

The Creative Process

Have you heard any of these sayings: “Creativity can’t be learned,” “The way to be creative is to ignore traditional ways of doing things,” “It takes a high IQ to be creative,” “Taking drugs enhances a person’s creativity,” or “Creativity is related to mental illness”? They’ve all been around for a long time. But guess what? *They’re all wrong.*

This chapter sets the record straight about creativity. It also details the characteristics of creative people, provides an overview of the creative process, and offers a strategy you can use to develop and apply *your* untapped creative potential.

The human mind, as we have seen, has two phases. It both produces ideas and judges them. These phases are intertwined; that is, we move back and forth between them many times in the course of dealing with a problem, sometimes several times in the span of a few seconds. To study the art of thinking in its most dynamic form would be difficult at best. It is much easier to study each part separately. For this reason, we will focus first on the production of ideas (Chapters 5 through 9) and then turn to the judgment of ideas.*

Although everyone produces and judges ideas, the quality of the effort varies greatly from person to person. One individual produces a single common or shallow idea for each problem or issue and approves it uncritically, whereas another produces an assortment of ideas, some of them original and profound, and examines them critically, refining the best ones to make them even better. The terms *creative thinking* and *critical thinking*, as we will use them throughout the remaining chapters, refer to the latter kind of effort.

*Because it is impossible to separate the two completely, minor elements on judging will be included in our treatment of creativity, and vice versa.

KEY FACTS ABOUT CREATIVITY

Before the mid-1950s, creativity received little scholarly attention. Then one researcher examined more than 121,000 listings of articles recorded in *Psychological Abstracts* during the previous 23 years. He found that only 186 articles—less than two-tenths of one percent of the total—had any direct concern with creativity.¹ Since that finding, interest in creativity has increased considerably, and many books have been published on the subject.² Researchers have examined the lives of creative achievers, probed the creative process, and tested creative performance in every conceivable circumstance and at every age level.

Researchers' efforts have helped deepen our understanding of creativity and overcome the many misconceptions that for so long went unchallenged. You have undoubtedly been exposed to some of these misconceptions and therefore have developed some false impressions about what creativity is and how it works. Replacing those false impressions with facts is an important first step in developing your creative potential. The facts that follow are the most important ones. Some we mentioned briefly in Chapter 1. All are worth returning to and reflecting on from time to time.

“Doing Your Own Thing” Is Not Necessarily a Mark of Creativity

“For many people,” George F. Kneller observes, “being creative seems to imply nothing more than releasing impulses or relaxing tensions. . . . Yet an uninhibited swiveling at the hips is hardly creative dancing, nor is hurling colors at a canvas creative painting.”³ Creativity does involve a willingness to break away from established patterns and try new directions, but it does not mean being different for the sake of being different or as an exercise in self-indulgence. It is as much a mistake to ignore the accumulated knowledge of the past as it is to be limited by it. As Alfred North Whitehead warned, “Fools act on imagination without knowledge; pedants act on knowledge without imagination.”⁴ Being creative means *combining* knowledge and imagination.

Creativity Does Not Require Special Intellectual Talent or a High IQ

The idea that highly creative people have some special intellectual ability lacking in the general population has been widely accepted for centuries. When the IQ test was devised, that idea was given new currency, and anyone who achieved less than a genius-level score (135 and above) was considered to have little or no chance for creative intellectual achievement.

However, when researchers began studying the lives of creative people and comparing IQ test performance with creativity test performance, they made two discoveries. They found that creativity depends not on the possession of special talents, but on the *use* of talents that virtually everyone has but most have never learned to use. In addition, they found that the IQ test was not designed to measure creativity, so a high score is no indication of creative ability, and a low score,

no indication of its absence. In fact, they found that the great majority of creative achievers fell significantly below the genius level.⁵

The Use of Drugs Hinders Creativity

Although many people seem determined to resist this fact, it has long been acknowledged by those who have studied creativity. If liquor and other drugs have been such a boon to original thought, one researcher asks, why hasn't the corner saloon produced more creative achievers? No one, as yet, has answered this question satisfactorily. Nor is anyone likely to. The reason drugs harm creativity, Brewster Ghiselin explains, is that "their action reduces judgment, and the activities they provoke are hallucinatory rather than illuminating." What is needed, he argues, is not artificial stimulation of the mind, but increased control and direction.⁶

