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Four Steps Toward Creative Thinking

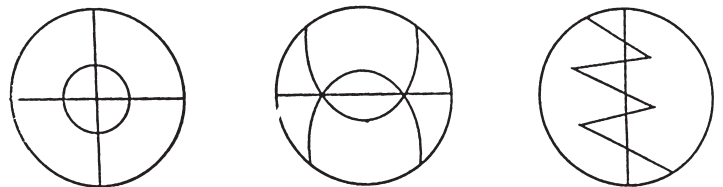
By Michael Michalko

Stuck for a new idea? Try reversing an old one, expanding your perceptions, getting crazy, or even not thinking.

Our minds build up patterns that enable us to simplify and cope with a complex world. These patterns are based on our past successful experiences in life, education, and work. We look at 6 X 6 and 36 appears automatically in our heads. In addition, these thinking patterns enable us to perform routine tasks rapidly and accurately, such as driving an automobile. But this same patterning makes it hard for us to come up with new ideas and creative solutions to problems, especially when confronted with unusual data.

Creativity deviates from past experiences and procedures. For example, try to imagine how to cut a cake into eight slices using no more than three cuts. Most people have trouble figuring out a way to do this because of their past experiences cutting cakes. To solve this problem, you need to change the way you think about cakes, a piece of cake, and how to cut a cake. One solution is to cut the cake in half and stack one half on top of the other. Cut the stacked halves in half, stack the quarters on top of one another, and cut them. Another solution would be to cut the cake into quarters and then slice the cake horizontally through the quarters. You could also cut the cake in any of the ways illustrated in figure 1.

When you break out of your established patterns and ignore the conventional wisdom on how to cut a cake,



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you'll discover that there are an infinite number of solutions. You can change your conventional way of thinking and "think out of the box" by using some simple techniques.

SCAMPER to New Ideas

Another aspect of creativity is generating new ideas. Every new idea is a modification to an idea that already exists. You can take any subject and change it into something else. Alex Osborn, a pioneering teacher of creativity, identified nine principal ways to manipulate a subject. They are arranged below as a checklist of idea-spurring questions. The list forms the mnemonic SCAMPER to help you remember them.

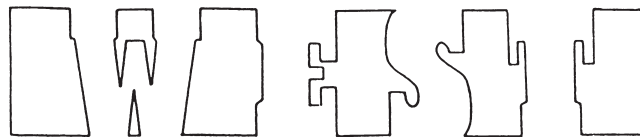
- S = Substitute?
- C = Combine?
- A = Adapt?
- M = Modify? = Magnify or add?
- P = Put to other uses?
- E = Eliminate?
- R = Rearrange? = Reverse?

Think of changing or improving any object, from the common paper clip to your organization. As you apply the SCAMPER checklist of questions, you'll find that ideas start popping up almost involuntarily.

Consider the Walkman radio. Sony engineers at first tried to design a small, portable stereo tape recorder. They failed, ending up with a small stereo tape player that couldn't record. They gave up on the project and shelved it. One day, Masaru Ibuka, honorary chairman of Sony, discovered this failed product and decided to refashion it into something new. He remembered an entirely differ-

ent project at Sony where an engineer was working to develop lightweight portable headphones and asked, "What if you combine the headphones with the tape player and eliminate the recorder function altogether?"

The Walkman radio became Sony's leading selling electronic product of all time and introduced all of us to the "headphone culture."



Put Your Thinking Into Reverse

Sony reversed the common assumption that a play-back machine must also record. Figure 2 gives you a chance to reverse your usual way of seeing something. In the illustration, there are some irregular shapes that look like puzzle pieces. They seem to have no meaning. However, if you focus on the background - the spaces between the shapes - the word "WEST" appears. If you have trouble seeing it, place a straight edge on the top or bottom border of the figures to make the word obvious.

By concentrating on the background and not the shapes, you change your perspective and see something that you were unable to see before. This is what happens when you reverse your perspective and look at the other side of things.

Reversals break your existing patterns of thought and provoke new ones. You take things as they are and then turn them around, inside out, upside down, and back

to front to see what happens. The same perceptual changes occur when we reverse our conventional thinking patterns about problems and situations. When Henry Ford went into the automobile business, the conventional thinking was that you had to "bring people to the work." He reversed this to "bring the work to the people" and invented the assembly line.

