THE FIRST STEP

ASK

How the Right Questions Lead to the Most Novel Answers

> The most serious mistakes are not being made as a result of wrong answers. The truly dangerous thing is asking the wrong question.
>
> **Peter Drucker, management guru**

In 1983 Howard Schultz was working as the head of marketing for Starbucks, a small Seattle coffee bean company. In addition to roasting their own coffee beans, the four Starbucks stores sold high-end coffeemakers, bean grinders, and other brewing supplies. In spring 1983 the company sent Schultz to Italy to attend an international housewares show, to find new, cutting-edge coffee equipment it could sell in its stores.

Walking from his Milan hotel to the convention center, Schultz passed an espresso bar. He'd never seen one before, so he went in to look around. He found a classy environment, with opera music playing in the background. But although it was classy, it nonetheless felt comfortable; the barista—the sole employee in the store, the person operating the espresso machine—knew most of the customers by name, and chatted with them as they stood at the bar drinking their espresso. Schultz was fascinated. He spent the rest of his visit checking out other espresso bars all around Milan. He discovered that some of them were upscale and some were working class, but they all seemed

to be like community centers—places where neighbors would gather to relax.

In one espresso bar, he overheard a customer order a *caffé latte*; he'd never heard of it, so he decided to order one too. He watched as the barista poured a shot of espresso, steamed some milk, and topped it off with foam. After one taste, Schultz thought to himself, "This is the perfect drink. No one in America knows about this. I've got to take it back with me."

Schultz flew back from Milan to Seattle with a compelling creative challenge: "How can I recreate the Italian espresso bar in the United States?" Starbucks's three owners rejected his idea; they were happy with their successful retail business. They had no interest in turning their stores into restaurants or coffee shops. But they agreed to provide Schultz with seed money to start his own coffee shop, and they agreed to supply Schultz with their coffee beans.

Schultz left Starbucks in 1985, and in April 1986 he opened his first store, in downtown Seattle's busy business district. Going all out with his Italian vision, he called the store Il Giornale. It was truly the answer to his creative challenge: the decor was Italian, the menu had Italian words on it, and opera music was playing in the background. The baristas wore white shirts and bow ties. There were no chairs; you had to drink your coffee standing up.

Although the store was successful—three hundred customers the first day—it was obvious that the Italian model wasn't a good match with the laid-back culture of Seattle. Some people complained about the opera music, others wanted a place to sit, and virtually nobody understood the Italian on the menus. No one could even pronounce the name of the store (Eel Joe-rrnah-leh). So Schultz decided to ask a new question: "How can I create a comfortable, relaxing environment to enjoy great coffee?"

This was a much better question. After Schultz ditched the opera and Italian menus and added more chairs, Il Giornale

started drawing up to one thousand customers each day. Schultz added two more stores. Just over a year after opening, the three Il Giornale stores were on track to make $1.5 million a year. Il Giornale was so successful that in August 1987 Schultz was able to buy out Starbucks, his coffee bean supplier. That gave him an opportunity to get rid of the last Italian feature of his stores: he renamed the Il Giornale stores and called them Starbucks.

The key to Schultz's success was *asking the right question.* Even outstanding creators don't know exactly what the right question is when they start out. But they're very good at paying close attention to cues that will lead them to a better question. Harvard Business School professor Clayton Christensen believes this is the secret of all successful entrepreneurs:

> Research has shown . . . that the vast majority of successful new business ventures abandoned their original business strategies when they began implementing their initial plans and learned what would and would not work in the market. . . Guessing the right strategy at the outset isn't nearly as important to success as . . . a second or third stab at getting it right.

In early 2010 the hottest thing in phone apps was location, location, location. With its built-in GPS feature, your phone could tell you all sorts of useful things, like which friends were nearby and how to find the closest public toilet

> You can tell whether a man is clever by his answers. You can tell whether a man is wise by his questions.
>
> *Mahfouz Naguib, Egyptian novelist and 1988 Nobel Prize winner*

(or the closest Starbucks). Foursquare had just been released for the iPhone a year earlier, and the digerati were "checking in" to let their friends know wherever they happened to be.

A young programmer, Kevin Systrom, wanted a piece of the action. He had worked for Nextstop, Google, and an early

version of Twitter, and he was ready to strike out on his own. Attracted by the success of foursquare, he started with a driving question: "How can I create a great location-sharing app?" The programming took only a few months, and the result was a simple iPhone app that let you check into a location, make plans for future location check-ins, earn points for hanging out with friends, and post pictures. Because he liked fine Kentucky bourbon whiskey, he named the app burbn.

Sad to say, it wasn't a big success. In retrospect, burbn was complicated to use, with a jumble of features that made it confusing. But around this time, a second programmer, Mike Krieger, joined Systrom. These two used a set of analytic tools to figure out what their customers were doing with burbn. Sure enough, they weren't "checking in" anywhere. But they were posting and sharing photos like crazy! Systrom and Krieger decided to ditch burbn completely and start with a new question: "How can we create a simple photo-sharing app?"

They began by studying all of the popular photography apps, and they quickly homed in on two main competitors. Hipstamatic was cool and had great filters, but it was hard to share your photos. Facebook was the king of social networking, but its iPhone app didn't have a great photo-sharing feature. Krieger and Systrom saw an opportunity to slip in between Hipstamatic and Facebook by developing an easy-to-use app that made social photo sharing simple. They chopped everything out of burbn except the photo, comment, and "like" features.

It took months of experimentation and prototyping to get everything just right. One of their early versions was called Scotch (Systrom liked scotch whisky, too) but it was slow and filled with bugs, and you couldn't use filters on your pictures. These various zigs and zags convinced them that the key to success was to make the app super easy. In their final version, you could post a photo in three clicks.

