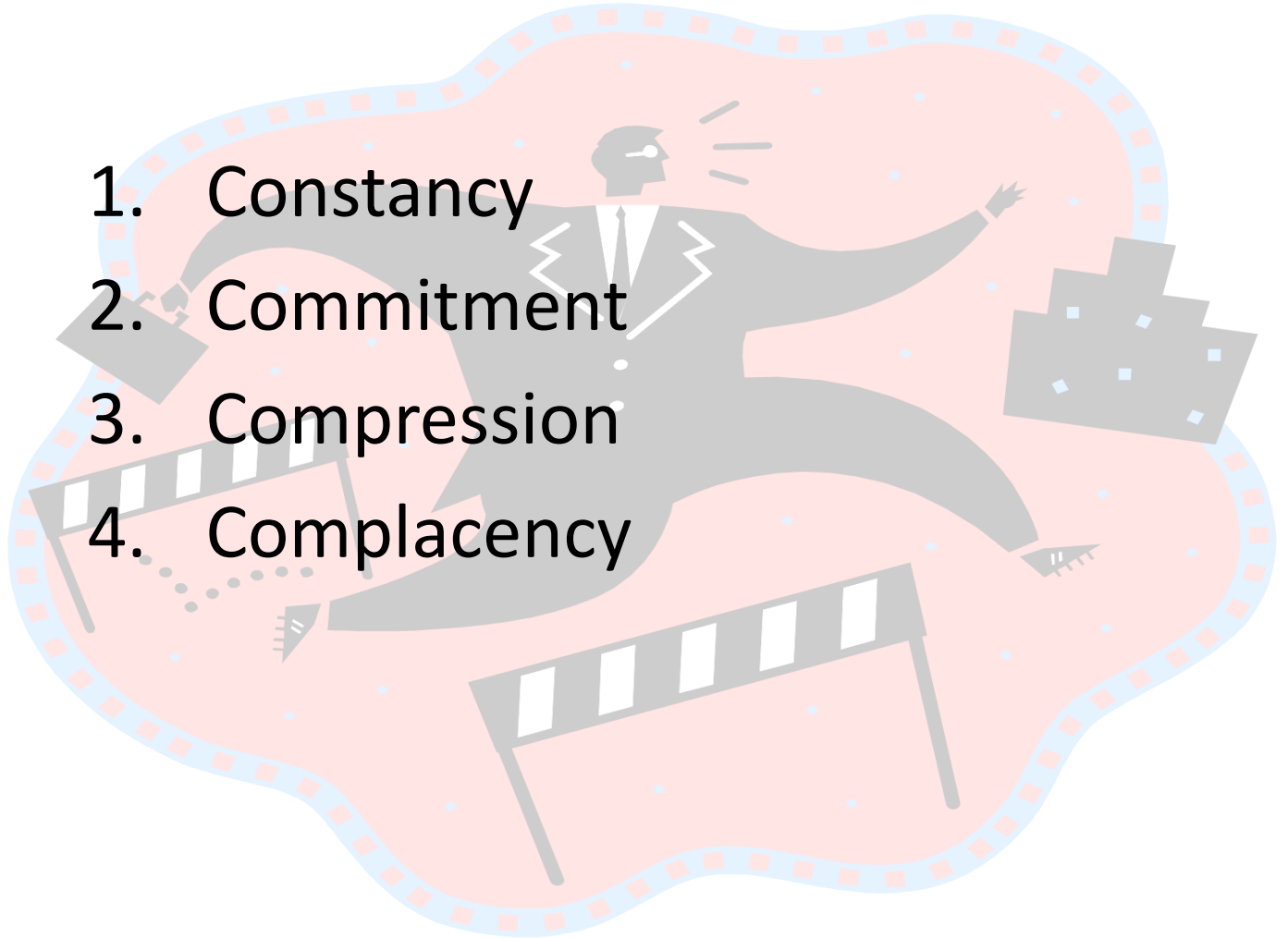


Two Examples

1. Percy Spencer's Magnetron led to the invention of the microwave
2. Spence Silver's Glue led to the development of the enormously popular Post-It Notes

Conceptual Blocks

1. Constancy
2. Commitment
3. Compression
4. Complacency



deBono's Ways of Thinking

- Vertical Thinking
 - Continuity
 - Chooses
 - Stability
 - Searches for what is right
 - Analytic
 - Where the idea came from
 - Develops an idea
- Lateral Thinking
 - Discontinuity
 - Changes
 - Instability
 - Searches for what is different
 - Provocative
 - Where the idea is going
 - Discovers the idea

