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- Information on the Beech Starship 2000A courtesy of Beech Aircraft Corporation, P.O. Box 85, Wichita, KS 67201-0085

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UNLEASHING THE POWER OF CREATIVITY

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What Is Creativity?

The “Four P’s”

Admittedly, some people chafe under a single, restrictive definition of creativity. After all, what about creative people? Creative products? Creative environments? Creative approaches? Creativity manifests itself in all kinds of ways, making it hard to settle on a universal definition or explanation.

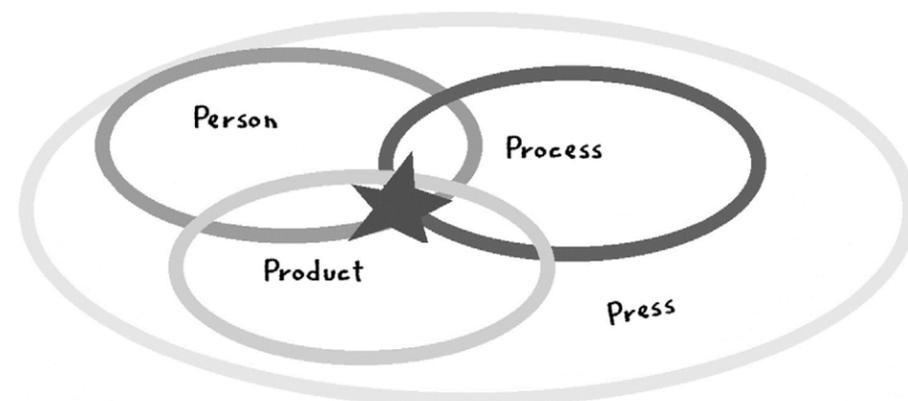
Those looking for a more holistic approach will appreciate the work of Mel Rhodes, considered by some to be the Don Quixote of creativity. Mel set off on a personal quest to find an all-encompassing definition of creativity. He researched all the literature and collected definitions from myriad sources. Still, one single definition eluded him. Finally, he settled for describing creativity with the “Four P’s.”

Person = how people are creative; how creative someone is; the characteristics associated with creative people

Product = the artifacts of creativity; what is a creative product; what makes something creative; how can you tell if something is creative

Process = how people create or can use and apply their creativity (the primary focus of this book)

Press = the climate surrounding person, process and product, in which creativity flourishes or is squelched



“... the definitions form four strands. Each strand has a unique identity academically, but only in unity do the four strands operate functionally.”

MEL RHODES (1961)

THE MANIFESTO FOR CHILDREN

E. Paul Torrance

Don't be afraid to fall in love with something and pursue it with intensity.

Know, understand, take pride in, practice, develop, exploit and enjoy your greatest strengths.

Learn to free yourself from the expectations of others and to walk away from the games they impose on you.

Free yourself to play your own game.

Find a great teacher or mentor who will help you.

Learn the skills of interdependence.

Don't waste energy trying to be well rounded.

Do what you love and can do well.

About the Course

- Phrase problems in a way that they can be solved (How to...)
- Defer judgment and generate many ideas
- Evaluate ideas positively (Pluses, Potentials and Concerns)
- Take personal responsibility for your creativity. *Get curious again!*

Consider some **Creativity Habits**.

Next time you encounter a problem, ask yourself:

"How else can I do this?"

What if...?

How can I use something that doesn't fit with this at all?"

"Sixty-seven percent of the statistical variance accounted on the climate for creativity in organizations is directly attributed to the behavior of the leader."
Goran Ekvall, University of Lund, Sweden

In other words,

If you are the leader and people are invested in their work,
contributing ideas,

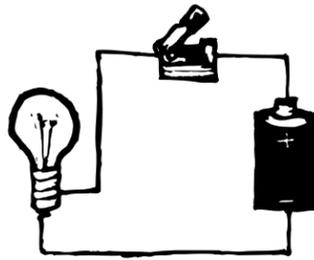
and successfully moving initiatives forward,

there is a **67% chance that you are doing some things right.**

If, on the other hand,
your people are not involved in the organization,
loathe their jobs,
think the company is a wretched place to work,
there is a **67% chance that it is your fault.**

Praise First

Pluses, Potentials, Concerns, Overcome Concerns (PPCO)



Behind every
bright idea
is a lot of
careful
thinking.

Most of us feel proud — and a little vulnerable — when presenting a new idea. Praise First is a four-step technique for evaluating and improving new ideas. Founded on the principle of affirmative judgment, Praise First allows you to express both positive and negative responses to an idea without crushing its potential—or its originator. When faced with a new idea, resist the inclination to point out its flaws. First, find the value in it. Express what you like about it. Say what might be possible if it worked. Only then should you present your concerns, phrased as questions which invite further thinking. Finally, brainstorm to overcome each of those concerns.

While Praise First is often associated with analyzing and improving ideas, you can also use it to give feedback on behaviors, products or proposals. In fact, you might recognize it as the very same feedback method used by a favorite teacher, boss or grandparent. The four steps:

Pluses

What do you like about the person's idea, work, proposal or performance right now? Be direct, honest and specific.

Potentials

What opportunities might this new idea open up? What might be potential spin-offs for future growth?

Concerns

Express your concerns as open-ended questions that offer a possible direction for future development. Use the statement starters "How to...," "How might..." and "In what ways might..."

Overcome Concerns

Review your list of concerns. Choose the most important one and brainstorm to generate at least a dozen ways to overcome it. Do the same for the next most important concern on the list. Continue on until you overcome all your concerns.

The PPC was originally developed in the early 1980s by Diane Foucar-Szocki, Bill Shephard and Roger Firestien.