They renamed the app Instagram and launched it on October 6, 2010. On the first day, twenty-five thousand users signed up.

They hit one million users in three months. Taking an idea from Twitter, they made every photo public by default. (When the pop sensation Justin Bieber joined, thousands of girls responded to every photo he posted, causing a huge spike in Instagram activity.) By April 12, 2012, when Facebook purchased Instagram for $1 billion, it had been installed on about 10 percent of all iPhones.

When Systrom built burbn, he was driven by the question, "How can I create a great location-sharing app?" It turned out to be the wrong question. Instagram succeeded because Systrom and Krieger were willing to dive deeper into this first step, ask. They looked closely at the failure of burbn, and they used that experience to figure out their next step: they found out what their users were doing (photo sharing); they studied the existing competition (Hipstamatic and Facebook); and they came up with a new question, "How can we create a simple photo-sharing app?" The answer to that new question led to thirty million users and $1 billion. In Silicon Valley today, this kind of shift in direction is called a "pivot." I call it a zig zag.

Back in the 1970s many psychologists argued that creativity was just another name for problem solving. We now know they were wrong, because most successful creativity comes through the process that led to Instagram and Starbucks: you begin without yet knowing what the real problem is. The parameters aren't clearly specified, the goal isn't clear, and you don't even know what it would look like if you did solve the problem. It's not obvious how to apply your past experience solving other problems. And there are likely to be many different ways to approach a solution.

These grope-in-the-dark situations are the times you need creativity the most. And that's why successful creativity always starts with asking.

It's easy to see how business innovation is propelled by formulating the right question, staying open to new cues, and focusing on the right problem. But it turns out the same is true of

world-class scientific creativity. "The formulation of a problem is often more essential than its solution," Albert Einstein declared. "To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advances in science."

Einstein loved metaphor. "For the detective the crime is given," he concluded. "The scientist must commit his own crime as well as carry out the investigation."

If the right "crime"—the right puzzle or question—is crucial for business and scientific breakthroughs, what about breakthroughs in art or poetry or music? A great painting doesn't emerge from posing a good question—does it?

The pioneering creativity researcher Mihaly Csikszentmihalyi (Chik-sent-mee-hi), who was one of my mentors at the University of Chicago, decided to answer *that* question. He and a team of fellow psychologists from the University of Chicago spent a year at the School of the Art Institute of Chicago, one of the top art schools in the United States. "How do creative works come into being?" they wanted to know. They set up an "experimental studio" in which they positioned two tables. One was empty, the other laden with a variety of objects, including a bunch of grapes, a steel gearshift, a velvet hat, a brass horn, an antique book, and a glass prism. They then recruited thirty-one student artists and instructed them to choose several items, position them any way they liked on the empty table, and draw the arrangement.

After observing the artists, Csikszentmihalyi was able to identify two distinct artistic approaches. One group took only a few minutes to select and pose the objects. They spent another couple of minutes sketching an overall composition and the rest of their time refining, shading, and adding details to the composition. Their approach was to formulate a visual problem quickly and then invest their effort in solving that problem.

The second group could not have been more different. These artists spent five or ten minutes examining the objects, turning

them around to view them from all angles. After they made their choices, they often changed their mind, went back to the table, and replaced one object with another. They drew the arrangement for twenty or thirty minutes and then changed their mind again, rearranged the objects, and erased and completely redrew their sketch. After up to an hour like this, students in this group settled on an idea and finished the drawing in five or ten minutes. Unlike the first group—which spent most of the time *solving* a visual problem—this group was *searching* for a visual problem. The research team called this a "problem-finding" creative style.

Which artists' work was more creative: that of the problem solvers or that of the problem

Exceptional creators ask questions no one has thought of before.

finders? Csikszentmihalyi asked a team of five Art Institute professors to rate the creativity of each drawing. With few exceptions, the problem finders' drawings were judged far more creative than the problem solvers'—even though their exploratory process left them much less time to devote to the final image, which was all the judges (who knew nothing of the process involved) were evaluating.

The most creative artists were those who focused on asking the right question.

Six years after the students graduated, Csikszentmihalyi tracked them down to find out who had the most successful careers and who were most respected by art critics. About half of the students he'd observed had stopped doing art altogether. Another quarter were recognized as somewhat successful artists. The most successful of the students, 29 percent of them, had become well known in the art world, with work in leading New York galleries and even in the permanent collections of famous museums. And these successful artists were by and large the problem finders back when they were in art school. They were the artists who focused on asking the right question.

The Practices

Creativity starts with a penetrating research question, a startling vision for a new work of art, an urgent business challenge, a predicament in your personal life. Mastering the discipline of asking means you're always looking for good problems, always seeking new inspiration. You know where you're going, and yet you're receptive to questions that emerge unexpectedly.

> Judge a man by his questions rather than his answers.
>
> *Pierre-Marc-Gaston de Lévis, duke of Lévis (1764–1830)*

The three practices in this chapter—Find the Question, Search the Space, and Transform the Problem—train you to master this critical first step. They help you ask the kinds of questions that lead to successful creativity. Exceptional creators don't just solve easy, familiar problems, such as "How can we make a smaller, cheaper cell phone?" Exceptional creators ask questions no one has thought of before. Like Csikszentmihalyi's successful artists, they are problem finders, not simply problem solvers. These practices will take you from asking yourself familiar and obvious questions like "How can I get a bigger raise?" to challenging yourself with questions like "What alternate sources of income can I identify?" or "How can I cut my monthly expenses without giving up what matters to me?" or "Do I have skills I'm not taking advantage of?"

