Creative Decision
Making and Problem Solving

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What is Creativity?

- Creativity is the ability to see the same things as everyone else but think something different.
- Creativity involves the translation of our unique gifts and talents into something that is both new and useful.
- Creativity is an important element in finding new ways to do old things and ways to do things yet undone.

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The Occurrence of Creativity

- When creativity emerges, it often occurs in the form of an intuitive flash of insight.
- It is usually just the complete idea that is revealed. Equations, testing, and analysis come much later.
- An example is Velcro, which arose from George de Mestral's observation about how cockleburs clung to clothes.
- Another is Post-It notes. Arthur Fry wanted a "poor" adhesive so he used a colleague's adhesive that was "useless" because it took years to set.

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Creativity Defined

To further refine our definition, we must distinguish between three related, but unique characteristics.

1. Intelligence is the ability to think and learn.
2. Academic achievement results in a degree after years of lectures, exams, and theses.
3. Creativity is the ability to redirect a line of thought into new directions.

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Different Ways to Think

There are five basic categories of ways to think:

1. Logical thinking – the decision maker builds on his or her analytical abilities.
2. Lateral thinking – disrupts the usual vertical thinking by introducing discontinuity
3. Critical thinking – takes the position that certain elements within a problem context are most critical to the solution. For example, Pareto's Law implies that 80% of problems occur from 20% of causes.

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Different Ways to Think (cont.)

There are five basic categories of ways to think:

4. Opposite thinking – the decision maker takes the perspective of someone other than himself.
5. Groupthink – an alternative way of thinking that can be used to achieve group involvement.

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Lateral Thinking

Three major activities are available to promote lateral thinking.
1. Awareness – these activities are intended to identify and understand current ideas (but not to evaluate them).
2. Alternatives – a conscious effort is made to produce as many different ways as possible to look at the problem.
3. Provocation – discontinuity is introduced into the thought process by forcing a change in the way the problem is viewed.

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Intuition

- Intuition is often identified as an important element in creative decision making and problem solving.
- Managers who can harness their intuition can often respond more quickly to a given situation and apply both experience and judgment.

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Barriers to Creativity

- Self-constraining beliefs – the participant makes the problem more difficult by assuming certain constraining conditions that do not exist.
- Fears, beliefs, and stresses – people that fear criticism or have strong beliefs may have limited ability to be "free" and creative
- Routines and rigidity – this may inhibit the information gathering, interactions, and incubation of thought that leads to creativity.

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Creative Problem-Solving Techniques

Most techniques fit into four categories:
1. Serendipity – we cannot control this, but can enhance its probability of occurring by actively studying unexplained phenomena.
2. Free association – techniques in this category, such as brainstorming, focus on divergent thinking and creation of ideas while deferring judgment on those ideas.

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Creative Problem-Solving Techniques (cont.)

Most techniques fit into four categories:
3. Structured relationships – new ideas are generated by forcing together two or more objects to produce new objects.
4. Group techniques – these enhance creativity in multiparticipant problem-solving contexts.

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Tools to Aid Brainstorming

- This free association technique involves gathering together a set of often-diverse people to generate a long list of ideas about a problem.
- After this long list is generated, it is culled down to manageable size, often with surprisingly little effort.
- Two commercial tools to aid in brainstorming are IdeaFisher and GroupSystems.

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A Dialogue from Ideocentics' IdeaFisher

What qualifies a person to be a potential customer?
Young, professional, athletic and/or fashion conscious, has purchasing power.

What purchasing power? Will spend up to $100 weekly on apparel.

What decision-making power? Independent.

For this marketing effort, who is your choicest customer? (A regular customer? A past customer? A first time buyer?) For what reason?

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Morphological Forced Connections

- Another structured relationships technique.
- A user writes down attributes of a problem, listing as many alternatives as possible for each attribute.
- The user is then asked to consider all possible combinations of the alternatives.
- These analyses can be performed in a matrix format and can easily be delivered via a DSS.

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Analytic Hierarchy Process

- It is often difficult to conceptualize all the different elements of a problem, or there is not enough cognitive energy to prioritize those elements.
- The AHP was formulated to counter those situations, and is a mathematically-based theory.
- It employs two key aspects: (1) data from the various variables that make up the decision, and (2) judgments about those variables.

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Analytic Hierarchy Process (continued)

- The AHP requires taking the following steps:
  1. Structuring the decision into a hierarchical model
  2. Pairwise comparison of all objects and alternative solutions.
- The form of the model has four elements:
  1. *Goal* – the desired outcome
  2. *Criteria* – elements that comprise the goal
  3. *Subcriteria* – elements inside the criteria
  4. *Alternatives* – solutions or choices available
- This format allows decision makers to examine every part of a complex problem.

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Group Techniques

- These techniques focus on enhancing creativity in multiparticipant situations.
- One widely used mechanism is the Nominal Group Technique which builds on the concept of brainstorming.
- Another technique is the Delphi Method. It uses several rounds of user participation, with pauses between for summarizing. The key difference between Delphi and NGT is that the participants are anonymous.

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Creativity and the Role of Technology

- Until recently, there was little empirical evidence that technology either enhanced or inhibited creativity.
- In effect, it was shown that the process imposed on the decision maker was the primary cause of enhanced creativity.
- Lately, research has shown that when appropriate creativity-enhancing processes are combined with effective technology, the results are markedly greater.

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