When Alfred P. Sloan became CEO of General Motors, the com-

mon assumption was that people had to pay for a car before they drove it. He reversed this concept, and pioneered installment buying.

Suppose you want to start a new restaurant and are having difficulty coming up with ideas. Try the following technique:

First, list all your common assumptions about restaurants.

- A. Restaurants have menus, either written, verbal, or implied.
- B. Restaurants charge money for food.
- C. Restaurants serve food.

Next, reverse each assumption. The reversals would be:

- A. Restaurants have no menus of any kind.
- B. Restaurants give food away for free.
- C. Restaurants do not serve food of any kind.

Ask yourself how to accomplish each reversal:

A restaurant with no menu. IDEA: The chef informs each customer what he bought that day at the meat market, vegetable mar-

ket, and fish market. He asks the customers to select items that appeal to them, and he creates a dish with those items, specifically for each customer.

A restaurant that gives away food. IDEA: An outdoor cafe that charges for time instead of food. Use a time stamp and charge so much per minute. Selected food items and beverages are free or sold at cost.

A restaurant that does not serve food. IDEA: Create a restaurant with a unique decor in an exotic environment and rent the location. People bring their own food and beverages (picnic baskets, etc.) and pay a service charge for the location.

Finally, select one new idea and develop it. Let's work with the "restaurant with no menu" reversal. We'll call the restaurant "The Creative Chef." The chef will create the dish using the ingredients the customer selected, then name the dish after the customer. Each customer will receive a computer printout of the recipe bearing his or her name.

Reversals destabilize your conventional thinking patterns and tie together other patterns in provocative new ways.

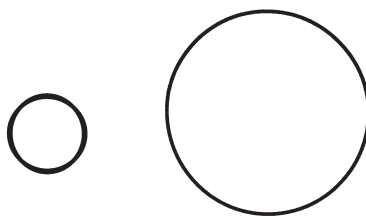
Don't Think About It

Another interesting way to get ideas, paradoxically, is not to think about your subject. When you consciously try to develop new ideas, those ideas are often heavily structured in predictable ways by your existing categories and concepts. Expertise in an area can hinder creativity by making you fixate along a certain line of thought. If you want to produce

something creative, such as a new, automobile design, don't think of automobiles - at least not at first. Instead, create several abstract compositions of bodies in motion and then use the compositions as stimuli for a new design.

Much evidence suggests that a broad, abstract definition of a problem can lead to greater creativity and innovation than a more typical narrow and concrete definition. Making your problem more abstract helps eliminate barriers that arise from preconceived notions. It forces you to test assumptions and expand the possibilities.

Look at figure 3, the illustration of a girl standing in the rain. Now try to imagine the girl entirely within the small circle. You will probably find that the image becomes very dense and only contains a few visible features. Now, form your image within the larger circle. The image becomes clearer, and you can see many more details - the girl's hair, her boots, the raindrops - that you could not see in the small circle.



Expand Your Perceptions

In a similar way, when you broaden your problem by making it more abstract, you dramatically expand your perception of the problem. Suppose you want to improve the design of an umbrella. If you work with the more abstract definition of an umbrella, "protector from the rain," you are more likely to explore more possibilities. You may come up with the idea of a design for a town where arcades protect people from rain and umbrellas are not needed.

Or consider the bookstore owner, for example, who viewed himself as a seller of books, a very specific definition. The trend toward electronic media put him out of business. On the other hand, if he had viewed himself as a provider of information and entertainment, a more abstract characterization, a switch in the medium would not have been threatening. It would have opened up new opportunities.

Suppose your problem is how to protect rural designer mailboxes from theft and vandalism. You would first form an abstract definition of your problem. What is the principle of the problem? The principle is protection. Next, think of ways to protect things.

- Place in a bank.
- Rustproof it.
- Provide good maintenance.
- Get an insurance policy.
- Hide it.

After you've generated a number of different ideas, restate the problem so that it is slightly less abstract. Think of ways to protect things that are outside and vulnerable. Again, generate as many

solutions as you can.

- Hire a guard.
- Watch it constantly.
- Drape it with camouflage.
- Put a fence around it.
- Keep it well lighted.

