CHAPTER

6

Duxbury Thomson Learning

Making Hard Decision Third Edition

CREATIVITY AND DECISION MAKING

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Creativity and Decision Making

Creativity and Decision Making

The majority of businessmen are incapable of original thinking, because they are unable to escape from the *tyranny of reason*. Their imaginations are blocked. *(David Ogilvy, Confessions of an Advertising Man)*

Creativity and Decision Making

- Good decision making includes active creation of new and useful alternatives.
- The very process of decision analysis—especially the specification of objectives—provides an excellent basis for developing creative new alternatives.
- Everyone is frustrated occasionally by an inability to think creatively and thus can use a hand in being more creative.

Creativity and Decision Making

- Modern managers must do more than simply cope with radical transformations: They must be on the attack.
- To be successful, a manager must learn to view new situations as opportunities for beneficial change rather than as problems to overcome somehow without **rocking the boat too much**.

Creativity and Decision Making

- The core paradox a manager faces if building an organization that is stable in its **ability to innovate rapidly and flexibly**.
- Solving problems creatively must become part of a manager's and a firm's essence.

Frame of Discussion

1. Defining creativity in decision making and looking at some of the psychological theories that have been developed to help us understand the creative process.
2. Discuss many different ways in which creativity can be blocked.
3. Discuss ways to enhance the creative process, especially the process of generating alternatives in a decision-making situation.

What is Creativity?

- It is much easier to identify creative acts that it is to define the term itself. We readily recognize creative acts, and we often use adjectives like novel, insightful, clever, unique, different, or imaginative.
- We are particularly concerned with the development of creative alternatives in decision problems.

What is Creativity?

- Creativity arises in many different situations;
  - A novel and elegant proof of a mathematical theorem,
  - An artist's creativity in painting or music, and
  - A storyteller's clever retelling of an old tell tale are a few examples.

What is Creativity?

- When we think of creativity in decision making, though, we will be **looking for new alternatives with elements that achieve fundamental objective in ways previously unseen**.

What is Creativity?

- Creative alternative has both elements of **novelty and effectiveness**, where effectiveness is thought of in terms of satisfying objectives of a decision maker, a group of individuals, or even the diverse objectives held by different stakeholders in a negotiation

Theories of Creativity

Why do creative thoughts seem to come more readily to some people than to others? Or in certain kinds of situations.

The most basic approach relates creativity to Maslow's (1954)

concept of self-actualization.

- **Self-actualization as, among other things means:**
  - Being able to perceive reality accurately and compare cultures objectively,
  - Having a degree of genuine spontaneity, and
  - Being able to look at things in a fresh, naive, and simple way.
- Creative productivity is the result of preconscious mental activity.

Theories of Creativity

- **Behavioristic** theories (*Maltzman* 1960, *Skinner* 1972) argue that our behavior, including creative behavior, is simply a conglomerate of responses to environmental stimuli. Appropriate rewards (stimuli) can lead to more creative behavior.

Theories of Creativity

- A **cognitive** approach suggests that creativity stems from a capacity for making unusual and new mental associations of concepts (*Campbell* 1960, *Mednick* 1962, *Staats* 1968). Campbell proposes that creative thought is just one manifestation of a general process by which people acquire new knowledge and thereby learn about the world.

Campbell Process

- This process includes as the first step the production of "variations," a result of mentally associating elements of a problem in new ways

Campbell Process

- **People who are more creative** are better at generating a wider range of variations as they think about the problems they face. Having a broader range of life experiences and working in the right kind of environment can facilitate the production of variations.
- **Some people** simply are better at recognizing and seizing appropriate creative solutions as they arise.