Multiple Thinking Languages

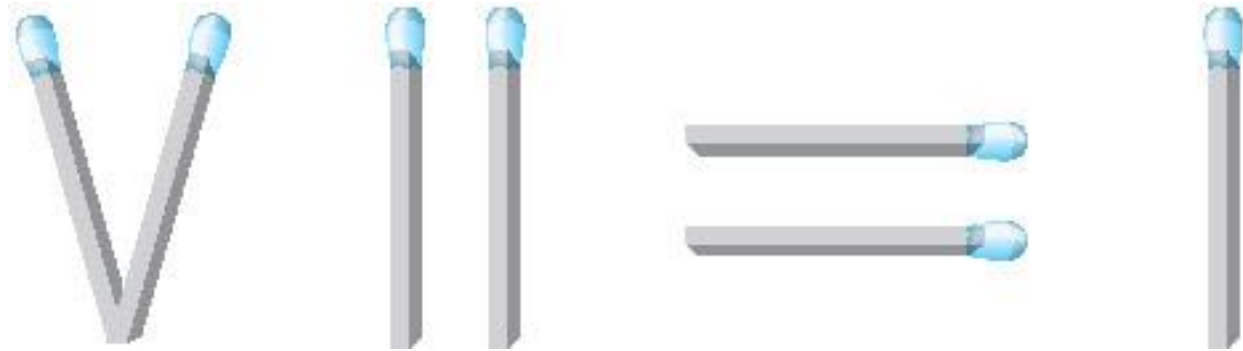
- Words
- Symbols
- Sensory (i.e. smell)
- Feelings and emotions
- Visual imagery

Multiple Thinking Languages

The more languages available to problem solvers, the more creative the solution will be.



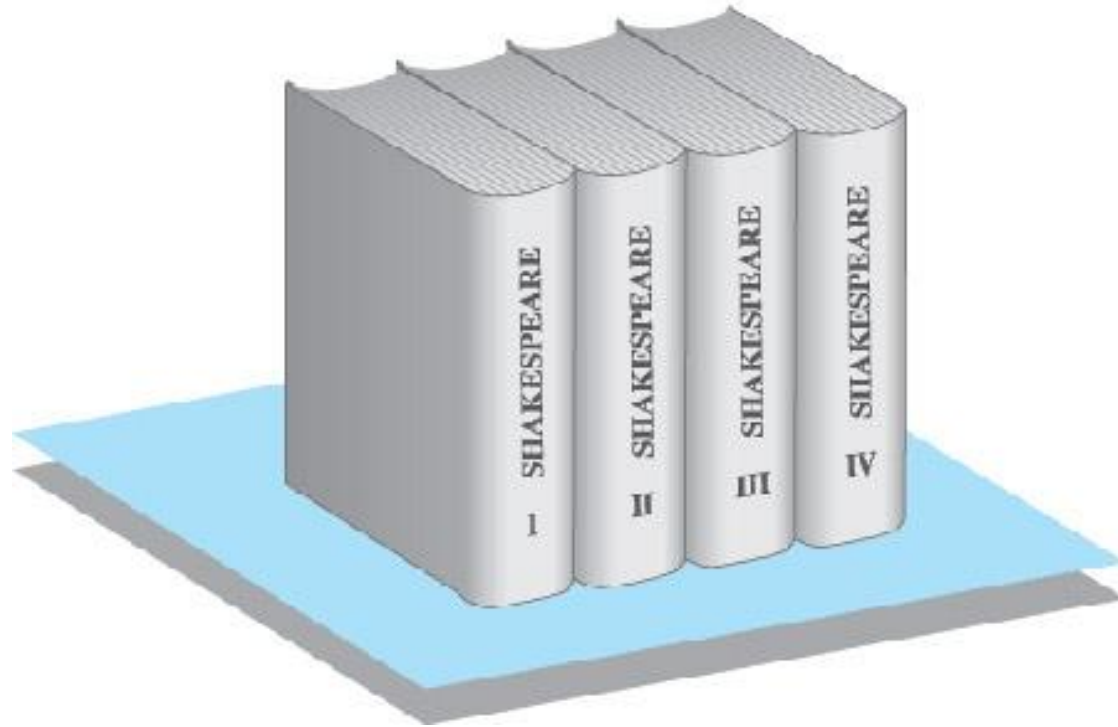
The Matchstick Configuration



Perceptual Stereotyping

When individuals define present problems in terms of problems that they have faced in the past.