Finally, consider the original problem again. Review the ideas and solutions to the two previous abstractions and use these as stimuli to generate solutions. One idea, triggered from “get an insurance policy,” is for the mailbox company to offer an insurance policy to owners of rural mailboxes: \$5 a year or \$10 for three years to cover the mailbox from theft or destruction.

Get Crazy

Another way to loosen up rigid thinking is to deliberately explore the absurd and unusual. Suppose, for example, you work for a greeting card company that wants new products and markets. You would first list several odd, unusual, or absurd ideas about the problem.

- Send greeting cards to dead people.
- Send heavy stones as greeting cards.
- Send cards COD.
- Send the person money with the message to “go out and buy your own greeting card.”

- Send a spider.

Next, select one of the absurd ideas. Let’s take the idea of sending greeting cards to dead people. Extract the principle of this idea. What is the principle? Communicating with the departed. Now, list the features and aspects of the absurd idea.

- People communicate with the dead through seances.
- People leave flowers at cemeteries.
- People leave poems, letters, and other artifacts.
- People publish personal poems, messages, etc., in newspapers to the departed.
- People pray for the departed.

Finally, build one of the features or aspects into a practical idea. Let’s work with “leaving items at the cemetery.” One idea could be to publish memorial cards on sticks so they can be inserted in the ground at the gravesite. Sell the “cards-on-sticks” in florist shops that are located near cemeteries.

A few years back, a group of engineers was looking for ways to prevent power lines from being downed by ice storms. None of the conventional ideas seemed to work. Finally, one of the engineers suggested putting a pot of honey on each pole. He said the

honey would attract big bears. The bears would climb the poles and the vibrations would cause the ice to fall off. Everyone laughed, but another engineer said, “I think you’ve got something. The principle of vibration is the answer. When I was in the military, I was around big helicopters a lot, and we were always feeling a massive downdraft from the rotor blades of those helicopters.” The engineers discovered that they could use helicopters to blow snow and ice off the power lines.

Creative-thinking techniques like the ones described in this article get you thinking out of your box by breaking up your conventional thinking patterns and stimulating new ones. These new thinking patterns lead to the formation of new ideas and concepts that you cannot get using your usual way of thinking.

Michael Michalko is a leading creativity expert and author of *Thinkertoys*, *Think Pak: A Brainstorming Card Deck*, and *Cracking Creativity: The Secrets of Creative Genius*.

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The Idea Incubator

By Frank Helton

Malpractice Insurance for Doctors

To see what’s wrong with President Bush’s malpractice reform plan, consider the case of

Linda McDougal, said *Steven Lubet* in the *Chicago Tribune*. Diagnosed with breast cancer, she was told her only chance for survival was to have both breasts removed. Two days after surgery, she discovered that doctors had mixed up the lab reports; her breasts had actually been perfectly healthy. Under Bush’s proposed

cure for the nation’s malpractice epidemic, McDougal would get no more than \$250,000 for pain and suffering. In his State of the Union speech, the president complained about greedy trial lawyers and implied that many malpractice suits are frivolous. But “frankly, doctors and hospitals sometimes need to be sued.”

Especially when they leave patients maimed, paralyzed, or dead, said *The New York Times*. That's why a sliding scale of caps, based on the severity of injury, "would be better than a single rigid ceiling."

Legislators better do something fast, said *The Hartford Courant*. Doctors burdened with astronomical malpractice premiums are walking off the job throughout the country. In Connecticut, 40 obstetricians announced last week that they would stop delivering babies because they could not afford to pay annual premiums of \$125,000. A cap on pain-and-suffering awards may not cure what ails the insurance industry overnight, but it will start to rein in runaway juries. Actually, a cap doesn't go far enough, said **Philip K. Howard** in *The Wall Street Journal*. Juries are poor judges of what constitutes real malpractice. Experts say that a quarter of all malpractice awards come in cases where no medical mistake was made. Meanwhile, most real medical errors "go uncompensated." In other words, our current system punishes good doctors and lets bad ones off the hook. If we want real reform, the U.S. must establish a special medical court that deals only with malpractice cases. That way judges with real expertise can make "predictable judgments about fair compensation," and good doctors can stop looking over their shoulders.