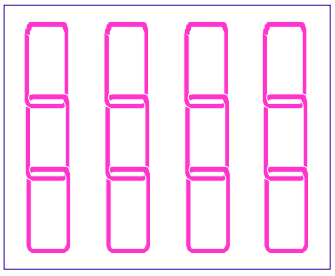
Campbell Process

The ability to come up with creative solutions is not very helpful if one ignores those solutions later

Chains of Thought

You have four three-link chain segments. A jeweler has offered to connect the segments to make a complete circle but to do so he must open and then resolder some of the links. Opening and closing a link costs $50. When you point out that you have only $150, the jeweler says the job can be done for that amount. How can the jeweler connect the segments by opening and closing only three links?

Chains of thought. Connect the segments by opening and closing only three links.



Phases of the Creative Process

- Wallas (1926) identified identified phases of the individual creative thought process **preparation, incubation, illumination**, and verification

Phases of the Creative Process

1. **Preparation — In this stage, the individual learns about the problem.**

   This includes understanding the elements of the problem and how they related to each other.

   It may include looking at the problem from different perspectives or asking other people what they know or think about the problem.

   From a decision-making point of view, this stage is very similar to problem structuring.

   Spending effort understanding fundamental objectives, decisions that must be made (along with the immediately available set of alternatives), uncertainties inherent in the situation, and how these elements relate to each other prepares the decision maker **for creative identification of new alternatives.**

Phases of the Creative Process

2. **Incubation — In this stage, the prepared decision maker explores, directly or indirectly, a multitude of different paths toward new alternatives. We might also use the terms *production* or *generation* of alternatives. The decision maker may do many things that seem to have a low chance of generating a new alternative, such as eliminating assumptions or adopting an entirely different perspective. Apparently frivolous activity may evoke the idea of the decision maker "playing" with the decision.**

   Many authors have included in this phase unconscious processing of information known about the decision.

   One explanation of unconscious incubation **as a valid element of the creative process has been suggested by researchers in artificial intelligence. The explanation is based on a "blackboard" model of memory in the human brain -** the process of coming up with a new and unusual association can result simply from the way the brain works.

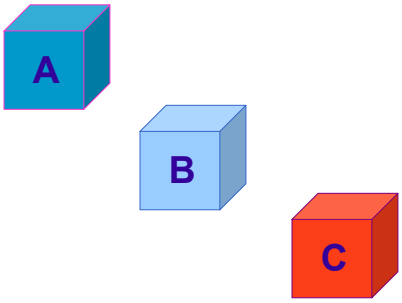
Phases of the Creative Process

3. **Illumination — This is the instant of becoming aware of a new candidate solution to a problem, that flash of insight when all the pieces come together, either spontaneously** (Aha!) **or as the result of careful study and work.**

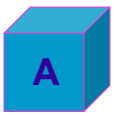
   Illumination is characterized as the culmination of the incubation stage.

Blocks to Creativity

All of the blocks interfere with the creativity process by ***hindering*** the generation and recognition of new and ***unusual solutions*** to a problem or alternatives in a decision situation.



Framing and Perceptual Blocks



These blocks arise because of the ways in which we tend to perceive, define, and examine the problems and decisions that we face.

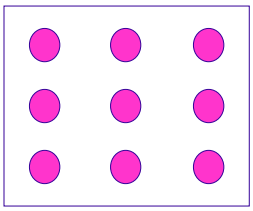
Framing and Perceptual Blocks

1. **Stereotyping —** Suppose you are a personnel manager, and an individual with long hair and no necktie applies for a job as an engineer. Imagine your reaction. What would you think about the person? A typical mental strategy that most people use is to fit observations (people, things, events, and so on) into a standard category or stereotype. Much of the time this strategy works well because the categories available are rich enough to represent most observations adequately. But when new phenomena present themselves, stereotyping and associated preconceived notions can interfere with good judgement.

Framing and Perceptual Blocks

2. **Tacit Assumptions —** Consider the classic nine-dot puzzle. Lay out nine dots in a square, three dots per row and then, without lifting your pencil, draw four straight lines that cross all nine dots. Try it before you read on.