The First Practice of Asking: Find the Question

You're set up to fail if you spend all your time chasing the answer to the wrong question. Had Kevin Systrom and Mike Krieger doggedly continued to refine burbn, their location check-in app, they would have missed the opportunity to deliver a great photo-sharing app. Had Howard Schultz stuck to selling coffee beans and coffeemakers, we wouldn't be starting our day by asking

a guy with an interesting tattoo to fix us a triple, skinny, venti, Pike's Place Roast mocha latte with a shot of peppermint but no whipped cream, poured macchiato style, with espresso in the foam.

How do you find the right question? The techniques of this first practice help you generate a *lot* of good questions, some of which will lead you to surprising versions of the problem. Interestingly, research has shown that these surprising versions are the ones most likely to lead to creativity. Problem finding requires you to loosen up, like a jazz musician or an improv actor, and figure out what you're going to create. It's not an agenda-driven process; you're not handed the problem and told to follow a certain procedure to solve it. You're creating as you go.

Try Ten Questions

Write down ten different formulations of your problem, all in one sitting. Try to make them as different as possible from each other. It's important to do this quickly, without taking a break, because working fast will force your unconscious mind to generate an odder, more intriguing mix of ideas. If you spend too much time thinking about your list, your conscious mind will start to censor the ideas, and you'll get only ideas that are "sensible"—rather than surprising and original.

I applied this method to a classic problem: "How can I build a better mousetrap?" Here are my questions:

1. How do I get the mice out of my house?
2. How do I catch mice?
3. Why are there mice in my house in the first place?
4. How did they get in?
5. What is the best way to kill a mouse?
6. How can I keep the mice from getting inside in the first place?

7. Why do mice exist in the first place, and how can we force them into extinction?

8. What does a mouse want? How can I make my backyard more attractive than the inside of my house?

9. How can we persuade all the mice to leave our neighborhood?

10. What if mice were so expensive that bounty hunters roamed the neighborhood looking for them? How can I raise the price of mice?

These versions of the problem are far from perfect—I really did make them up in two minutes—but that's okay. As you'll see, I'm on my way to some unexpected solutions.

Think of at least ten questions about cardboard boxes. I'll get you started with the first question:

1. What did people use before cardboard boxes were invented?
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Whenever you try this technique, you'll find that your questions group into clusters around common themes. Look for the two

or three most promising themes. From my list, I'd pick—tempting as extinction might be—catching mice, keeping them out of the house by sealing it, and making the backyard more attractive to them.

It's likely that one of the ten new versions of your problem will turn out to be a better question than your original. For me, it's pretty obvious that the best approach is to keep the mice out of the house. So now I have a brand-new problem to tackle, a far cry from my original challenge of building a better mousetrap.

Find the Bug

Computer programmers call annoying program errors "bugs"; when they're "debugging," they're actually finding and fixing errors. Debugging can be a boost to creativity—and a good way to come up with questions—because tiny annoyances are often symptoms of bigger problems. You can practice debugging by thinking of a product you use every day: your refrigerator, your toothbrush, your car keys, even your bathroom toilet. Now, write down every disadvantage you can think of. The product's flaws don't all have to make sense. Be unreasonable, be unfair, go on the attack. My toilet occasionally overflows; the seat is always up or down at the wrong time; it's cold in winter; the rim is awkward to clean; sitting there is boring; the flush is so loud it's embarrassing. Once you have a list, think of ways to get rid of the bugs, to make the product more efficient or more pleasant to use.

If I were to choose a mousetrap as my everyday item, I'd have no trouble coming up with bugs: the traps are hard to set; they snap on your fingers; the mice escape with the cheese or run around the house dragging the trap when it snaps on their tail. The inventors of the glue trap actually did invent a "better mousetrap" by banishing these bugs one by one. Their trap—just a plastic tray with a thin layer of powerful glue—has no painful spring mechanism and no need for cheese, and the mice can never escape once they're stuck in the powerful glue.

Still, I can't stand watching the little guys struggle, glued to that tray. So I found an ingenious *humane* mousetrap, a little tunnel, baited with generous smears of peanut butter, that tilts down and closes the minute a mouse runs inside. Once the mouse is inside, I just carry the trap to the backyard and release the mouse back into nature. Then my redefined, important problem kicks in: keeping that mouse from getting back inside!

A friend of mine tried debugging her bathroom cabinet. She was tired of having to knock down vitamin bottles and shove aside toothpaste tubes to see what was in the back of the cabinet, so she put in a lazy Susan she could spin. She was annoyed by the chore of sticking down contact paper or watching shelf paper crumple, and the woven plastic mesh she'd tried instead kept rucking up instead of laying flat. So she found a thick, soft, easy-to-clean epoxy paint that protected the shelves once and for all. Tiny changes, but she noticed them daily, and instead of that brief flash of annoyance, she enjoyed a few seconds of satisfaction that inspired her to start debugging the rest of her life.

She also told a friend about debugging little annoyances, and he went home and glared at the racks holding his collection of antique long guns. The guns' barrels slid back and forth in the top part of the rack, which risked scratching and jostling them. He debugged by inserting a flat magnet at the back of each slot, and magnets now hold the guns securely in place.

Here's a bigger debugging success story, one that not only generated a good question but also led to a prizewinning solution. Corne is a Belgian company that manufactures paper used for packaging food. In the United States, most supermarkets sell meat and cheese prepackaged, but in Europe it's still common to select your pound of bacon or wedge of Irish cheddar and then have it wrapped. Corne was starting its annual exercise to look for product improvements. Its top executives asked the creativity firm New Shoes Today to help.