Joe Louis said, "Everyone's got to figure to get beat sometime. "As John Gardner in his book *On Leadership* emphasized, "The question is not 'Did you take a fall?' but 'Did you get up and continue?'" Successful, creative people take criticism and failure, and use it to grow. They know that the book of life has many chapters.

As James Michner, the prolific, prize winning author once said, "I like challenge. I don't mind defeat. I don't gloat over victories. I want to stay in the ball game."

Stop the Action.

In our culture, the peace of solitude is difficult to attain. We are constantly bombarded with things to do, to buy and to take action on. However, all great leaders and teachers have taken time out of their busy schedule for meditation, rest and reflection.

The enlightenment that came to the Buddha while he was meditating under a tree on the banks of the Nairanjana river is said to have been the culmination of long reflection upon the human condition. Jesus spent forty days in the wilderness undergoing temptation by the devil before returning to proclaim his message of salvation. It is said that Ghandi spent from midnight on Sunday night to midnight Monday night in solitude, fasting, prayer and meditation.

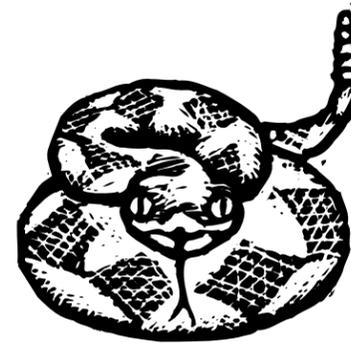
When you remove yourself from your habitual, fast paced environment of day-to-day life, new self understanding is possible. Anthony Storr in his book *Solitude: A return to the self-reported Admiral Byrd's account of manning an Antarctic advanced weather base in the winter of 1934 as a form of renewal*. Byrd said, "I wanted something more than just privacy in the geographical sense. I wanted to sink roots into some replenishing philosophy. [I wanted] to be by myself for a while and to taste peace and quiet and solitude long enough to find out how good they really are." Byrd summed up the experience of his long solitude in Antarctica as, "I did take away something that I had not fully possessed before; an appreciation of the sheer beauty and miracle of being alive, and a humble set of values... I live more simply now, and with more peace."

Any form of solitude will work. Spend 30 minutes sitting quietly in a comfortable chair. Don't read, listen to music, eat or watch television. Just sit. In the first 10 minutes your mind will still be racing and will tell you all the things you should be doing. Resist the temptation to get up and act. This is your renewal time. After those first excruciating ten minutes, sitting in solitude will become easier. New insights might come forth. However, the important thing is to take a "time out" in your life. If you want some new ideas, you need to make some space for them. By stopping the action, you create room for those new ideas to come in.

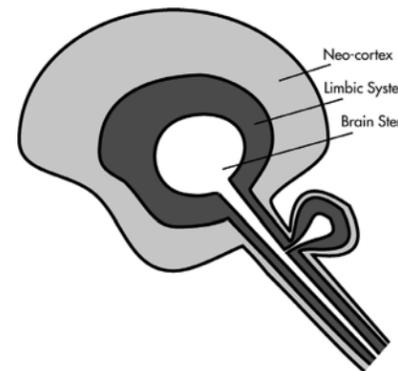
One of the methods I use to take time out is to sit quietly on my porch and just gaze out over my tree-lined backyard. Don't have the opportunity to sit quietly at home for more than 30 seconds? Then try the approach that my friend uses. He will often leave work early and stop at a park near his home. He will sit in his car, gazing quietly out over the park for 30 minutes. He reports that this method works extraordinarily well for him. He gets some time to renew himself, to reflect and he doesn't create an imposition on his family or business associates.

Change your attitude about failure.

Whenever you do anything, you create a result. A failure is just a result that you didn't anticipate. Unfortunately, we rarely look at this unanticipated result in a positive way. However, if we look at failures as learning experiences, they can actually help us to become more creative.



A new idea...
Can I eat that?



The Triune Brain ...the lizard in you

Understanding the brain can bolster creativity. Here is a simplified (a very simplified) model of the brain. A more detailed description appears in Dr. Paul McLean's book *The Triune Brain*. But in essence, the brain has three basic parts ...

...the Brain Stem

At the core of our brains is the brain stem. McLean calls it the "reptilian brain" because it's essentially the same brain reptiles have. The reptilian brain figures out how to get food and not be food. It's about survival — both physical and psychological. It's about territory, protection, instinct and automatic action. The reptile's response to anything new is likely to be "attack it, run from it, eat it...or not even notice it."

...the Limbic System

Surrounding the brain stem is the limbic system which moderates hormones and other chemicals that affect our moods. It's the governing body for emotions. Chemicals here can make us sick or well, happy or frightened. The limbic system's motto: "feel, feel, feel."

...the Neo-cortex

Sitting atop the limbic system is the neo-cortex or "new brain." This is headquarters for speaking, thinking and problem solving. The neo-cortex is the learning brain — the source of creative thinking. It's motto is "learn, learn, learn and create, create, create."

Upshifting and Downshifting

According to Dave Meier, director of the Center for Accelerated Learning, you can shift into a creative mode by being conscious of "where" your thinking comes from. Threatening situations produce negative feelings. The limbic system actually releases chemicals that depress the thinking part of the brain. People automatically "downshift" into the reptilian brain. They react. A boss might tell employees, "Screw up, and you're outta here!" Imagine what kind of work environment this creates. Up shifting is thinking from the neo-cortex. When in need of new ideas, make a conscious "up shift" from the reptilian brain to the neo-cortex. Up shifting lets us learn, create and succeed.

To Diverge...

Defer judgment
Strive for quantity
Seek wild ideas
Build on other ideas

Ground Rules for Diverging

Why bother to generate lots of options? Research proves that more ideas produce better solutions. "Quantity yields quality," noted Alex Osborn, and Roger Firestien's 1987 research confirmed it: Those who used divergent thinking ground rules produced more than twice as many good ideas as those who didn't.