Nine-dot puzzle. Connect the dots using four straight lines without lifting your pencil. [*Source*: From *Conceptual Blockbusting: A Guide to Better Ideas* by James L. Adams @ 1974, 1976, 1979, 1986 by James L. Adams. Stanford Alumni Association, Stanford, CA and James L. Adams.]



People often look at problems with tacitly imposed constraints, which are sometimes appropriate and sometimes not.

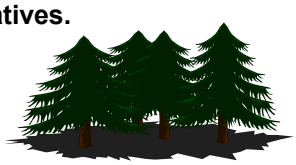
Framing and Perceptual Blocks

3. **Inability to Understand a Problem at Different Levels —** This block can be manifest in different ways.

   (1) First is the familiar issue of isolating the precise decision context that requires attention.

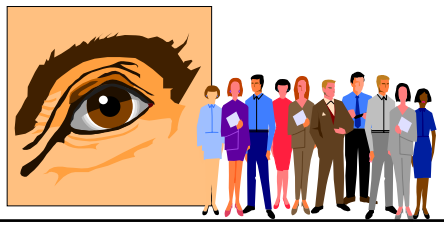
   (2) Another manifestation is focusing too much on detail and not being able to reframe the decision in a broader context, a problem commonly called "not seeing the forest for the trees."

   Many decisions require attention to a large amount of detailed information. The sheer volume of information to be processed can keep the decision maker from seeing new and promising alternatives.

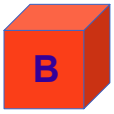


Framing and Perceptual Blocks

4. **Inability to See the Problem from Another Person's Perspective —** Where the previous block relates to seeing the problem itself in different ways, this one relates to seeing the problem through someone else's eyes and with their values. When a decision involves multiple stakeholders, it is always important to understand the values, interests, and objectives of other parties. Really creative solutions incorporate and satisfy as many competing objectives as possible, and an inability to understand others' values can interfere with the development of such solutions.



Value-Based Blocks



In many cases our vales and objectives can interfere with our ability to seek or identify truly creative alternatives in a decision situation.

Value-Based Blocks

1. **Fear of Taking a Risk —** To get a feel for this block, try the following game at a party with a lot of friends. Each person is assigned to be a particular kind of barnyard animal: cow, donkey, chicken, goat, ship, or whatever else you designate. The more people, the better. After everyone has been assigned to be an animal, the organizer counts to three. On the count of three, each person looks directly at his or her nearest neighbor and makes the sound of his or her animal as loudly as possible. For obvious reason, this is called the Barnyard Game (Adams 1979). Almost all participants feel some reluctance to play because they risk appearing silly in front of their friends.

   There is nothing inherently wrong with being afraid to take risk. In fact, the idea of risk aversion is a basic concept in decision making under uncertainty. **We have seen that the basic risky decision requires the decision maker to determine whether the risk of a loss (relative to a sure thing) is justified by a possible but uncertain gain.**

Value-Based Blocks

It may be counterproductive, though, not to offer a creative alternative for consideration in a decision problem because you risk others thinking your idea is impossible, too "far out," or downright silly. What are the consequences of presenting a far-out idea that turns out to be unacceptable? The worst that might happen is that the idea is immediately determined to be infeasible. (Making far-out suggestions can have a more subtle value. Outsiders often have a difficult time understanding exactly what the problem is. Presenting far-out ideas for action is a sure way to get a clear statement of the problem, couched in an explicit and often supercilious explanation of why the idea will not work. Although this technique cannot be used in every situation, when it works the result is a better understanding of the decision situation.)

Value-Based Blocks

2. **Status Quo Bias —** Decision making automatically means that the decision maker is considering at least one alternative that is different from the status quo.

   The ability to deal with change is becoming increasingly important for managers and decision makers.

   Studies show, however, that many people have a built-in bias toward the status quo. The stronger that bias, the more difficulty one may have coming up with creative problem solutions and alternatives.

Value-Based Blocks

3. **Reality versus Fantasy — An individual may place a lot of value on being realistic and a low value on fantasizing.**

   Creative people must be able to control their imagination, and they need complete access to it.