The New Shoes consultants used the technique Find the Bug to generate ideas to make the wrapping paper more appealing. One

person in the group began by saying, "It's boring: the sheets are too square shaped." That didn't lead anywhere; after all, wrapping paper doesn't need to be exciting. But with that idea still on the table, another person complained: "When I get home from shopping, I have all of these wrapped packages and I can't tell what's in them. I end up opening the cheese and the chicken before I finally find the salami." Bingo! Instead of "How can we make this product more appealing?" the new question was: "How can we know what's in the package without opening it?" And once they asked that question, the creative solution came pretty quickly: put a small window in the paper to reveal what's inside. This new product was released as the Duxon brand, and it was the first wrapping paper to have a window. Corne won a Packaging Oscar award for the idea. (Yes, there are Oscars for the packaging industry!)

It's doubtful that the consulting firm would have reached its creative solution without *asking the right question*.

Steve Jobs, Expert Bug Finder

Some of the world's most famous creators are particularly good at swatting away little annoying bugs that reduce the quality of our experience. The late Steve Jobs, founder and CEO of Apple, was famous for his focus on the bugs that detracted from a user's experience of a product. This sort of focus might seem too picky and narrow to result in creativity, but Jobs had one of the most creative business minds in history. It's not because he invented radically new products; all of Apple's products were new versions of products that already existed. The Macintosh computer was a variant of one already developed at Xerox; the iPod was not even the second or third MP3 player on the market. But Jobs was brilliant at finding the bugs in the user experience and removing them. The first Mac's menus, windows, and mouse were easy to use, so you didn't have to be an MIT graduate to navigate

the computer; the first iMac was designed to remove all of the bugs that made it difficult to connect to the Internet; and with the iPhone, Jobs famously insisted on glass instead of plastic, so his keys wouldn't scratch the screen.

Reinterpret

I began this chapter with two success stories, Starbucks and Instagram. What they have in common is that a product was created, and then was modified and reinterpreted as a very different product. If only Systrom could have jumped straight to Instagram without hitting the dead end of the burbn app! But that's not the way creativity usually works. Before you can arrive at the right question, you often have to go ahead and make something, then reinterpret it as something very different based on what happened when you made it. For example, let's say you're preparing a fancy dessert, a whipped cream cake coated with strawberries. You figure out a way to carefully place the strawberries on the cake, using a thin wooden skewer to get each one nestled close to the others. Later, you're putting batteries in your son's toy, and you drop one of the screws down inside the dishwasher. Remembering your strawberry skewer technique, you take out the gum you've been chewing, stick it on the end of a skewer, and reach deep into the dishwasher and retrieve the screw by sticking your gum to it. By changing the context, you've repurposed your skewer idea and created a practical new device.

Here's a technique to help you get better at reinterpreting what you've created. I've done this exercise in workshops with thousands of people, and I've learned that anyone can do it—no artistic or technical ability is required.

Start by selecting three numbers at random, between one and fifteen. Then choose a number between one and eight. Write all four numbers on a sheet of paper. Use the first three numbers to identify three shapes from the numbered display shown here:
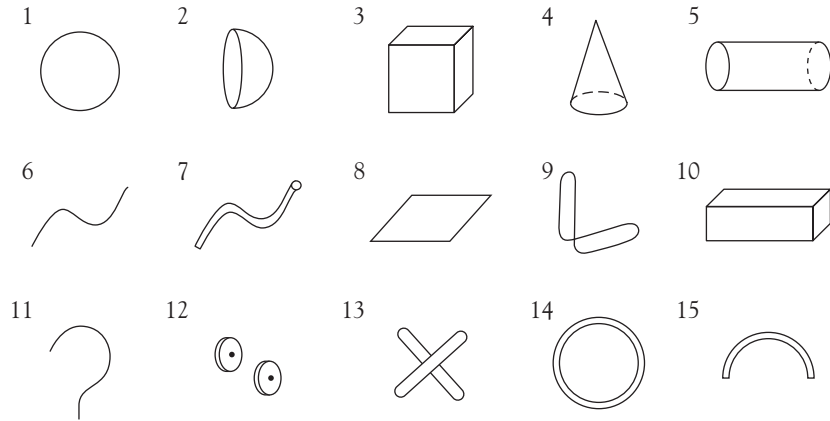
Figure reprinted by permission of L. Erlbaum Associates

Now take one minute to assemble your three shapes into an interesting, potentially useful object, and sketch it. You can combine the parts in any way, and you can vary their size. You can put some of the parts inside of others, if you like, and the parts can be made of any material. The only rule is that you can't deform any of the shapes (except for the wire and the tube, numbers six and seven, which can be bent and stretched any way you want), and you have to use all three parts in your design.

Once you've finished your sketch, take the fourth number— the one between one and eight—and pick a category from the following list:

1. Furniture
2. Personal items
3. Transportation
4. Scientific instruments
5. Appliances
6. Tools and utensils
7. Weapons
8. Toys and games

Next, take your design and rethink it, so it fits the category you chose. Don't redraw the design, just rethink your object's function. It won't be easy, but force yourself to find a use for your object within that category.

In one of my creativity seminars, one woman chose four, seven, and thirteen. She put the cone with the open end up, and she put the tube under it, extending down to the X-cross as a base. It was a flower vase, and she had even penciled in lines representing the flower stalks. She groaned when she realized she'd chosen the weapons category, but she gamely rethought her flower vase as a poison sprayer: you fill the cone with poison and swing it at your opponents, spraying poison over a large area.

The point to this silliness? Researchers at the University of Texas studied this exercise closely. They learned that when people are forced to change the context for what they've designed, they wind up being much more creative than those who knew their category ahead of time and designed an object to match. A panel of independent judges rated the creativity of each invention, and they found, consistently, that being required to reinterpret your initial sketch results in a more creative invention. Why? Because you're forced out of your first assumptions, and you have no choice but to look for surprising new connections and perspectives. Whether you're a programmer working on Instagram and seeking the creative pot of gold or a high school teacher struggling to expand your professional skills, reinterpreting what you've already done can be a powerful way to move forward.