Defer Judgment.

Whatever idea comes to mind, go with it. Don't evaluate ideas while you are generating them. The ideas can be evaluated later.

Strive for quantity.

The more ideas you have, the greater the chances of getting a good one. Lay out all the usual approaches to the problem, then push to consider new options.

Seek wild and unusual ideas.

Freewheel—the wilder the ideas the better. Osborn said it's easier to tame a wild idea than to invigorate a weak one. Stretch your thinking to create some wild ideas.

Build on other ideas.

Let one idea spur other ideas. Build, combine and improve ideas.

Read and listen to different material.

Several years ago Donna Hamlin of Hamlin, Harkin, Ltd. in San Jose, California, conducted a study on the reading habits of scientists. She grouped the scientists into three categories: The first group of scientists she labeled "innovative." These scientists were the ones who exhibited the highest creative productivity as measured by patents. The second group she labeled "productive" scientists. These scientists were known for being highly technically proficient scientists. The third group were scientists who were neither productive nor innovative. The term used to identify this group was... "slugs."

The results of the study found that the "slugs" hardly read anything at all. The "productive" scientists read almost exclusively in their field. The highly creative scientists, however, while not always as technically updated as their counterparts in the second group, read in a variety of fields. In fact, a great deal of their reading was outside of their areas of expertise. These scientists were reading everything from science fiction to technical journals; from *Popular Mechanics* to the *National Inquirer*.

As you might imagine, the "innovative" group of scientists had a much richer storehouse of information from which to generate new concepts.

Don't have time to read? Listen to tapes in your car. But don't just listen to tapes that focus on your particular business. Buy self-improvement tapes, books on tape and mysteries. Most public libraries have a variety of cassettes you can borrow. The old radio dramas were wonderful for exciting listeners' imaginations. Use the rich resource of taped material available today whenever you are driving your car.

Always listen to the same radio station with the same music programming? Try an all news format station or something that features a tremendous range of subjects such as *National Public Radio*. Use your drive time to keep your mind fresh and refreshed. And of course, keep that notebook or tape recorder nearby so when those ideas surface, you can effortlessly record them.

Network.

In addition to reading and listening to different material, it's important to interact with different people. Most of us find it more comfortable to spend time with the people that are familiar to us. We don't make the time or effort to meet new people.

Research conducted on communication networks tells us that the best source of new information is not from the people you see on a regular basis — they usually have the same information you do. The best source of new information is from other networks— other, different people. This is also known as "non-homogeneous groups." To keep your creativity fresh, it is important to tap into groups of people that you usually don't interact with. Find those new networks and plug into them.

doing right reduces their energy. The same is true for ideas, and that's why Praise First (PPCO) works.

Vary your routine.

It's no surprise that many of us get great ideas for work related problems when we are on vacation. When you go on vacation, your routine is significantly altered. You aren't keeping your regular hours. You aren't in the familiar surroundings. You aren't exposed to the situations that face you at a usual work day. One of my colleagues, Gerard Puccio says that there is a direct relationship between the distance he is away from home and the number of new ideas he generates. For Gerard, the farther away from home, the more new ideas he generates.

Now, I'm not suggesting that every time you need to come up with a new concept you leave town, but there are some definite ways to adapt this approach. Here are a couple of them:

Treat your commute time as a scenic vacation. Instead of thinking about what is going to happen at the office, focus on the world around you and take a mini-vacation on the way to work. Drive to work a different way, or get off the expressway and take the scenic route. By exposing yourself to some different scenery you are likely to get some new input. Ride the train to work? Then sit on the side opposite where you usually sit and look out the window instead of burying your nose in your book, files, or morning paper.

Vary your routine at work. Rather than do the same thing for lunch at the same place with the same people, go somewhere new with people you don't normally speak with. Bring in new pictures for your work area, or exchange them with the ones from your home every few months. Rearrange your office every quarter to get a new perspective. You'll also send a message to your co-workers that you're not trapped in a rut and are open to new ways of looking at things.

Vary your routine at home. Do you always go to the same place on Friday night for dinner? Do you always go to a movie on the weekend? Try a different approach. Don't go to a movie, go to a hockey game. Or stay home. Or take a walk. Have a barbecue on a boat. Never seen a foreign film? Go see a movie with subtitles.

John Gardner in his book *On Leadership*, discussed some of the ways that leaders handle stress. One of the ways is to change their routine. The leaders he interviewed had some favorite environment or pastime—a beach for walks, a stream for fishing. However, Gardner was struck by the fact that most of their solutions could be summed up in a brief line of advice: "Do something nonverbal." Music, nature, sensory enjoyment, working with one's hands, gardening or sports.

Effects of Creative Problem Solving Training on Communication Behaviors and Quality of Ideas Generated in Small Groups

In a study designed to measure the effects of Creative Problem Solving (CPS) training on the communication behaviors that occur in small groups, Firestien and McCowan (1988) and Firestien (1990) found that groups trained in a semester long course in CPS (approximately 33 hours of instruction) responded more, i.e. got more involved in the group problem solving process; criticized ideas less; supported ideas more; laughed more; smiled more, and produced significantly more ideas than the groups that did not receive training.