Shakespeare Riddle

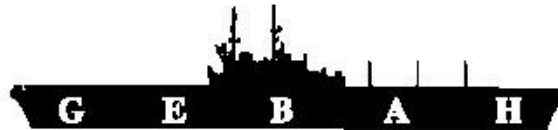


Ignoring Commonalities

Creativity is blocked when individuals fail to find the common thread that exists between dissimilar problems.

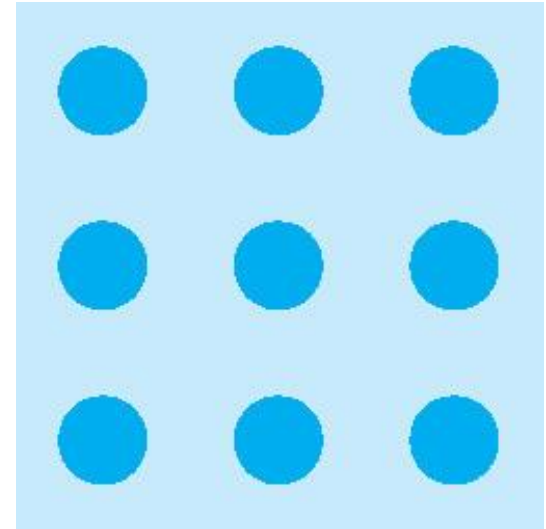
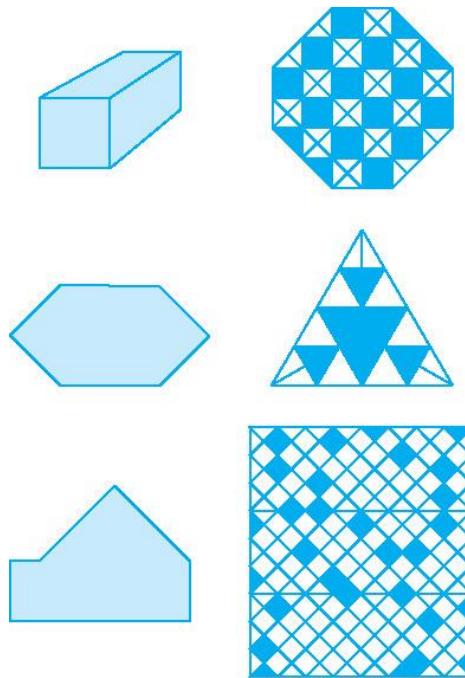


Name That Ship!



Examples of Compression

Artificial Constraints



Separating
Figure From
Ground

Examples of Complacency

- Noninquisitiveness: Unwillingness to ask questions
- Bias against thinking:
Proclivity to avoid doing mental work

Table 3.4 Exercise to Test Ambidextrous Thinking

LIST 1	LIST 2
sunset	decline
perfume	very
brick	ambiguous
monkey	resources
castle	term
guitar	conceptual
pencil	about
computer	appendix
umbrella	determine
radar	forget
blister	quantity
chessboard	survey

Stages in Creative Thought

- Preparation
- Incubation
- Illumination
- Verification



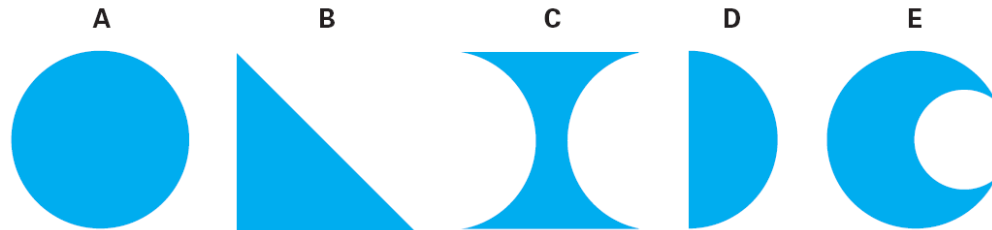
Ways to Improve Problem Definition

- Make the strange familiar and the familiar strange – Synectics
- Elaborate the definition
- Reverse the definition

The Five-Figure Problem

Figure 3.9 The Five-Figure Problem

Of the five figures below, select the one that is different from all of the others.