   Many exercises are available for developing an enhanced imagination and the ability to fantasize. Richard de Mille's *Put Your Mother on the Ceiling* (1976) has many imagination games. Although designed primarily for children, going through one of these games as an exercise in using fantasy can provide a remarkable experience for anyone. An excerpt from one of these games is reproduced in *Breathing* (see the next page). For the best effect, have a friend read this to you, pausing at the slash marks, while you sit quietly with your eyes closed.

Value-Based Blocks

4. **Judgment and Criticism — This block arises from applying one's values too soon in the creative process. Rather than letting ideas flow freely, some individuals tend to find fault with ideas as they arise.**

   Fault finding can discourage the creation of new ideas **and can prevent ideas-one's own or someone else's-from maturing and gathering enough detail to become usable.**

   Making a habit of judging one's own thoughts inevitably sacrifices some creative potential.

Value-Based Blocks

Breathing

Let us imagine that we have a goldfish in front of us. / Have the fish swim around into your mouth. / Take a deep breath and have the fish go down into your lungs, into your chest. / have the fish swim around in there. / Let out your breath and have the fish swim out into the room again.

Now breathe in a lot of tiny goldfish. / Have them swim around in your chest. / Breath them all out again.

Let's see what kinds of things you can breathe in and out of your chest. / Breathe in a lot of rose petals. / Breathe them out again. / Breathe in a lot of water. / Have it gurgling in your chest. / Breathe them out again. / Breathe in a lot of dry leaves./ Have them blowing around in your chest. / Breathe them out again. / Breathe in a lot of raindrops. / Have them pattering in your chest. / Breathe them out again./ Breathe in a lot of sand. / Have it blowing around in your chest. / Breathe it out again. / Breathe in a lot of little firecrackers. / Have them all popping in your chest. / Breathe out the smoke and bits of them that are left. / Breathe in a lot of little lions. / Have them roaring in your chest. / Breathe them out again.

Breathe in some fire. / Have it burning and crackling in your chest. / Breathe it out again. / Breathe in some logs of wood. / Set fire to them in your chest. / Have them roaring as they burn up. / Breathe out the smoke and ashes….

Be a fish. / Be in the ocean. / Breathe the water of the ocean, in and out. How do you like that? / Be a bird. / Be high in the air. / Breathe the cold air, in and out. / How do you like that? / Be a bird. / Be a camel. / Be on the desert. / Breathe the hot wind of the desert, in and out. / How does it feel? / Be an old-fashioned steam locomotive. / Breathe out steam and smoke all over everything. / How is that? / Be a stone. / Don't breathe. / How do you like that? / Be a boy (girl). / Breathe the air of this room in and out. / How do you like that?

Source: de Mile, Richard (1976). Put Your Mother on the Ceiling. New York: Viking Penguin.

Cultural and Environmental Blocks

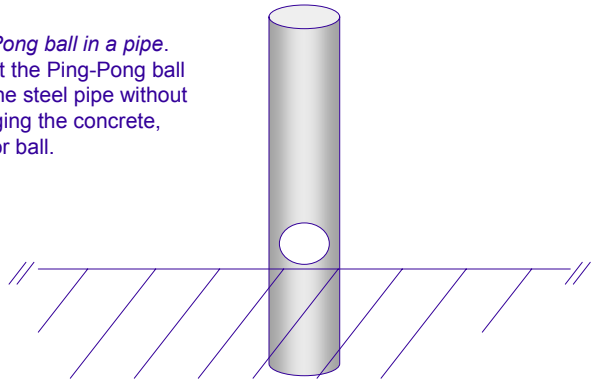
All decisions are made in some sort of social and cultural environment.

Cultural and environmental blocs may hinder the production and recognition of creative alternatives in decision situations.

Cultural and Environmental Blocks

1. **Taboos —** This type of block has to do with what is "proper behavior" or "acceptable" in a cultural sense; taboos may exist for no apparently good reason.