Rise to the Occasion

You don't have to reinvent the wheel (or coffee or photo sharing) to arrive at good questions. In fact, throughout history the same questions have kept coming up. The CIA developed a checklist of good questions that they call Phoenix. Here is my condensed (and paraphrased) version of the CIA list:

1. Why does this problem need to be solved?
2. What benefits come from solving the problem?

3. What don't you understand yet?

4. What information do you have? Is it sufficient? Is it contradictory?

5. Put a boundary around the problem—be clear about what is *not* the problem.

6. What are the various parts of the problem? Identify and describe the relationships among the parts.

7. What cannot be changed about this problem? (Don't assume something can't be changed when in fact it can.)

8. Think of another case of this same problem, but perhaps in a slightly different form, or in a different area altogether. Can you use the same solution, analogically? If not, can you use a component of the solution, or the method that led to that solution?

Here's what I came up with when, at the risk of overkill, I applied the CIA's method to my mice:

> **Each time you ask a question that leads to a creative solution, write it down so you can use it again later.**

1. *Why does this problem need to be solved?* Because mice are unsanitary, and they're in the kitchen cabinets busting into my wife's flour and sugar and my Honey Nut Cheerios.

2. *What benefits come from solving the problem?* If I get rid of the mice, my family's food will be safe from germs and unsightly mouse droppings.

3. *What don't I understand yet?* I don't understand how these critters are getting into the house.

4. *What information do I have?* I know the mice are in the house because I find food bags torn open, and I find mouse droppings.

5. *Put a boundary around the problem.* I can't destroy the house; I can't endanger my family's safety by poisoning the food in our pantry to kill the mice.

6. *What are the various parts of the problem?* Keeping the mice out; killing the mice if they get in; protecting the food so it's harder for the mice to get to it.

7. *What things cannot be changed about this problem?* I absolutely cannot tolerate a mouse in the house (even if it's *not* eating my cereal or shredding my soap).

8. *Think of another case of this same problem.* Years ago I had ants streaming into my kitchen. I couldn't seal up all the gaps in my house because the ants were too small and there were too many tiny ways to get in. The solution was to place poison on the anthills outside the house.

The original Phoenix list features more than forty questions, including "How will you know when you have succeeded?" and "Can you use this problem to solve some other problems?"

You can personalize and extend the list by formulating your own good questions. Each time you ask a question that leads to a creative solution, write it down so you can use it again later. The first question I added was "Can I think of someone else who might have already solved a similar problem, even if the context was very different?"

The Second Practice of Asking: Search the Space

Sometimes you can't move forward because you're focused on one tiny part of the territory and the creative solution is off in a different area. Let's say you spent all of your time thinking about how to build a better mousetrap. You were exploring only one small corner in the space of potential solutions. If the most creative solution is to figure out how to keep the mice from entering your house, that's a completely different area of the solution space, and you've been ignoring it.

The techniques in this second practice are designed to help you make sure you don't leave any part of the space unexamined.

Break It Down

This ingenious three-part technique helps you exhaust all possible ways to think about a problem.

First, break your problem down into as many *properties* as you can—at least four or five. Include even the most obvious, taken-for-granted ones. Here's what I thought of for a new mousetrap: material, location, method for attracting the mouse, and method for catching the mouse. Put the properties at the top of four columns, as in the chart included here.

Second, come up with *possibilities* for each property, and list them in a column under the property. It often helps to invent improbable and implausible possibilities, as we'll see in a minute.

Third, think of all of the possible *combinations* of possibilities. The power of this technique is that it gives you an enormous number of potential solutions—in the chart, with five possibilities for each of the four properties, I have 625 possible combinations! Discard the ones that are impossible to build or aren't useful, and then seriously consider the remaining combinations.

Material	*Location*	*Attracting*	*Catching*
Wood	Floor	Cheese	Metal spring
Plastic	Wall	Sexy mouse	Glue
Metal	Outside house	Beer	Trap door
Paper	Ceiling	Mouse cocaine	Teleportation
Fishing Net	Inside the wall	Mouse television	Masking tape

I've circled four possibilities in my chart. What would this combination look like? A sexy female mouse sits in a plastic frame outside of the house, and when the male mouse comes up to hit on her, he gets stuck in masking tape? A crazy idea, but even crazy ideas can lead to good ones. My "sexy mouse" example might generate the better idea of attracting mice with mouse pheromones, the chemicals that animals use to signal they're
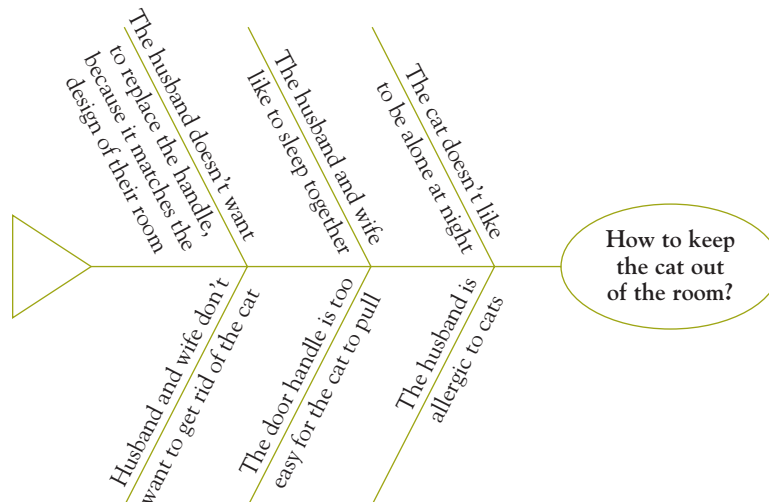
interested in sex. The males race into the trap, believing there's a sexy female waiting inside. Now *that* might really work!