The use of drugs and liquor as stimulants is sometimes part of a larger misconception that might be termed the *bohemian mystique*. This misconception is the notion that a dissipated lifestyle somehow casts off intellectual restraints and opens the mind to new ideas. Eliot Dole Hutchinson offers an assessment that most researchers would endorse: "Narrow streets, shabby studios, undisciplined living, and artistic ballyhoo about local color may all have their place in pseudo artistry, but they have little to do with genuine creation. Nor is the necessary creative freedom clearly associated with them at all. Bohemianism squanders its freedom, returns from its hours of dissipation less effective. Creative discipline capitalizes its leisure, returns refreshed, reinvigorated, eager."⁷

Creativity Is an Expression of Mental Health

One common image of the creative person is reinforced by a number of low-budget horror films. That image depicts a wild-eyed mad scientist, shuffling nervously around a laboratory, rubbing hands together evilly and drooling. Many people really believe the image: They view *creative person* and *lunatic* as near synonyms. They are wrong.

In the following passage, Harold H. Anderson summarizes a leading psychological view concerning the relative sanity of creative people. (Endorsers include such respected thinkers as Erich Fromm, Rollo May, Carl Rogers, Abraham Maslow, J. P. Guilford, and Ernest Hilgard.)

The consensus of these authors is that creativity is an expression of a mentally or psychologically healthy person, that creativity is associated with wholeness, unity, honesty, integrity, personal involvement, enthusiasm, high motivation, and action.

There is also agreement that neurosis either accompanies or causes a degraded quality of one's creativity. For neurotic persons and persons with other forms of mental disease [who are, at the same time, creative] such assumptions as the following are offered: that these persons are creative in spite of their disease; that they are producing below the achievements they would show without the disease; that they are on the downgrade, or that they are pseudo creative, that is, they may have brilliant original ideas which, because of the neurosis, they do not communicate.⁸

CHARACTERISTICS OF CREATIVE PEOPLE

Studies of creative achievers have identified a number of characteristics they share.⁹ The following characteristics are among the most prominent.

Creative People Are Dynamic

Unlike most people, creative people do not allow their minds to become passive, accepting, unquestioning. They manage to keep their curiosity burning, or at least to rekindle it. One aspect of this intellectual dynamism is *playfulness*. Like little children with building blocks, creative people love to toy with ideas, arranging them in new combinations, and looking at them from different perspectives. It was such activity that Isaac Newton was referring to when he wrote, “I do not know what I may appear to the world; but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding . . . a smoother pebble or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me.”¹⁰

Einstein was willing to speculate further. He saw such playfulness as “the essential feature in productive thought.”¹¹ But whatever the place of playfulness among the characteristics of creative people, one thing is certain: it provides those people a richer and more varied assortment of ideas than the average person enjoys.

Creative People Are Daring

For the creative, thinking is an adventure. Because they are relatively free of preconceived notions and prejudiced views, creative people are less inclined to accept prevailing views, less narrow in their perspectives, and less likely to conform with the thinking of those around them. They are bold in their conceptions, willing to entertain unpopular ideas and seemingly unlikely possibilities. Therefore, like Galileo and Columbus, Edison and the Wright brothers, they are more open than others to creative ideas.

Their daring has an additional benefit: It makes them less susceptible to face-saving than others. They are willing to face unpleasant experiences, apply their curiosity, and learn from those experiences. As a result, they are less likely than others to repeat the same failure over and over.

Creative People Are Resourceful

Resourcefulness is the ability to act effectively and to conceptualize the approach that solves the problem—even when the problem stymies others and the resources at hand are meager. This ability is not measured by IQ tests, yet it is one of the most important aspects of practical intelligence. One dramatic example of this quality was reported in *Scientific American* more than half a century ago. A prisoner in a western state penitentiary escaped but was recaptured after a few weeks. The prison officials grilled him for days. “Where did you get the saw to cut through the bars?” they demanded. In time, he broke down and confessed how he had managed to cut the bars. He claimed he had picked up bits of

twine in the machine shop, dipped them in glue and then in emery, and smuggled them back to his cell. Night after night for three months, he had “sawed” the one-inch-thick steel bars. The prison officials accepted his explanation, locked him up, and made sure he never visited the machine shop again.