Ping-Pong ball in a pipe. Extract the Ping-Pong ball from the steel pipe without damaging the concrete, pipe, or ball.



Cultural and Environmental Blocks

2. **Strength of Tradition —** As we mentioned previously, individuals can resist change because of a bias toward the status quo. There is a cultural counterpart to status quo; in many cases, the social cultural environment in which a decision maker operates places a high value on maintaining tradition. Adopting change can be difficult in such a situation, which in turn can hinder the production of creative suggestions in the first place.

   For example, the musical *Fiddler on the Roof* describes the tradition-bound culture of Russian Jews in the early twentieth century and a father's difficulty in dealing with his daughter's new ways of finding husbands.

Cultural and Environmental Blocks

3. **Reason and Logic versus Humor, Fantasy, and Artistic Thinking — There is a clear block against using feelings, intuitions, and emotions in business problem solving. Certainly valuable insights and understanding come from analytical treatments of any given problem; indeed these skills are important in decision making, and a course of decision analysis offers to teach such skills. However,** valuable cues and ideas can also arise by admitting and examining feelings, intuitions, and emotions**. For example, doing so can help understand the values of workers who feel that the playfulness, fantasy, and humor that children represent should not displace reason and logic at work.**

Cultural and Environmental Blocks

In formal decision-making much of the emphasis is on the development of analytical thinking. Unfortunately, little effort is put into more artistically oriented thinking skills such as using imagery, being playful, storytelling, or expressing and appreciating feelings. Such activities tend to be culturally blocked because of the stress placed on analysis. From discussions it would appear that artistic thinking can play an important role in the development of creative alternatives. The best possible arrangement is for an individual to be "mentally ambidextrous," or good at switching between analytical and artistic thinking styles. This enhances creative development of potential alternatives without sacrificing subsequent careful analysis.

Organizational Issues

- Different organizations have different characteristics or cultures, and organizational culture can have a strong influence on decision making.

Organizational Issues

Example:

An organization may have a culture that is subtle ways promotes criticism and judging of ideas, stereotyping, or being risk-averse. Humor, playfulness, or artistic thinking may be frowned upon, or change may be resisted in order to preserve company traditions. For all of the reasons discussed above, such characteristics can reduce the creative potential of individuals in the organization.

- **By their very nature, organizations can impede creative thought. As Adams (1979, p. 143) points out, "**the natural tendency of organizations to routinize, decrease uncertainty, increase predictability, and centralize functions and controls is certainly at odds with creativity."
- **Organizations also can hinder creativity through excessive formal procedures (red tape) or lack of cooperation and trust among co-workers.** Hierarchical organizational structures can hinder creativity, which in turn can be exacerbated by supervisors who tend to be autocratic.

Organizational Issues

- **Detailed model of individual creativity in the organization context.**

→ Individual creativity requires three ingredients:

1. **Expertise in the domain,**
2. **Skill in creative thinking,**
3. **Intrinsic motivation to do the task well. In other words, we need someone who is good at what he or she does, who likes to do it just because it is interesting and fun, and who has some skill in creative thinking.**

Expecting detailed and critical evaluation, being closely watched, focusing on tangible rewards, competing with other people, and having limited choices and resources for doing the job all can hinder one's creativity.

Although creativity is essentially an individual phenomenon, managers can have a significant impact on creativity in their organizations through goal setting, evaluation, recognition and rewards, and creating pressure that reflects a genuine need for a creative solution.

Even though managers can help individuals in their organizations be more creative, one can develop a "blind spot" because of a long-term association with a particular firm. The German word *betriebsblind* is for this situation literally means "company-blinded." One of the important roles that consultants serve is bring a new perspective to the client's situation.