If we want real reform, said **Alcestis "Cooky" Oberg** in *USA Today*, we have to get rid of the bad doctors. Nearly 4 percent of all hospital patients are victimized

by medical error, resulting in as many as 180,000 deaths a year. That's more than the combined death toll of AIDS, breast cancer, and car accidents. To really reform the system, we need aggressive patient safety laws that will yank the licenses of hospitals and doctors with bad track records. Only then will the health care industry be motivated to embrace "a culture of safety." Only then will people like Linda McDougal stop being maimed.

DDT is coming back

It's time to bring back DDT, said **Alexander Gourevitch** in *The Washington Monthly*. This powerful insecticide, banned in the U.S. and many other countries for a generation, could keep 2 million people from dying of malaria each year. But thanks to **Rachel Carson's** 1962 anti-pesticide diatribe *Silent Spring*, hysterical environmentalists still link it to cancer, genetic mutations, and other horrors. We now know the truth: In limited applications, like clearing swamps of mosquitoes, "there's simply no solid scientific evidence" that DDT is harmful to humans. The stuff is dangerous only when used recklessly, as when farmers choked their crops with it in the 1950s and '60s. But environmental groups have so demonized this particular pesticide that no international aid agency will fund DDT use." This has left many developing nations in Africa impotent before malaria; DDT's alternatives are both less effective and far more expensive. So African countries stand by helplessly while malaria deci-

mates their populations and cripples their economic growth. The U.S. ought to admit to being wrong on DDT and restore it to the public-health arsenal. What's more important: environmental dogma or millions of human beings?

Why should we tag designer foods?

Genetically modified foods such as corn and soybeans have been commercially grown in the U.S. for decades. But other countries, particularly in the European Union, are far more suspicious of these "Frankenstein foods." Several have banned their commercial production, and refuse to accept imports of them. Genetically engineered crops are plants that have genes added to them to change their characteristics - to make them pest-resistant, for example. So far, there is no evidence they harm consumers. But the still-wary are now suggesting they be given a choice, by adding a kind of DNA bar code to genetically modified foods. "This will ensure consumer choice and increase confidence," says British government scientist **Howard Dalton**. Detecting modified food is currently very difficult because you have to know what alteration you're looking for. The new technique would add the same easy-to-detect genetic tag to all foods. Once developed, the new DNA tagging technology could also be used to prevent knockoffs of bank notes or designer clothes.

From the Institute for Collaborative Alliances How Different Cultures Make the Same Decisions

By Beth Azar

“People often talk about the next century as being the Pacific century. If that’s so, questions about cultural differences in judgment and decision-making will be crucial.”

Frank Yates
University of Michigan

Men, on average, see less risk than women in just about everything, from not wearing a seat belt to nuclear power, according to several large national surveys. But it’s a small subset of the men surveyed – 30 percent - who drive this trend: They find virtually no risk in anything, says University of Oregon psychologist **Paul Slovic**, PhD., who conducted the surveys with his colleagues.

The majority of men, in fact, believe the world is as risky as women do. And virtually all men of color view risks as equally high as their female counterparts, the surveys find.

“It appears that white men are causing the gender effect and that a subset of 30 percent of them are really driving the effect,” says Slovic, director of decision research in Eugene, Ore.

When Slovic’s research team looked to see what distinguished these men from everyone else, they found that the most significant difference was in their social lot and political attitudes. They tended to be highly authoritarian, anti-egalitarian and they trusted experts.

They also found that the general difference is highly correlated to people’s identification with the phase, “I often feel discriminated

against.” People who identify with the statement have a higher perception of risk from just about everything than people who don’t.

“We concluded that white males who design hazardous technologies and who tend to benefit more from them and feel more in control of their lives, see the world as less risky says Slovic. People in a more vulnerable position, socially and economically, see the world as more risky.”

Psychologists are beginning to uncover differences in how Chinese and Americans make decisions.

When it comes to making a decision, most people in a recent survey predicted that Americans, as opposed to the peoples of Asia, would be greater risk takers.

But psychologists who study cultural differences in judgment and decision-making report just the opposite. People in China willingly invest in financial deals that people in the United States deem too risky, finds Ohio State’s **Elke Weber**, PhD, and her University of Chicago colleague **Christopher Hsee**, PhD. And many Asians are more confident in their judgments, says University of Michigan’s **Frank Yates**, PhD.