The properties shouldn't be surface features, like color and size, that don't really contribute to the solution. Instead, choose deep, structural properties, like method for attracting and method for catching. The key to success with this technique is identifying the right set of properties.

Draw a Fishbone

When you're stumped, it may be because you haven't identified the true *cause* of the problem. The "fishbone" technique—so-called because the finished diagram looks like the skeleton of a fish—helps you detect all the possible causes of your problem. Start by writing your problem on the right side of a piece of paper. Draw a circle around it; this will be the fish's head. Then draw a straight line from the circle to the left, and draw "bone" lines above and below this central line, at forty-five-degree angles. On each of the bones, write one possible cause of the problem. The simplest, most obvious causes should be near the head, and the more complicated ones should be near the tail.

The husband doesn't want to replace the handle, because it matches the design of their room

The husband and wife like to sleep together

The cat doesn't like to be alone at night

Husband and wife don't want to get rid of the cat

The door handle is too easy for the cat to pull

The husband is allergic to cats

**How to keep the cat out of the room?**

In one of my seminars, a woman talked about a problem her husband was having: her cat liked to sleep in bed with both of them, but her husband was very allergic to cats. They tried to keep the bedroom door closed, but the cat figured out how to reach up and pull down on the lever-style door handles they were using.

In the diagram included here, I've written down possible causes of this problem. Now it's easy for the couple to consider each cause in turn, and see which causes are most important, which can be easily dealt with, and which require some extra creativity.

Map Your Idea

An "idea map" is another graphic way to explore the entire space of potential solutions—and to use your mind's visual abilities to identify the real source of your problem. Here is an idea map I created for the husband's cat allergy problem:
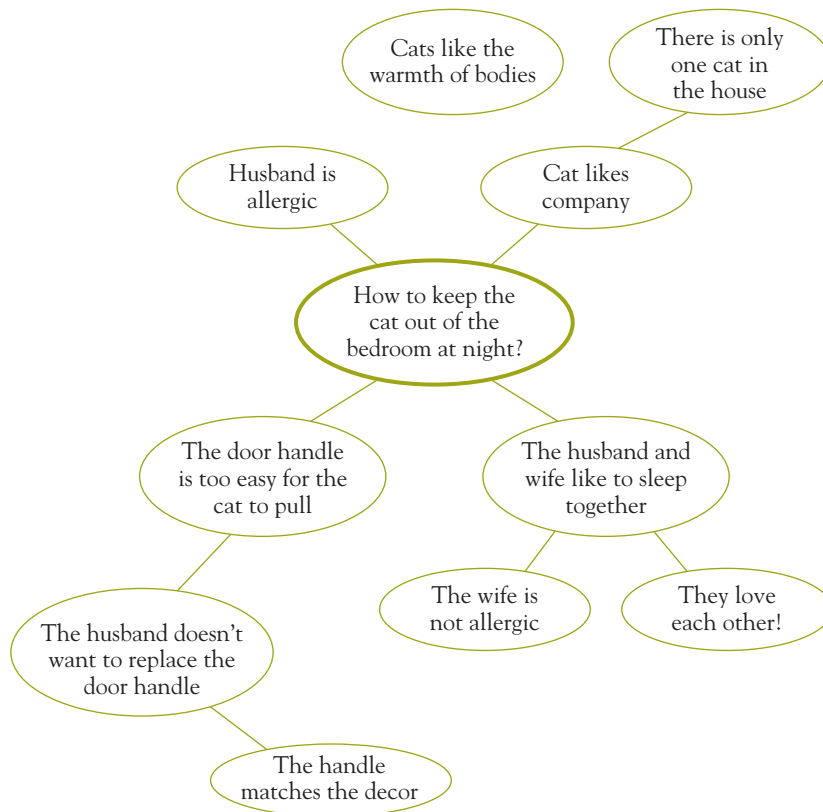
Write your creative challenge in the center of a piece of paper and draw a circle around it. It's best to have a large piece of paper, or even a flip chart or whiteboard—especially if you do this in a group. Free-associate related ideas and causes, putting each one in its own circle near the center and drawing a line linking each new idea to the original problem at the center.

You can do idea mapping on your computer, too. Try the open-source FreeMind software, available at freemind.sourceforge.net. Or use MindMeister for its Web client that supports live, collaborative idea-mapping sessions.

Other idea-mapping software includes Mindjet; MindGenius; IdeaFisher; and Visual Idea Pro. For your iPhone or iPad, try iThoughts or iMindMap.

Challenge Your Assumptions

List all the assumptions you have about your problem, including the reasons you're absolutely sure it can't be changed.

A business executive who attended one of my creativity workshops started with a question that was nagging at him: "My wife's car is old and breaking down. Do I fix it or buy a new car?" Neither alternative thrilled him, so he'd been stuck for weeks. Fixing the car would cost almost as much as replacing it. But a new car's value would drop the minute his wife drove it off the lot, and deep down, she loathed cars. Traffic exasperated her; she was more prone to road rage than she'd admit; and the cost of gasoline was, pun intended, driving her crazy.

When my student challenged his assumptions, he rewrote his question again and again: Could his wife get a job within walking distance of their home? Could he? Could they share a car and take turns working from home? Could she bike or take public transportation? Could they move closer to public transportation? Luckily, because of the nature of their work, quite a few of those possibilities were feasible. They were a little more dramatic than his original, predictable question, but they were also a lot more fun to contemplate, and closer to his wife's values.