Table 1
Effects of Creative Problem Solving Training on Communication Behaviors in Groups

Communication Behaviors	Untrained	Trained
Total Responses	26.0	39.00
Verbal Criticism	2.21	.09
Verbal Support	1.4	3.70
Laughter	2.11	6.00
Smiles	2.6	6.70
Ideas Generated	13.0	27.00

In a subsequent analysis of the data, it was found that groups trained in CPS produced significantly more ideas of higher quality than groups that were not trained in CPS. The quality analysis also showed that groups trained in CPS produced more low quality ideas as well. This finding points to the importance of using convergent techniques to select and evaluate ideas. (Convergent techniques are crucial aspects of the CPS process.) This analysis also revealed the finding that groups that are trained in CPS have a significantly higher probability of a breakthrough occurring simply because more high quality ideas were generated.

Table 2
Effects of Creative Problem Solving Training on Communication Behaviors in Groups.
Idea Quality Results Combined Rating of Three Criteria Used

Rating	Untrained	Trained
5	281	618
4	500	1342
3	352	917
2	253	648
1	29	140

References:

Firestien, R.L. & McCowan, R.J. (1988). Creative Problem Solving and Communication Behaviors in Small Groups. *Creativity Research Journal*, 1 (1). 106-114.

Firestien, R.L. (1990). Effects of Creative Problem Solving on Communication Behaviors in Small Groups. *Small Group Research*, 21 (4). 507-521.

ABOUT THE COURSE

- Phrase problems in a way that they can be solved (*How to...*)
- Defer judgment and generate many ideas.
- Evaluate ideas positively (Pluses, Potentials and Concerns)
- Take personal responsibility for your creativity. *Get curious again!*

Do you always need a group to brainstorm? Absolutely not. The four brainstorming rules can also be applied individually.

Use passive ways to generate ideas.

Most of us don't get our best ideas at work. People usually report that they get their best ideas while driving a car, taking a bath or shower or as they are falling asleep at night.

While at work, most of us are in the implementation mode, the action mode, the make-it-happen mode. New ideas begin to surface when we get away from work and are able to pay attention to something in an almost automatic, relaxed way. It seems that activities like driving, bathing or falling asleep are so automatic that we relax the judgmental part of our thinking, which in turn allows new ideas to surface.

The key is to be ready to catch those ideas when they appear. Have a piece of paper, a note pad or a pocket tape recorder with you to record those new insights as soon as they occur. If you don't write it down right away, it might just disappear.

A friend of mine calls his answering machine with his new ideas so he can listen to them when he gets back to his office. Use whatever method works for you to capture your fortuitous insights.

Look for the strengths in a new concept first.

When you are presented with an idea, or after you have generated a number of ideas, the next step is to evaluate and/or refine them. Unfortunately, most of us "refine" an idea by first examining all the things that are wrong with it. One of the techniques I use in my creativity seminars is to encourage participants to evaluate ideas by looking at the pluses, potentials and concerns of an idea, then overcoming their concerns. I call it Praise First or PPCO for short. Here's how it works:

- 1) After you've selected an idea you'd like to develop and implement, list at least three things that are good about the idea. Those are the Pluses.
- 2) Then list the potentials: speculations or possible future gains that might result if the idea were implemented. Try starting these with "It might..."
- 3) No idea is perfect so, as your third step, list the concerns about your idea. But phrase those concerns as questions, or problem statements so that you continue the idea development process by inviting solutions. If your concern is that the idea will cost too much, rephrase your concern as "How to reduce the cost? or How to find the money to develop the idea?"
- 4) With your concerns about the idea phrased as questions, you can now generate ideas to overcome the concerns, strengthen your idea and increase its chances for acceptance. This is a positive pro-active approach to evaluating and building ideas. George Leonard in his book *Mastery* stressed the importance of acknowledging the negative, but accentuating the positive. Telling people what they are doing wrong while ignoring what they're

How to Keep your Creativity Fresh

Creative thinking and Creative Problem Solving tools help spawn a proliferation of ideas and fresh thinking. But after a while, it's not uncommon for people to find that their "flowing river of ideas" has been reduced to a trickle. So how can we keep our creativity renewed and revitalized on a daily basis? Try out the eight specific suggestions listed below:

Use active ways to generate ideas.

There are explicit, tested approaches for generating ideas. One of the best active methods is Brainstorming, the group creative problem solving technique developed by advertising executive Alex Osborn, which he shared in his book *Applied Imagination*. To use brainstorming effectively, follow the four guidelines on which it is based. Those guidelines are:

- 1) Defer judgment. Don't evaluate your ideas while you are generating them. Whatever ideas come to mind, write them down — all of them! They will be evaluated later.
- 2) Strive for quantity. The more ideas you come up with, the greater are your chances of getting a good one. One of the best ways to apply this guideline is to establish an idea quota. I've found it helpful to set a goal of about 35 to 40 ideas. This quota seems to be high enough to purge out the usual approaches to solving the problem but still stretches you into new concept areas. Don't stop at the quota if you are really generating good ideas. If your problem is fairly complicated, establish a higher quota of ideas. Let yourself go and you will be very pleased with the ideas you develop after you reach your goal. And if you haven't solved your problem when you reach your quota, double the target and keep going.
- 3) Seek wild and unusual ideas—the wilder the better. Alex Osborn said that it is easier to tame down a wild idea than to invigorate a weak one. The implication is that we need to strive to create some wild, unusual ideas, since they can always be engineered down later.
- 4) Build on other ideas. Let one idea spur other ideas. One of the most common approaches to creativity is to make incremental improvements to already existing ideas by building on them. Small improvements are important because they lead to better, more refined ideas. In a brainstorming session, the ideas you generate are just starting points. Allow yourself and others to build on and improve those ideas.



Remember the
ground rules for
divergent thinking!

- Defer judgment
- Strive for quantity
- Seek wild ideas
- Build on other ideas

Brainstorming

Not just another bright idea

Everyone's heard of brainstorming. But did you know that brainstorming was actually invented by Alex Osborn in 1953?