As the researchers piece together theories of why these cultural differences exist, they hope their work will not only help shape general models of decision-making, but also help international teams - whether business, political or even research teams - work better together.

The ‘Cushion Hypothesis’

When Weber and her colleagues discovered that people in China

were willing to make riskier financial decisions than people in the United States, one of the questions they began to ask was whether this meant, as basic economic theories would predict, that the Chinese are less averse to risk than Americans. Do they weigh the expected gain from the investment as more important than the risk of loss? Or could it mean, as Weber and her colleagues have indeed found, that the Chinese perceive the same risks to be smaller than Americans do.

In a recent study published in *Management Science* (Vol. 44, No. 9, p. 1205-1217), for example, Weber and Hsee asked people in the United States, China, Germany and Poland how willing they’d be to invest in a set of financial options, and measured how risky they perceived those options to be. As other studies have found, the Chinese thought the risks were the lowest and were willing to invest the most money, while the Americans were the complete opposite. The other two countries landed in the middle.

When the researchers then controlled for differences in how the cultures perceive risk, they found that the Chinese and the Americans were willing to tolerate the same amount of risk, but that the Chinese simply perceived the financial options as less risky than did the Americans.

Why? Weber and her colleagues propose the “cushion hypothesis,” which suggests people in socially collectivist cultures, such as China, can afford greater financial risks because their social networks will cushion them against catastrophic financial falls.

“There’s no difference in how much (people in different cultures) enjoy uncertainty,” says Weber. “The Chinese perceive the risks as smaller because they’re protected.”

Yates’s theory is that people in

countries such as China think about problems differently than do people in Japan and the United States. In particular, they hold special respect for history. So instead of personally reasoning through each problem anew, people in China may rely more heavily on what they can recall about facts and precedents established with similar problems in the past.

Yates and his colleagues, including **Ju-Whei Lee**, PhD, at Chung Yuan University in Taiwan, have found preliminary support for this view. They examined how people from different countries reason through answers to general knowledge questions, such as "For which is the gestation period longer, chimpanzees or humans?"

Before study participants answered the question, they had to list the pros and cons of each of the two answers. For example, a "pro" to answering "humans" might be that chimpanzees are smaller and less advanced than humans; and a "con" might be that you remember reading somewhere that how advanced a species is doesn't predict gestation.

Chinese participants listed cons to the answer they eventually chose only 24 percent of the time. In contrast, the Japanese and U.S. participants came up with arguments contrary to their final answers 48 percent and 43 percent of the time, respectively.

"At a very straightforward level, the Chinese literally didn't see why their choices might be wrong," says Yates. "It was exactly the opposite with the Japanese, who are the least overconfident and generate the most contrary arguments."

It's unclear why the Japanese differ so strongly from people in other Asian countries, says Yates. But some researchers hypothesize that the tendency toward a more

argumentative problem solving style might be a relatively recent phenomenon - perhaps based on the popularity in 1930s Japan of philosopher John Dewey, who emphasized a style of education that relied on learning-by-doing and the scientific method.

Although work on cultural differences may be more interesting from a theoretical than a practical perspective, both Yates and Weber expect their work to eventually inform business people who work on international teams.

A Cognitive Phenomenon

The Chinese not only perceive risks as less risky, but they're also more confident in their judgments than Americans, finds Michigan's Yates. He found that most people surveyed overestimated how accurate they were when asked a list of general knowledge questions - but people in many Asian countries, including Hong Kong, mainland China and India, were even more overconfident than people in the United States. And the trend extends beyond answers for general knowledge questions.

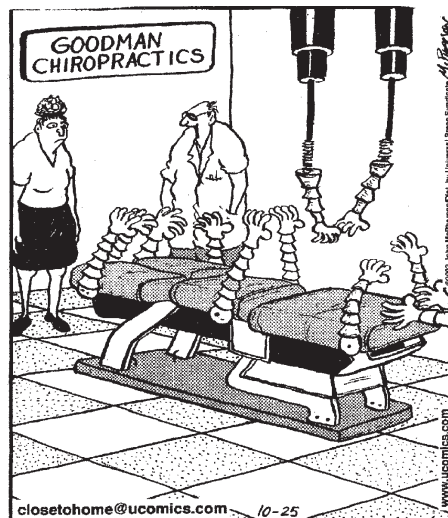
A study by Yates and his colleagues, published in the journal *Organizational Behavior & Human Decision Processes* (Vol; 7, No. 2, p. 89-117), found the same trend when people in Taiwan, Japan and the United States were asked to diagnose fictional diseases and then to report their confidence in their diagnoses. And Chinese psychologist **Zhang Bingxun**, PhD, has also found evidence of extreme overconfidence among Chinese economic forecasters. Interestingly to Yates, the responses of people in Japan look more like those of Americans

than they do those of other Asians.