Marsha, a computer programmer, compiled her own list of assumptions—a rather bleak one, at the outset. She told me that not only was she stuck in a rut at her job but also her personal life was limited and unsatisfying. Here's what she said about ...

- *Her career*: "Without an MBA I'll never get promoted to management."
- *Her company*: "This business is pretty stable, and our customer base is loyal."
- *Her family*: "I've always been the one who keeps everything organized."
- *Her friends and relationships*: "Pretty much, I only hang out with people I share hobbies and interests with."

I told Marsha to go through her list, and for each assumption, imagine that she's just discovered it's no longer true. I then asked her to come up with a story about how that state of affairs came to pass.

- ("*Without an MBA . . .*") "I was promoted without an MBA. It happened when I did a stellar job on the next project, and our CEO personally sought me out."
- ("*The business is pretty stable . . .*") "Our customers abandoned us, and our company went bankrupt. It happened when new competition emerged from Asia."
- ("*I've always kept everything organized . . .*") "I have a lot of 'me' time, and my husband and children do a lot more of the work around the house."
- ("*I only hang out with people like me . . .*") "I have a large group of diverse friends, and I learn new things from them every day. I met them when I joined a new church."

The Third Practice of Asking: Transform the Problem

The first two practices, Find the Question and Search the Space, help you generate long lists of problem statements. The third practice dares you to think about your challenge in a completely different way. The techniques are intended to shock you out of your assumptions.

Reverse

In the eighteenth century physicians all over Europe stood by helplessly as four hundred thousand people perished from small-pox *every year*. The odds were pretty good that if you caught smallpox you would die, and the disease was especially brutal for children: 80 percent of children with smallpox died. One-third of all survivors went blind, and most survivors had scars from the skin infections, resulting in what was known as a disfigured or "pockmarked" face. Doctors tried curing it with herbal remedies and special cloths. One seventeenth-century doctor, Dr. Syden-ham, even recommended drinking twelve bottles of beer every day! Nothing worked.

The driving question was: "How can we cure this dread disease, which is killing our citizens?" No answers came until 1796, when the British physician Edward Jenner reversed the question. Noting that the women who milked cows rarely caught smallpox, he asked, "Why do milkmaids not get smallpox?" The answer was that they were immunized by exposure to cowpox, which is relatively harmless. Jenner went on to extract some pus from a milkmaid's cowpox lesion and inject it into an eight-year-old boy, James Phipps. Two months later, he injected young James with pus he'd taken from a fresh smallpox lesion—and James did not get sick. (Phew! Give James a monument.) Jenner named his invention "vaccination" after the Latin word for cow. His enormous contribution was spurred by a simple reversal of the prevailing question—not "How can we prevent smallpox?" but "Why don't milkmaids get smallpox?"

A historic illustration of creativity via reversal comes from the automobile industry. In the early days of the business, one work team would swarm around the car, do their part of the job, then file out as the next work team came in. Factory managers kept asking, "How can I get each work team to the car faster?" Henry Ford turned the question around. "How," he asked, "can I get the car to the work team?" The answer—which gave rise to the assembly line, where the work team stayed in one place as cars were carried to them—forever changed American manufacturing.

Go Back from the Future (BFF)

In searching for creative solutions, most people look forward from the present. Instead, why not visualize your goal, then work backward to your current situation?

One of my students was trying to lose ten pounds. She visualized herself grabbing fruit or fresh veggies whenever stress made her ravenous. That meant the fruit and veggies needed to be close at hand—as close as the cookies she currently kept in her bottom desk drawer. She dreamed up a refrigerated desk drawer, with a rubber-sealed hinged top, that would take the place of the deep file drawer in her desk.

She loved the idea—we all did—but her boss wasn't going to buy her a high-tech, customized, refrigerator-drawered desk. So she remembered a tiny refrigerator that was sitting at home in the garage, waiting for her husband to want icy sodas while he worked on his old Fiat. The Fiat was beyond repair, and the tiny refrigerator fit perfectly in her drawer, its cord running out the back and plugging into an unused outlet.

BFF has far weightier applications, of course. It's been widely used to solve technical problems of all kinds. In the 1980s scientists working on the Jupiter space probe Galileo faced a major challenge—how to create a rocket booster large enough to propel the probe to Jupiter without damaging the delicate cargo bay at launch. The creative solution came via BFF: instead

of focusing on the booster design, they focused on the goal: "We've arrived at Jupiter, and with lower rocket power. How did it happen?" At first, they were stumped. They'd already failed to figure out how to make it happen. And yet, by thinking back from the future, the engineers could speculate about a way it might have happened: perhaps they could have used the gravitational force of Venus to add force to the space probe long after its launch. If they timed the launch exactly right, a relatively small booster rocket would get the probe to Venus's orbit, and the gravitational force of Venus would swing the probe around and give it the extra velocity needed to reach Jupiter.

> You can use idea mapping in combination with BFF. Instead of starting with your problem at the center of the paper, start with your desired end state. What will your life be like after you've found a creative solution?

Launched in 1989, Galileo swung around Venus in 1990 and reached Jupiter on schedule in 1995, after traveling through space for five years. Galileo was an amazing feat of engineering, and BFF played a significant part in Galileo's success.

Pick the Worst Idea

This technique comes from my friends in Chicago's hottest theater scene. At the Improv Institute, the actors ask audience members to shout out "world's worst" prompts for skits. Experienced improv actors get used to hearing "world's worst boss" or "world's worst boyfriend." This technique got picked up by the TV show *Whose Line Is It Anyway?* On one show, host Drew Carey started a scene by suggesting this prompt: "World's worst thing to say on your first day in prison." The first actor's response brought down the house: "Who here loves to crochet?"

