



## *Problem Solving*

*Leadership is action, not position.---Donald. H. McGannon*

Productive problem solving is not purely content focused; rather it includes and values the feelings of both parties concerning the issue at hand. By valuing their feelings, both parties feel cared for, understood and accepted. This provides the energy for creative problem solving and attaining mutually beneficial solutions.

### ***Types of Problems***

- ***Well Defined Problems:***
  - The given information, the operations, and the goal state are completely specified.  
*Example:*  $3x = 2$ , solve for  $x$ .
  
- ***Ill Defined Problems:***
  - Problems in which there is uncertainty in either: the given information, the permissible operations, or the final state. Because of the uncertainty, the problem space cannot be completely specified.  
*Examples:*
    - cooking dinner
    - writing a term paper
    - establishing an organization

### ***When are there barriers to productive problem solving?***

- A ``Yes — But'' attitude
- Intellectual defensiveness closed to new ideas
- Fear of being perceived as being incompetent
- Fear of one's ideas being unaccepted
- Inability to be objective about problem
- Fear of being wrong
- Inability to be creative, imaginative or off the wall in developing alternative solutions
- Being inflexible or too serious to have fun while problem solving
- Resentment about having to solve the problem; blaming others for causing the problem; no desire to own up to the problem yourself
- Believing that problems are the concerns of others, not yourself; therefore, why waste my time in trying to solving them
- Mental and/or physical fatigue from trying to cope with problems and finding no fruitful solutions; burnout
- Feeling so stressed, anxious, or tense in the face of a problem that your body systems shut down

- Getting so angry about the problem that all energy and attention is drawn to the anger rather than to the problem
- Feeling sorry for oneself so much that the "self-pity" overwhelms and obstructs all creative thinking on the matter
- Denial that the problem exists
- Bargaining in dealing with the problem; e.g., agreeing to perform certain steps only as long as the solution to the problem benefits you

***What is needed for productive problem solving?***

- *A clear description of the problem.*
- *A description of the limiting (or negative) factors involved in the problem.*
- *A description of the constructive (or positive) factors involved in the problem.*
- *A clear delineation of the "ownership" of the problem. Whose problem is it: mine, yours, the other guy's, my boss', my spouse's, my child's, my parents', my teacher's?*
- *A clear description of the scope of the problem: How extensive a problem is it? How long has this problem existed? How many people are affected? What else is affected by this problem?*
- *A clear description of the consequences if the problem were not solved: What is the possible impact on my family, job, marriage, school performance, life in this community, etc., if this problem isn't solved? What is the worst possible thing that could happen if this problem isn't solved?*
- *A list of brainstormed solutions to the problem, with each alternative analyzed as to its reality, its benefits, and the consequences for following each one.*
- *A system of ranking each solution to finalize the decision-making process. A rating system for analyzing each solution is developed, e.g., 100% chance of success, 75% chance of success, 50% chance of success. Example:*

*When ranking alternatives, rate each alternative on (1) possible consequences, then (2) probability of success:*

<u>Alternatives</u>	<u>Possible Consequences</u>	<u>Probability of Success</u>
Behavioral actions	Positive or negative	Expressed in percentage

- *A clear description of myself as a problem solver when it comes to this problem. Am I procrastinating? Am I avoiding the problem? Am I in denial? Am I shutting down or blocking my creativity on this problem? Am I ignoring it, hoping it will go away? Am I using magical and/or fantasy thinking in addressing the problem?*
- *Determination to follow through on the solution decided upon jointly. This involves full motivation to "take the risk" and pursue the solution to its fullest*

***How to resolve the problem? Hints and Wisdom***

- Take time to examine and explore the problem thoroughly before setting out in search of a solution. Often, to understand the problem is to solve it.

- Breaking the problem into smaller parts will often make solving it much easier. Solve each part separately.
- A problem is not a punishment; it is an opportunity to increase the happiness of the world, an opportunity to show how powerful you really are.
- The formulation of a problem determines the range of choices: the questions you ask determine the answers you receive.
- Be careful not to look for a solution until you understand the problem, and be careful not to select a solution until you have a whole range of choices.
- Procrastinators finish last.
- Denying a problem perpetuates it.
- Solve the problem that really exists, not just the symptoms of a problem, not the problem you already have a solution for, not the problem you wish existed, and not the problem someone else thinks exists.
- Creativity is the construction of something new out of something old, through effort and imagination



### ***Techniques for Approaching a Problem***

Here are several ways to attack a problem, each way designed to clarify the problem, suggest alternatives, or break a fixation. You will want to experiment with the applicability of these for various situations.

#### ***Entry Points***

An entry point is, as Edward de Bono has said, “the part of a problem or situation that is first attended to.” In our linear, traditional problem solving mindset, this usually means a particular point—usually the most obvious—on the front end of the problem. However, there is no reason that some other point cannot be chosen as an entry point, nor is there any reason that the problem cannot be approached from the middle or even the end. Let’s look at each of these.

*Front end entry points.* Most problems are attacked on the front end first, which is to say, by stating the problem. However, there is really more than one front end because a give problem can be attacked from any one of several angles. Too often we assume that the first front-end angle that comes to mind is *the* method of approach, the only way to attack the problem. But that is not so.

*Example problem: How to keep rain off of you while you walk on the street.*

*Possible entry points:*

- *Inadequacies of current umbrellas. (Suggests “improve the umbrella” as a problem direction.)*
- *Irritation of having to carry an umbrella. (Suggests “develop easily portable umbrella.)*

*Beginning at the end.* When a particular solution state is clearly defined, a problem can often be more easily solved by starting with the solution and working backwards toward the problem, filling in the necessary steps along the way.

The classic example is the problem: Divide a triangle into three parts so that the parts can be put together to form a square. That's very hard. But if you start from the solution end, with a square, it's easy to divide it into three parts all of which form a triangle.

*Example: How do you count the number of people in a stadium that's over ninety percent full?*

- *Count the number of empty seats and subtract from the number of seats in the stadium. Easier than counting people.*

*Somewhere between the beginning and the end.* After all, there's no law that says you have to start at one end or the other. So why not start in the middle?

*For example, say you want to put up a new building. Why not assume that the funding and planning have already been done and begin with the construction phase, which contractors to hire, etc. Then work in both directions—backward toward planning where to put the building and how to get the money, and forward toward arranging for tenants.*

### ***Dangers of having only one premise***

The danger of limiting ourselves to one hypothesis to explain a collection of phenomena is two-fold.

- *Some evidence will be ignored.* If we are focused on a single hypothesis, we will overlook as not relevant any information that does not bear on the truth or falsity of the hypothesis. However, such information might bear on the truth or falsity of some other hypothesis.

*For example, if our hypothesis is that suspect X burglarized the Washington's house, we will focus on evidence that helps to establish or disprove our theory. As a result, we will probably overlook the fact that the story told by the Washington's son does not add up. That's just an ignorable irregularity. If, on the other hand, one of our hypotheses is that the Washington's son might have faked a burglary and stolen the missing items himself, then the difficulties in his story will not be overlooked.*

- *We may become emotionally committed to our hypothesis.* The idea of falling in love with a pet theory is not limited to problem solving, of course. Wherever it happens, the lover begins to search for and select out only the evidence that supports the hypothesis, ignoring or subconsciously filtering out information that argues against the pet.

Always when problem solving any issue use different techniques to solve the problem rather than use one method, otherwise  $y + x$  will always equal  $q$  not  $xy$ .