"We had a notion that the phenomenon must be caused by something about Asian cultures more generally," says Yates. "But this finding made it puzzling."

Just as puzzling were standard theories suggesting that ego underlies overconfidence. If that were the case, more ego-driven cultures such as the United States should be more overconfident than more modest cultures such as China and Japan, says Yates. Indeed, when he and his colleagues examined overconfidence on answers to more ego-laden questions - for example, asking students how many of their peers have better math skills than they do - people in the United States were the most overconfident in their standing, Chinese were intermediate and Japanese were among the least overconfident.

"The process underlying general knowledge overconfidence does not rest on ego," says Yates. "Instead, we're dealing with a cognitive phenomenon."



"Good news, Mrs. Huffleman! You get to be the first patient to try out our new automated adjustment table."

Executive Trivia Question...

Sylvan N. Goldman, of Standard Food Markets and Humpty Dumpty Stores developed what supermarket convenience?

Some Might Remember When

From: Bill Billica

Animal Whys?

by Jocelyn Little

- When earthworms are plentiful, moles bite their heads off and store them underground. If they forget where they put them, the worms will grow new heads and worm away.

- The web-throwing spider of South Africa disguises itself as a tree bud by day. At night, it weaves a rubbery web the size of a postage stamp between its legs and waits for prey to blunder by. When it spots a likely victim, it flings out the web so that it expands to six times its original size and nets the morsel, like a gladiator in ancient Rome.

- The renowned horse trainer Henry Blake described how a poacher was stopped by a police officer, who accused him of using his dog to catch rabbits. The poacher denied this, and took the officer to a field full of rabbits. Then the poacher said, "Go on, boy, catch one," and the dog stood and looked at him with a puzzled expression. After a few minutes of this, the officer gave up and went away disgusted. Then the poacher said to his dog, "Get to heel," and the dog shot out and caught a rabbit.

Basically we were in fear for our lives but it wasn't because of drive-by shootings, drugs, gangs, etc. Our parents and grandparents were a much bigger threat! But we survived because their love was greater than the threat.

Send this on to someone who can still remember Nancy Drew, the Hardy Boys, Laurel and Hardy, Howdy Dowdy and the Peanut Gallery, the Lone Ranger, The Shadow Knows, Nellie Bell, Roy and Dale, Trigger and Buttermilk.

Smmers were filled with bike rides, baseball games, Hula Hoops, bowling and visits to the pool, and eating Kool-Aid powder with sugar.

And remember that the perfect age is somewhere between old enough to know better and too young to care.

How many of these do you remember?

- Candy cigarettes.
- Wax Coke-shaped bottles with colored sugar water inside.
- Pop machines that dispensed glass bottles.
- Coffee shops with tableside jukeboxes.

- Blackjack gum.
- Clove and Teaberry chewing gum.
- Home milk delivery in glass bottles with cardboard stoppers.
- Newsreels before the movie.
- P.F. Fliers.
- Telephone numbers with a word prefix...(Raymond 4-601).
- Party lines.
- Peashooters.
- Howdy Dowdy.
- 45 RPM records.
- Green Stamps.
- Hi-Fi's.
- Metal ice cubes trays with levers.
- Mimeograph paper.
- Roller-skate keys.
- Cork pop guns.
- Drive-ins.
- Studebakers.
- Tinkertoys & Erector Sets.
- The Fort Apache Play Set.
- Lincoln Logs.
- 5 cent packs of baseball cards - with that awful pink slab of bubble gum.

Thought To Ponder...

Your biggest competitor is your own view of your future.

Jim Taylor

"The Visionary's Handbook"

Executive Trivia Answer...

The shopping cart.