Paradoxically, bad ideas, even the "world's worst," can lead you to good ones. Start by listing the absolute worst ideas you can think of. Then try to identify potentially good features of these terrible concepts.

The marketing consultant Andy Stefanovich describes two true cases. At a toy company, he and his team came up with the idea of a "hooker doll." Truly the worst! But when the group talked about it a bit more, they realized that this doll drew on make-believe play that little girls love: dressing up, dancing, and going out on the town. When the laughter settled down, this appalling idea actually gave rise to a doll that was successful. She was given a backstory—the life of a sophisticated woman, with limos, nightclubs, and dance parties. (You can no doubt understand why the toy company wants to remain anonymous!)

At Woolmark—the wool manufacturing trade group—Stefanovich's group was charged with changing the image of wool from something your grandmother wears to a stylish, modern material. They had a small budget and a fixed schedule: the promotion would take place during New York City's high-octane fashion week. One of their "world's worst" ideas was, "Let's run a herd of sheep through Times Square and disrupt traffic." A crazy notion, but once an idea like this gets on the table, it sticks around in your subconscious. So later, when one of the team members spied a typical New York dog walker with ten dogs on ten different leashes, they knew they had found the right question: "What if we put sheep on the ends of those leashes?" And so was born the incredibly successful Sheepwalk ad campaign, in which leggy, high-cheekboned models paraded sheep up Manhattan's elegant Madison Avenue.

Writers often secretly use this technique. "Read the classics, choose fine authors, read good journalism," they tell their students. But when they need to remind

> Try it yourself. Think of the world's worst way to
>
> - Ask for a raise
> - Save for retirement
> - Improve your marriage
>
> Now, do these horrible ideas give you any new insight into the problem?

themselves of the basics, nothing works better than grading beginning student essays that include tons of mistakes, or reading a lousy book and knowing just how they'd do it differently. The worst can be a creative prompt—and a confidence builder.

Stretch and Squeeze

Transform your problem by *stretching* it, to make it a broader, more universal question, or *squeezing* it, to create a narrower, more tightly focused question. These two exercises work because when you're stumped, it's often because you're pondering your problem at the wrong level of abstraction. Stretching makes it more abstract; squeezing makes it more concrete.

Stretch by using the Five Whys technique—keep asking why, up to five times, until you get to a powerful new formulation of the problem:

1. Why don't I have a girlfriend?
   (because I don't meet any women)

2. Why don't I meet any women?
   (because I have a demanding job and I have no spare time)

3. Why is my job so demanding?
   (because I enjoy it and I'm committed to the work)

4. Why am I so committed to my job?
   (because my work is making a real difference in the world)

   You know you're on the right track when the "whys" get you to a new "how" question:

5. How can I stay committed to my job and still have time to socialize more?

Now you've arrived back at a concrete question, but an entirely new one that could actually yield a creative solution. The secret is that the new question, informed by a broadened look at your life and your values, actually gets at the root cause of

your dilemma. The first question turns out to be a symptom, and most likely a temporary one now that you know how to treat it.

You also need to transform your problem when it's too *big* to be solved all at once. A problem like "I'm not happy with my job" is just too sprawling and vague to solve, even for the most creative person on earth. Break it down into smaller problems by listing the reasons you're unhappy about your job:

- My commute is too long.
- The work is boring.
- My boss isn't nice to me.
- My boss wants me to be available 24/7.
- I don't make enough money.
- It's just not fulfilling.

One of these smaller problems might already suggest a solution. If not, maybe you need to take the big problem and

> **If you're stumped, you might be pondering your problem at the wrong level of abstraction.**

squeeze it. Squeezing narrows the problem, reducing the territory you need to explore. Squeeze by asking "who," "what," "where," "when," and "how" questions. Who at your job is present when you feel unhappy? (Maybe there's a personality conflict that's coloring your entire day.) What tasks make you unhappy? (Maybe you just need to ask for more responsibilities, or different ones, or less pressure.) Where are you when you're most unhappy? (Maybe it's only at the morning meeting, because the atmosphere's so competitive and aggressive.) When does this feeling of unhappiness strike you? (Maybe it only hits on Sunday evenings and Monday mornings, and the real problem is that your weekends aren't satisfying, so you dread starting the workweek unrefreshed.) How do you react when you feel unhappy? (Are you

snapping at your coworkers or retreating into a dark mood, thus feeding a vicious cycle?)

You know you're on the right track when *squeezing* gets you to a concrete statement of the problem that's so obviously accurate and specific, you're halfway to a solution already.

The risk with *squeezing*, though, is that you can end up with a question that's so narrow that it contains an invalid assumption. Maybe you squeezed your "Why don't I have a girlfriend?" question until you reached a lot of practical questions about where and how to meet more women. But these "girlfriend" questions have a built-in assumption: if you meet more women, you're more likely to find a girlfriend. Perhaps the problem isn't that you never meet women, though. Perhaps the real problem is that you act shy when you meet a woman, or you don't feel good about yourself, or you're not a lively conversationalist. Make sure to search the space before you squeeze your question.

Onward . .

Ask, the first step in your journey, just might be the most important. You'll find yourself returning to the techniques in this chapter more than those of any of the other chapters because this is where creativity begins.

Then, once you've pinpointed your creative challenge, you need to become a master, an expert in the kinds of knowledge that are related to your challenge. That sounds daunting, but I don't mean you need to master every aspect of every related field. You simply need to know how to find the information you need, hone the skills you require, and keep new inspiration streaming in. The next step is to learn.