Four Types of Analogies



1. Personal
2. Direct
3. Symbolic
4. Fantasy

Ways to Generate More Alternatives

1. Defer judgment – Brainstorming
2. Expand current alternatives
3. Combine unrelated attributes

Rules of Brainstorming

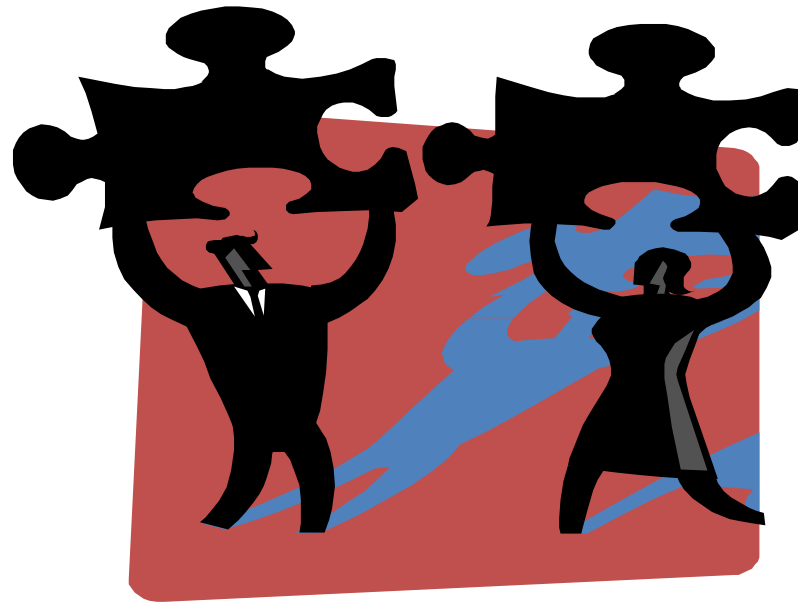
1. No evaluation of ideas is permitted
2. Wild ideas are encouraged
3. Quantity before quality
4. Build on ideas of others

Morphological Synthesis

1. The problem is written down
2. Attributes of the problem are listed
3. Alternatives to each attribute are listed
4. Different alternatives from the attributes are combined

Relational Algorithm

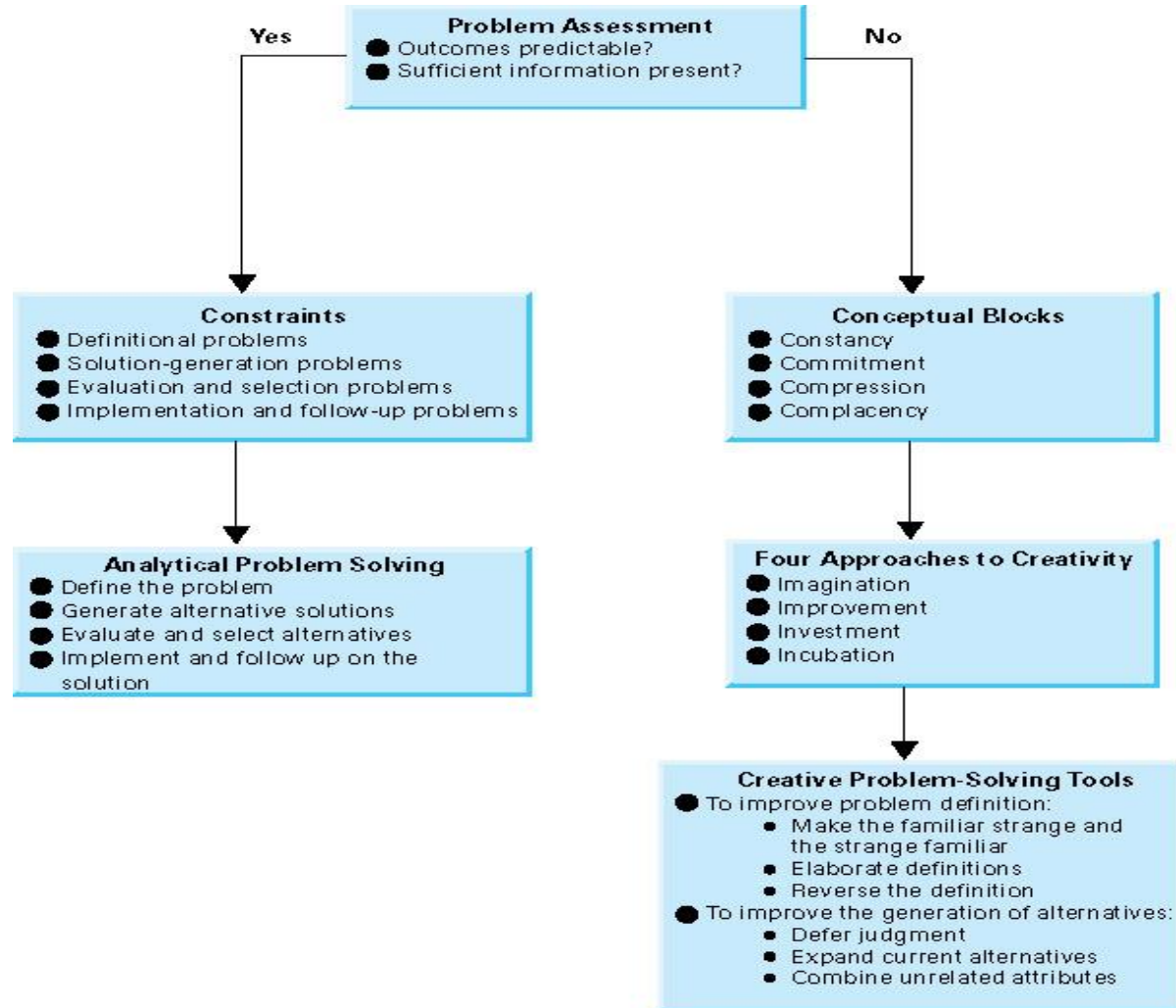
Applying connecting words that force a relationship between two elements in a problem.