That, however, is not the end of the story. One dark night about three and a half years later, the man escaped again, and the prison officials found the bars cut in exactly the same manner. Though he was never recaptured, the way he escaped is legendary in the underworld. He’d lied about using material from the machine shop the first time. He had been much more resourceful than that. He had used woolen strings from his socks, moistened them with spit, and rubbed them in dirt on his cell floor.¹²

Creative People Are Hardworking

“All problems,” states William Gordon, “present themselves to the mind as threats of failure.”¹³ Only people who are unwilling to be intimidated by the prospect of failure, and who are determined to succeed no matter what effort is required, have a chance to succeed. (Even for them, of course, there is no guarantee of success.) Creative people are willing to make the necessary commitment. It was that commitment Thomas Edison had in mind when he said, “Genius is 99 percent perspiration and 1 percent inspiration”; so did George Bernard Shaw when he explained, “When I was a young man I observed that nine out of ten things I did were failures. I didn’t want to be a failure, so I did ten times more work.”

Part of creative people’s industriousness is attributable to their ability to be absorbed in a problem thoroughly and to give it their undivided attention. But it is derived, as well, from their competitiveness, which is unlike most people’s in that it is not directed toward other people but toward ideas. They take the challenge of ideas *personally*. Lester Pfister was such a person. He got the idea of inbreeding stalks of corn to eliminate weaker strains. He began with 50,000 stalks and worked by hand, season after season. After five years, he had only four stalks left, and he was destitute. But he had perfected the strain.¹⁴ Where others would have succumbed to frustration and disappointment, he persevered because he was unwilling to accept defeat.

Creative People Are Independent

Every new idea we think of separates us from other people, and expressing the idea increases the separation tenfold. Such separation is frightening, especially to those who draw their strength from association with others and who depend on others for their identity. Such people are not likely to feel comfortable entertaining, let alone expressing, new ideas. They fear rejection too much. Creative people are different. This is not to say that they don’t enjoy having the acceptance and support of others or that the possibility of losing friends doesn’t bother them. It means that however much they may want acceptance and support and friendship, they don’t need them the way others do. Instead of looking to others for approval of their ideas, they look within themselves.¹⁵ For this reason, they are less afraid of appearing eccentric or odd, are more self-confident, and are more free to speak and act independently.

Knowing these five characteristics can help you develop your creative potential if you are willing to make the effort to acquire them—or if you already possess them, to reinforce them. It is never an easy task; old habits resist replacement. But even modest progress will make a difference in the quality of your thinking.

APPLYING CREATIVITY TO PROBLEMS AND ISSUES

The two broad applications of creativity that are of special concern to us are solving problems and resolving controversial issues. The terms *problem* and *issue* overlap considerably. Both refer to situations that challenge our ingenuity, situations that have no readily apparent, satisfactory remedy. But an *issue* has an additional characteristic. It tends to divide people into opposing camps, each sure that it is right and the opposition wrong.

The most important ways to apply creativity to problems and issues include taking a novel approach, devising or modifying a process or system, inventing a new product or service, finding new uses for existing things, improving things, and inventing or redefining a concept. Let's look at some examples of each.

Taking a Novel Approach

D. B. Kaplan's, a Chicago delicatessen, approaches menu writing with its tongue well in cheek (and in some cases, in the sandwich). Items include Tongue Fu, the Italian Scallion, Chive Turkey, Ike and Tina Tuna, Dr. Pepperoni, the Breadless Horseman, Annette Spinachello, and Quiche and Tell. The ingredients are as creative as the names.