Osborn defined brainstorming as "a group's attempt to find solutions for a specific problem by amassing ideas." He did not define it as a bunch of people kicking around ideas and arguing about their relative merits.

Brainstorming is a pure form of divergent thinking. So as soon as you announce the problem to work on, BE SURE to review the ground rules for divergent thinking (at left).

Directions:

- 1.) Write the statement of the challenge you're working on so it's clearly visible.
- 2.) Review the ground rules for divergent thinking.
- 3.) Start thinking up options. Set a goal of at least 30 to 35. This quota seems high enough to purge the usual approaches to solving the problem and push you to consider new territory. Don't stop at the quota if you are really generating well.
- 4.) Record EVERY option in writing. If you're working with a group, have someone write on a flip chart. Be sure all the options are visible.
- 5.) Every 15 options or so, check to be sure you are still on track to meet the challenge.
- 6.) Keep going until you've met or exceeded your quota and have enough options to address the challenge.

Do you always need a group to brainstorm? Absolutely not. But keep in mind, even when you're by yourself, the four ground rules still apply!

Forced Connections

What ideas do you get from this aardvark?



I am NOT
an aardvark.

If you run out of ideas during a brainstorming session, try the *Forced Connections* technique. It works well with other divergent tools such as *brainstorming* and *brainwriting*. The unusual ideas that result often help get the group's mental wheels turning again.

Directions:

- 1.) Review the ground rules for diverging.
- 2.) Point to an object or picture totally unrelated to the problem and ask, "When you look at this (object or picture), what ideas do you get for solving this problem?"
- 3.) Force a connection between the item and the problem to generate more ideas. (Forced Connections often results in more novel or unusual options.)
- 4.) Share your ideas and repeat as necessary.

The Forced Connection question:

**"When you look at this
(object or picture), what ideas do
you get for solving this problem?"**

Concern 1. *How to...*

Ideas for overcoming concern one:

- | | |
|----|-----|
| 1. | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | 12. |

Concern 2. *How to...*

Ideas for overcoming concern two:

- | | |
|----|-----|
| 1. | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | 12. |

Concern 3. *How to...*

Ideas for overcoming concern three:

- | | |
|----|-----|
| 1. | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | 12. |

Now review the information that you wrote for *Pluses, Potentials and Concerns* on the previous page, and **especially** the ideas that you generated for overcoming your concerns. Build on the solution you wrote on the top of the previous page or write a **new** and **improved** statement of your solution below. Include as much detail as possible.

What I **NOW** see myself (us) doing is:

PREPARE FOR ACTION
Select & Strengthen Solutions
Pluses, Potentials and Concerns (PPCo)

If your ideas blend together or suggest a tentative plan of action, write your idea in the form of an idea phrase. Your idea phrase should create a specific measurable result. The result can be as stringent as using measures to quantify the result, that is, metrics or dollars saved, or as simple as verifying that you have accomplished the solution or not accomplished it. Write your idea phrase below.

What I see myself (us) doing is:

Below list at least three *pluses* or specific strengths of your idea phrase. What is good about your idea now?

- 1.
- 2.
- 3.

Now, list three *potentials*, speculations, spin-offs or possible future gains of your idea. In a future when this idea has become a reality, what has become possible? List potentials using the phrase "It might."

1. It might...
2. It might...
3. It might...

Finally, list the *concerns* you have about your idea. Be sure to phrase each concern as an open-ended questions that will allow you to overcome each one and move forward.

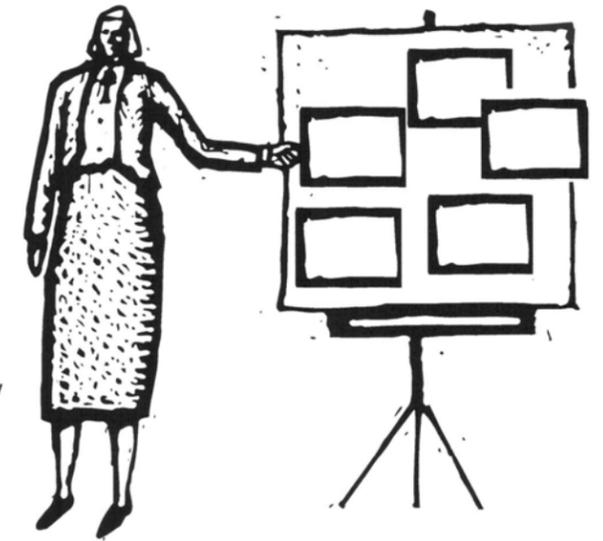
- How to...
- How to...
- How to...

Review your concerns. Decide which one is the most important to you. On the next page, generate at least a dozen ways to overcome that concern. Once you have enough ideas to overcome your most important concern, go to your next most important concern and generate ways to overcome that concern. Do this until all of your concerns have been overcome.

Stick 'em Up Brainstorming

"Write a headline. Call it out!"

The 1980s brought the happy marriage between brainstorming and Post-it® notes, which led to the highly convenient, super speedy—and rather fun—technique of Stick 'em Up Brainstorming.