Value-Focused Thinking for Creating Alternatives

- **Ways in which** fundamental and means objectives **can be used as a** basis for creating new alternatives **for decision alternatives.**

Fundamental Objectives

- Process A
  - The most basic techniques use the fundamental objectives directly, for example:
    - Take one fundamental objective and, ignoring the rest, invent a (possibly hypothetical) alternative that is as good as it could be on that one objective.
    - Do this for each fundamental objective one at a time, and keep track of all of the alternatives you come up with.
    - Now go back and consider pairs of objectives; what are good alternatives that balance these two objectives.

Fundamental Objectives

- After doing this for various combinations of objectives, look at the alternatives you have listed.
- Could any of them be modified so that they would be feasible or perhaps satisfy the remaining objectives better? Can any of the alternatives be combined?

A related approach is to:

- Consider all of the fundamental objectives at once and imagine what an alternative would look like that is perfect in all dimensions; call this the ***ideal*** alternative.
- Most likely it is impossible, but what makes it impossible? If the answer is constraints, perhaps some of those constraints can be removed or relaxed.

Fundamental Objectives

- Process B
  - Find a good alternative and think of ways to improve it.
  - The fact that the alternative is a good one in the first place can reduce the pressure of finding a better one.
  - In searching for a better one, examine the alternative carefully in terms of the objectives:
    - On which objectives does it perform poorly?
    - Can it be improved in these dimensions?

Means Objectives

The means objectives can provide a particularly fruitful hunting ground for new alternatives.

The reason for this is simply that means objectives provide guidance on what to do to accomplish the fundamental objectives.

In complicated problems with many fundamental objectives and many related means objectives, this approach can generate many possible courses of action.

The Decision Context

Process C

It is always possible to broaden the decision context as part of the search for new ideas.

Part of the creative process requires that the decision maker look at a problem from as many different perspectives as possible and considering a broader context is guaranteed to reveal a different view of a decision situation.

Other Creativity Techniques

- Fluent and Flexible Thinking
- Process D
  - *Fluency and flexibility of thinking* are important in enhancing creativity.
  - **Fluency** - the ability to come up with many new ideas quickly.
  - **Flexibility** - ability to stimulate variety among new ideas.

Other Creativity Techniques

- An individual who can write down many ideas quickly, regardless of what they may be, would be a **fluent thinker**.
- The **flexible thinker** might have a shorter list of ideas, but the ideas would tend to cover a broader range of possibilities.
- An individual who is both fluent and flexible can write down many different ideas quickly.

Other Creativity Techniques

- One useful analogy compares thinking with digging holes
  - Fluent thinking is seen as the ability to dig one hole very deep and very quickly by taking a lot of dirt from one place.
  - Flexible thinking, however, is more the ability to dig many smaller holes in many different places.

Idea Checklists

- Process E
  - One classic technique for enhancing creativity uses checklists that cover potential sources of creative solutions to problems.
  - Most of us use lists in a rather natural way.
  - The yellow pages provide a simple and ubiquitous list that can provide many ideas for solutions to specific problems

Idea Checklists

- Process F
  - Write down attributes of a problem
  - List alternative options under each attribute, and then
  - Consider various combinations and permutations of the alternatives.

Strategy-Generation Table

Utility	Exploration and Production	Oil Field Services	Forest Products	Coal	Acquisition	Dividends	D/E Ratio
Aggressive Supply Buildup	Increase Exploration Budget	Aggressive Expansion	Hold-Improve Earnings	Purchase Additional Reserves	None	70%	1/1
Hold/ Restricted Investment	$800M Investment	Modest Expansion	Add Timber-	Joint Venture Synfuels	Service Business	50\5	1 .5/1
Severe Capital Constraints	Sell/Milk	Hold	Sell	Hold	Resource Business	25%	2/1
		Milk		Milk		0%	

Strategy-generation table. Source: Reprinted by permission of Ron Howard, "Decision Analysis: Practice and Promise," *Management Science*, 34, No. 6, June 1988, pp. 679-695. Copyright 1988. The Institute of Management Sciences.