Hints to Facilitate Creative Problem Solving

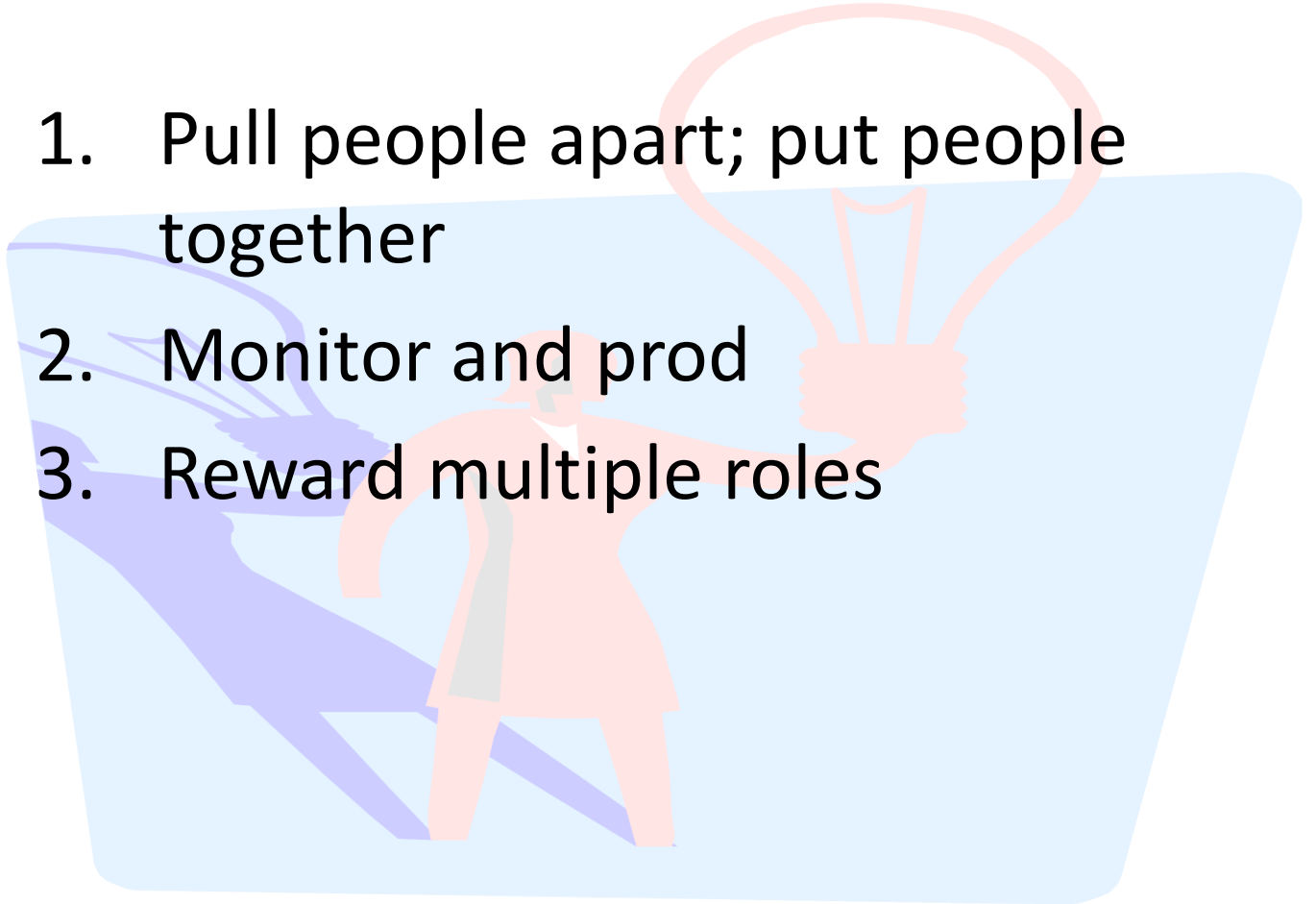
- Give yourself relaxation time
- Find a place where you can think
- Talk to other people about ideas
- Ask other people for their suggestions about your problems
- Read a lot
- Protect yourself from idea-killers