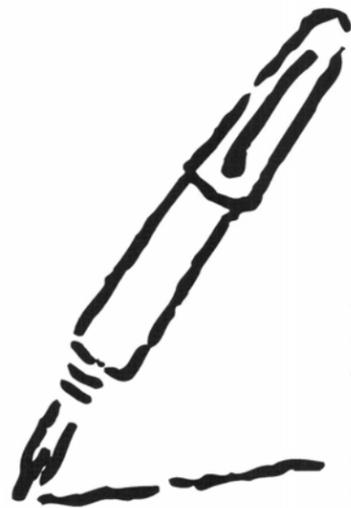
Directions:

- 1.) On a flip chart that's visible to all group members, write down the statement of the challenge you're working on.
- 2.) Review the ground rules for divergent thinking.
- 3.) Issue each participant a 3" x 5" pad of post-it notes and a dark, medium-tip magic marker.
- 4.) Set an idea quota and plan to push for new ideas until you meet it.
- 5.) Begin brainstorming on the challenge: If you have an idea, write it (in large print and in headline form) on a post-it note. Say your idea aloud and pass it forward to be posted on the flip chart.
- 6.) Every 15 ideas or so, check with the "owner" of the challenge to be sure the ideas are going in the right direction.
- 7.) Keep going until you meet your quota or have enough ideas to address the challenge.

Post-it note protocol:

- Write it down
- Say it out loud
- Hand it up

Brainstorming with Post-its is described by Scott Isaksen, Brian Dorval and Don Treffinger in Creative Approaches to Problem Solving.



Brainwriting

"Write 3 and Go!"

Another brainstorming technique is called "brainwriting." Developed by Horst Geschka, this modified form of brainstorming is an excellent way to give a group time to reflect on ideas and deliberately build on other thoughts. Because it is a more private, individualistic form of brainstorming, brainwriting is an excellent tool for dealing with groups where shy, quiet members are being overshadowed by more vocal ones. Surprisingly, even though brainwriting feels like a slower paced form of brainstorming, the actual number of ideas that results is often higher, because everyone in the group is working simultaneously.

Directions:

- 1.) Each person starts with a brainwriting worksheet (on opposite page).
- 2.) Put a blank worksheet in the center of the group.
- 3.) Write the statement of the challenge at the top of all worksheets.
- 4.) Review the ground rules for divergent thinking.
- 5.) Silently think of three ideas and write each one in a separate box on the first open row of your worksheet.
- 6.) Pass your worksheet back to the center and pick up one that someone else has just finished.
- 7.) Read the ideas on the new worksheet and build on them, or come up with three new ideas.
- 8.) Keep swapping worksheets until all the boxes are full. (Add more worksheets if necessary.)

Highlighting

A Quick Way to Screen Options

Highlighting is a great way to take a proliferation of ideas and narrow them down to a few good options. This is a particularly effective convergent tool when you want to clarify a problem or generate ideas. Highlighting helps you screen and select - to get the 80 percent value that's hidden in 20 percent of the options. In addition, highlighting helps make the remaining choices more manageable by grouping them into meaningful categories.

Highlighting actually has three steps:

- 1.) Hits
- 2.) Cluster
- 3.) Restate

Hits

If you did a really ambitious job of diverging, you've ended up with more ideas or problem statements than you can possibly use. That's good. Now, review all the options you've generated. Some will strike you as especially interesting, promising, compelling, intriguing, innovative or on-target. Mark or "hit" those ideas with a check, star or colored dot.

Cluster

After you mark your "hits," see if any share a theme or reiterate the same idea. Create groups or "clusters" of these related options.

Restate

Look at the clusters you have created. Within each cluster, try to synthesize the slightly different ideas or problem statements into a single statement. Resist the desire to string options together into a long phrase. Instead, try to capture the essence and paraphrase all the options into a concise headline

Statement Starters

IW, IWBGI, H2, ...hmmm

Creative Problem Solving relies on word power to encourage affirmative judgment and frame problems in their most approachable light.

Statement starters are the clearest example of CPS word power. They are set phrases, used to begin statements of ideas or problems. The phrasing is designed to focus the brain on generating options and considering solutions, rather than shutting down ideas and blocking possibilities.

For example, it's natural to voice a concern about cost by saying, "It's too expensive." But such phrasing is likely to cut off discussion or spark an argument. If, instead, you used the statement starter "How might...", you naturally invite ideas for overcoming the concern. For example, "How might we make it less expensive?" Or, "How might we obtain funding from other sources."

When expressing concerns, use the statement starters: There's a statement starter associated with several (but not all) of the stages in CPS.

Identify the Goal, Wish or Challenge

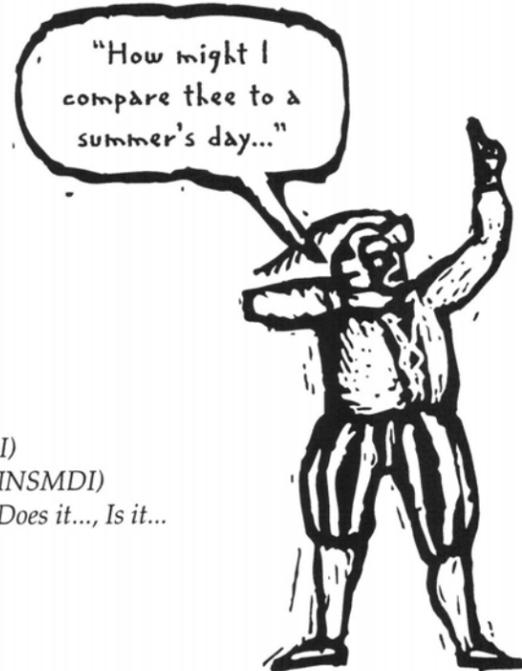
*It would be great if... (IWBGI)
I wish... (IW)*

Clarify the Problem

*How to... (H2)
How might... (HM)
In what ways might... (IWWM)
What might be all the... (WMBAT)*

Select & Strengthen Solutions

*What I see myself (us) doing is... (WISMDI)
What I NOW see myself (us) doing is...(WINSMDI)
When generating criteria, use Will it..., Does it..., Is it...*



What your English teacher would say:

Statement Starter + Noun + Verb + Object.

Example: How might + we + get + funding for this project?