Brainstorming

- Process G
  - Brainstorming is another popular way of generating a long list of ideas quickly. To be effective, a brainstorming session should include at least two people, and probably no more than 8 or 10 (it can be difficult to keep up with all of the ideas generated by a group that is very large). The rules for a brainstorming session are simple:

Brainstorming

1. No evaluation of any kind is permitted.
2. All participants should think of the wildest ideas possible.
3. Participants should try to build upon or modify ideas of others.

– Brainstorming works well for several reasons. The most important is probably the lack of any judgment, which eliminates an important block for many people. The enthusiasm of a few individuals tends to be contagious, and a "one-upmanship" game usually develops as participants try to top previous ideas. After this initial phase, participants must come up with new concepts. Naturally, the newer concepts are the most valuable result of the brainstorming exercise.

Brainstorming

Given our earlier discussion of fantasy and imagination, it should come as no surprise that creativity can be enhanced by the use of metaphors. Three kids of metaphors can be used systematically to enhance creative potential: direct analogy, personal analogy, and fantasy analogy.

Direct analogy **involves thinking about how others have solved problems similar to the one under consideration. Often the most productive approach is to examine solutions found in nature.**

Personal analogy **is closely related to the kinds of games that are played in de Mille's *Put Your Mother on the Ceiling*. The idea is to imagine a variety of personal situations that are pertinent in some way to the problem at hand.**

In *fantasy analogy*, the group tries to come up with truly far-fetched, fantastic, and ideal solutions.

Other Techniques

- Process H
  - Many techniques rely on methods for improving group interaction in general. Nominal Group Technique (NGT) (*Delbecq*, *Van de Ven*, and *Gustafson* 1975) begins with no interaction.

Other Techniques

- Individuals in the group each write down as many ideas as they can on pieces of paper.
- Then each individual in turn presents one of his or her ideas.
- The group leader records these ideas on a flipchart of chalkboard.
- Discussion begins after ideas from each participant are written down.

Other Techniques

- At the end, each individual writes down his or her ranking or rating of the ideas. These are then combined mathematically to arrive at a group decision.
- The main advantage of NGT is that the group leader manages the interaction of the group in such a way that certain blocks are avoided and the environment is enhanced.
- Discussion is not permitted until after the ideas are presented, thus creating a more supportive environment.

Other Techniques

- **Process J**

Other techniques actually use more of an adversarial approach.

Devil's advocacy and dialectical inquiry **are techniques in which individuals take sides in a debate.**

On the surface, this might appear to hamper creative thought, but when such techniques are used only after ideas have been generated and a healthy creative environment has been established, they can work well.

It also helps if all participating members understand what the techniques are meant to do.

The main advantage of this kind of approach is that it can help a group of individuals consider a problem from multiple perspectives.

Being forced into an alternative viewpoint can lead to new creative ideas.

Another advantage is that the group is less likely to overlook basic issues that may be hidden from certain vantage points.

Other Techniques

- The role of the leader in group discussion techniques is paramount.
- **A good leader sets the tone of the session, and a positive tone promotes an atmosphere that is conducive to healthy discussion and that encourages the free flow of ideas.**
- **It is easy to see that a group with such a leader probably will have more success in generating creative ideas and solving problems.**

Creating Decision Opportunities

Creativity in decision making can be much more than generating new alternatives.

A really creative decision maker is one who creates decision opportunities.

Kenney (1992) stresses that an individual, group, or organization which understands its values and objectives clearly is perfectly positioned to look for decision opportunities proactively rather than merely reacting to decision problems served up by life.

As you may agree, life does not always generously provide decision situations with many attractive options, but instead often seems to pose difficult decision problems that must be addressed, often under trying circumstances.

Summary

- Creativity is important in decision making because the available alternatives determine the boundaries of the decision.
- We discussed various *theories of creativity*, including the *phases of creative thought*.

Summary (cont'd)

- We introduced many different kinds of *creativity blocks* that hinder creative efforts.
- A truly creative decision maker goes beyond the creation of alternatives all the way to the development of new decision opportunities.

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