A Model of Analytic and Creative Problem Solving

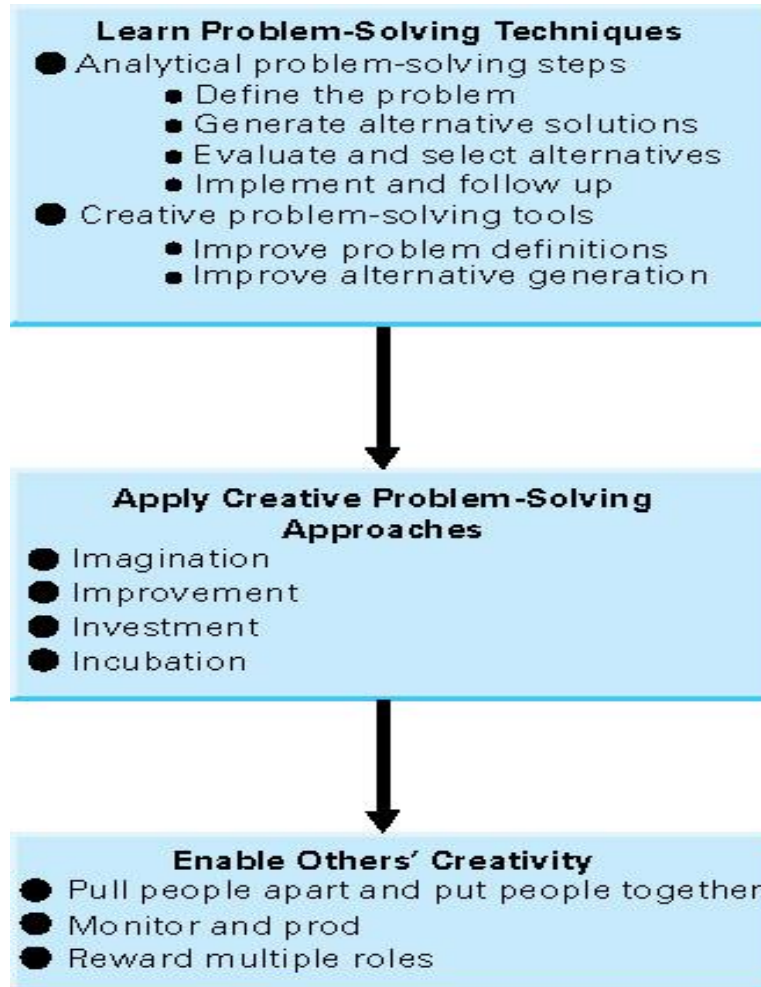


Three Principles for Fostering Creativity

1. Pull people apart; put people together
2. Monitor and prod
3. Reward multiple roles



Enabling Creativity in Others




Behavioral Guidelines

- Follow the four-step procedure for analytical decision-making
- Employ the four types of creative decision-making
- Implement steps to overcome conceptual blocks

Behavioral Guidelines

- Use techniques to elaborate the problem definition
- Foster creativity among those with whom you work



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