Brainwriting

Problem statement: _____

	1A		1B		1C
	2A		2B		2C
	3A		3B		3C

SCAMPER

Divergent Spark Plug

"The best way to have good ideas is to have lots of ideas."

LINUS PAULING

"The important thing is not to stop questioning."

ALBERT EINSTEIN

Experience has shown that the best ideas are most often found among the last 33 percent of the ideas generated. That's why it's important to stretch people's thinking and generate lots of ideas. Alex Osborn, in his breakthrough book, Applied Imagination, developed a series of questions that spark ideas during divergence. Bob Eberle categorized these questions in his book Scamper: Games for Imagination Development, and created the mnemonic SCAMPER to make them easier to remember.

Substitute
Combine
Adapt
Modify
Put to other uses
Eliminate
Rearrange



(See next page for questions.)

The Value of Clarifying the Problem: A Seafaring Example

From Thinkertoys by Michael Michalko

In the 1950s, ocean-going shipping was a dying industry. Costs were rising, and it took longer and longer to get merchandise delivered. The longer goods piled up waiting to be loaded, the more theft happened at the docks.

The shipping industry formulated their challenge as: **"In what ways might we make ships more economical at sea and while in transit from one port to another?"**

They built ships that were faster or required less fuel, and reduced crew size. Costs still kept going up, but the industry kept concentrating its efforts on reducing the specific costs related to ships while at sea and doing work. They were doing things right, but they weren't doing the right thing.

A ship is capital equipment and the biggest cost for the capital equipment is the cost of *not working*. Finally, a consultant stretched the industry's challenge to: **"In what ways might the shipping industry reduce costs?"**

This allowed them to consider *all* aspects of shipping, including loading and stowing. The innovation that saved an industry was to separate loading from stowing, by doing the loading on land, before the ship is in port. It is much quicker to take on and take off preloaded freight. They decided to concentrate on the costs of not working rather than working, and reduce the amount of time a freighter does not work. The answer was the roll-on, roll-off ship and the container ship.

This simple solution was the direct result of reframing the challenge. The results have been startling. Freight traffic has increased fivefold in the last thirty years, and costs are down by 60%. Port time has been reduced by 75%, and with it, congestion and theft has declined.

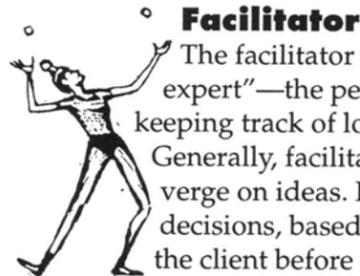
From *Thinkertoys* by Michael Michalko, Ten Speed Press, Berkeley, California 1991.

SCAMPER Questions

To generate more ideas while brainstorming, ask the following questions in any order. Repeat the questions as necessary, but don't overwhelm yourself or the group by reading them in rapid succession. Take time to think and respond.

Roles in a CPS Session

When using CPS in a group, there are distinct roles to assign.



Facilitator

The facilitator is the Creative Problem Solving “process expert”—the person (or team of people) responsible for keeping track of logistics, idea flow and group development. Generally, facilitators do not contribute ideas or help converge on ideas. Instead, they focus on making CPS process decisions, based on the client's input. They also meet with the client before convening the resource group.

Client

The client—who can be an individual or a group—is the primary “owner” of the challenge being explored. The client lets the facilitator worry about CPS process and focuses instead on the data and decision making around the challenge itself. The client is responsible for sharing background information, generating ideas along with the resource group, providing direction for the facilitator and selecting ideas that best address the challenge. (Note: the client is generally the only one who gets to diverge and converge.)



Resource Group

The resource group provides ideas, energy, insight and dynamic perspectives for the CPS session. They take direction from the facilitator and diverge like crazy to serve the client.



Alex Osborn first addressed the roles and responsibility of the facilitator in his book *Applied Imagination* (1953). Subsequently, the role of the resource group was explained by Donald Treffinger and Roger Firestien in the *Journal of Creative Behavior* and the role of the client was defined by Donald Treffinger, Scott Isaksen and Roger Firestien in the *Handbook of Creative Learning*.

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Substitute

What can you substitute?
What else can you use instead?
Who else can be included instead?
What other group can be included?
What other process can be used instead?
What other material can be used instead?

Combine

What can be combined?
How about a blend?
What sort of ensemble could be used or created?
How can you combine parts?
How can you combine purposes?
How can you combine applications?
How can you combine materials?

Adapt

What other thoughts does this suggest?
What else is like this?
Does the past offer a similar situation?

Modify

How about a new twist?
How can you change the meaning?
How can you change the color or shape?
How about the sound?
What can you add?
How can you increase the height?
How can you increase the weight?

How can you add strength?
How can you increase frequency?
How can you increase value?
What can you subtract?
What can you shrink?
What can you streamline?
What can you understate?
How can you reduce the size?
How can you reduce the weight?

Put to other uses

What else can it be used for, as is?
What might other uses be, if changed?
What other markets might be interested?

Eliminate

What can you get rid of or omit?
What can you do without?
What can you sacrifice?
What can you give away?

Rearrange

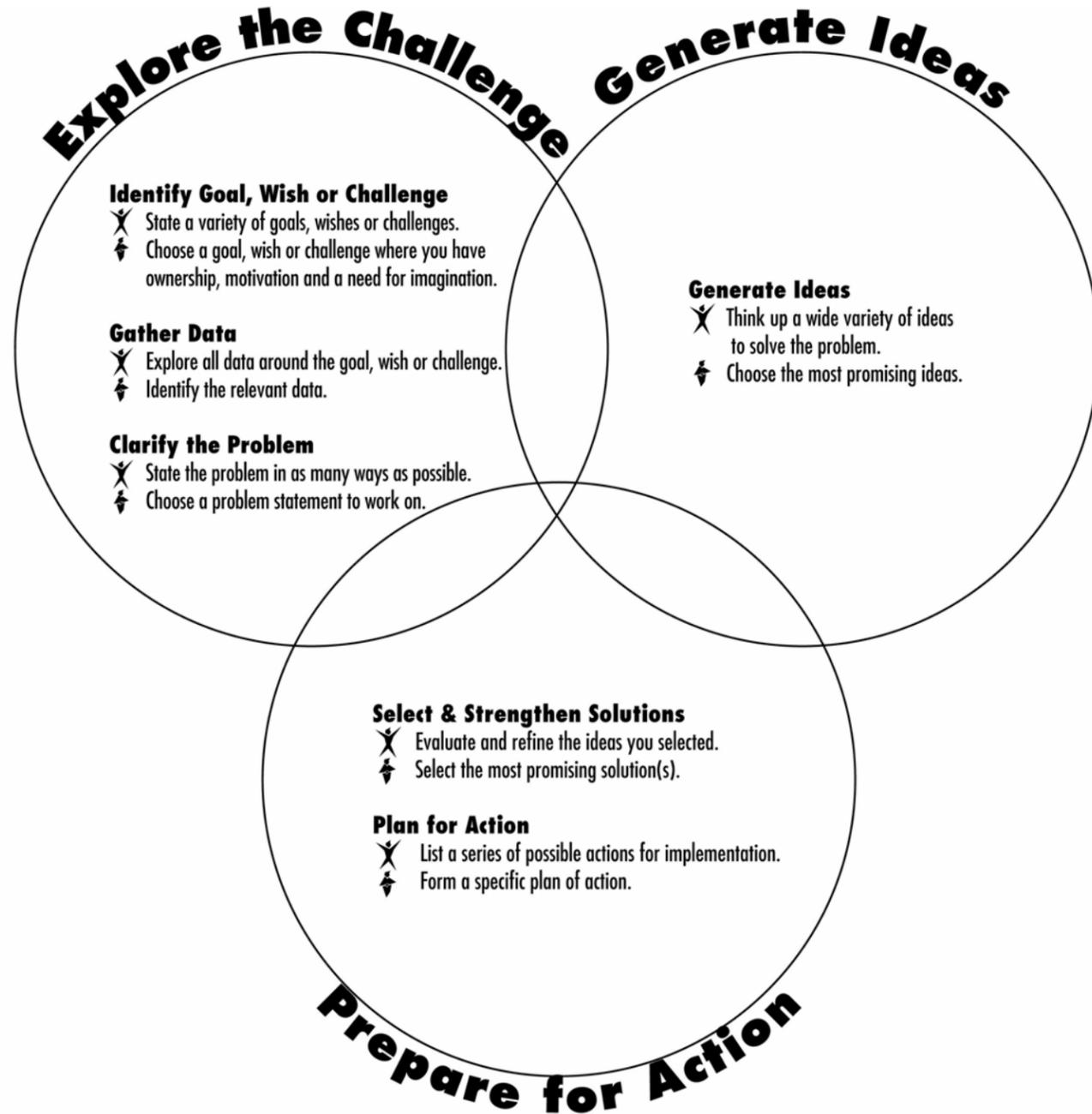
What other patterns might work?
What other arrangements could be used?
What other layout might work?
What can you interchange?
What can you transpose?
What can you reconnect?
What if you reversed it?
What if you turned it upside down?
What if you turned it inside out?

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The Whole Picture

CPS process in full detail

The CPS process breaks down even further with one or more stages in each component. The entire CPS line-up has six stages, one for each column heading.



CPS stage	Identify Goal, Wish or Challenge	Gather Data	Clarify the Problem	Generate Ideas	Select & Strengthen Solutions	Plan for Action
when to start	You want to create, invent, solve or improve something.	You want to explore the facts, feelings and data around the issue.	You want to pinpoint the right problem to solve.	You need novel, useful ideas to solve your problem.	You want to turn promising ideas into workable solutions.	You want to implement a solution.
statement starters	I wish... It would be great if...		How to... In what ways might... How might...		What I see myself (us) doing is... <i>for criteria:</i> Will it... Does it...	
sample questions	What are some goals, dreams or visions you'd like to begin or accomplish this year? What do you wish worked better? What challenges do you face? Who's been on your mind lately? Why?	Give a brief history. Who's involved? Why is this a concern? Why's it an opportunity? How do you own this? What's been thought of or tried already? What is the ideal outcome?	Why? Why else? What's stopping you? What else?	What can you combine, substitute, modify, eliminate or rearrange? What ideas can you get from other objects, worlds or situations?	What do you like about it? What opportunities or potential spin-offs are there? What are your concerns? How might you overcome them?	Who might assist? Who needs to be convinced? What resources are available? How can you get acceptance & enthusiasm for your idea? How could you pre-test the solution?
tools	Generate statements of your goals, wishes and challenges.	Brainstorm on data gathering questions	Brainstorming Ladder of Abstraction Word Dance	Brainstorming Brainwriting Forced connections SCAMPER	Brainstorming	Brainstorm on action planning questions
	Check for ownership, motivation and imagination	Hits	Highlighting (hits, cluster, restate)	Highlighting (hits, cluster, restate)	PPC, Matrix, Card Sort, Target	Hits
outcome of stage	A statement of the goal, wish or challenge that begins with "I wish..." or "It would be great if..."	A list of key data about the goal, wish or challenge	A well-defined statement of the problem	An idea or a selected list of ideas that will solve the problem	Well developed, detailed and improved solutions, phrased: "What I now see myself (us) doing is..."	A plan for implementing solutions with a list of who does what by when, reporting completion to whom