Humane Society inspectors who found two dogs in a closed car in brutal 92-degree heat used a novel approach in dealing with the dogs' owners. They offered them an alternative to being charged with cruelty to animals: spend an hour inside the closed car themselves in the same heat the dogs endured, while the dogs spent the hour in the air-conditioned Humane Society building.¹⁶

A judge in a Michigan divorce court took a novel approach to the issues of custody and the right to live in the family home. He awarded the house to the *children* until the youngest reached 18. The parents would take turns living in the house and paying the bills. (Both parents lived in the area, so this housing arrangement was workable.)¹⁷

To instill in students a sense of obligation to help those in need, Tulane University Law School set the unusual graduation requirement of performing at least 20 hours of volunteer legal work for the poor.¹⁸

The city of Venice, Italy, sits on a number of small islands in an Adriatic lagoon and has long been subject to periodic flooding. Now there is reason to fear that the rising sea level will eventually flood the city. The most publicized and widely accepted proposal to prevent this disaster is to build 78 moveable, hollow gates at the entrance to the lagoon. These gates could be filled with air and caused to rise up, preventing rising waters from flooding Venice. Not

everyone accepts this novel plan, however. Some scientists say the gates' design is based on outdated tide tables, and thus the gates would eventually have to be replaced. And environmentalists have raised concerns about the increased pollution the gates could cause.

Devising or Modifying a Process or System

The Dewey decimal system and the Library of Congress system are two techniques that were invented for classifying books. (Even more basic to learning, of course, is the invention known as the alphabet.)

Several decades ago, a new surgical procedure was devised for combating periodontal disease and making it possible for people to keep their teeth throughout their lives. The procedure involves cutting back diseased gum tissue and scraping accumulated plaque from the teeth. (Left untreated, periodontal disease can cause teeth to loosen and fall out.)

Over the years, several procedures have been developed for determining the health of a fetus. Both amniocentesis and chorionic villus sampling involve the extraction of amniotic fluid; ultrasound involves the bouncing of sound waves off the fetus to form an image.

Between the 1880s and the 1980s the principal tool of criminal investigation was the fingerprint. Today it is DNA testing. Every individual who ever lived has his or her own distinctive genetic makeup. A strand of hair or a spot of urine, saliva, or semen left at a crime scene can be compared with a DNA sample of a suspect and be a significant factor in determining guilt or innocence.

Reacting to widespread criticism of the 1988 presidential campaign as superficial, a member of Congress from Indiana, Lee Hamilton, proposed a change in the traditional debating format. His idea was to have each candidate speak alone for an hour, presenting his or her ideas on a single issue and responding to in-depth questioning by a panel of experts. The presentations would be videotaped simultaneously for sequential televising at a later time.¹⁹ (Unfortunately, the idea has not been implemented in subsequent presidential campaigns.)

Inventing a New Product or Service

In 1845, a man needed money quickly to pay a debt. "What can I invent to raise some money?" he thought. Three hours later, he had invented the safety pin. He later sold the idea for \$400. Virtually all the products we use every day have similar, though perhaps less dramatic, stories. The hammer, the fork, the alarm clock, the electric blanket, the toothpaste tube, the matchbook—these and thousands of other products first occurred as ideas in a creative mind. And new ideas are occurring every day. One you may not have heard of is Graffiti Gobbler, a chemical compound that can remove ink or paint from wood, brick, or steel.²⁰

The laundromat, the car wash, and the rent-a-car agency are examples of successful services that have been invented. When the rent-a-car service became quite expensive, some enterprising people invented rental services providing older, high-mileage cars in good working condition. (One such agency is called Rent-a-Wreck; another, Rent-a-Heap.) A public-spirited psychiatrist invented a

service for insomniacs called Sleepline that offers an eight-minute recorded message (“Sleep is coming . . . slower . . . deeper . . .”) to help people sleep.²¹

The way people view movies changed when companies such as Blockbuster and Hollywood Video were created. But those companies were challenged when Netflix and similar services made it possible to receive DVDs first through the mail and then directly and without delay over the Internet.

Finding New Uses for Existing Things

No matter how old something is, new uses can always be devised for it. Consider how many kinds of nails, nuts, bolts, and brushes have been developed from the original ideas. Even the water bed, a relatively new variation on the bed, has been given a new use: to simulate the warmth and protection of the womb for premature babies.²² In some cases, apparently useless objects can be put to good use. For example, a St. Louis barber combines hair clippings with peat and other substances to form an unusually rich potting soil that he believes may help restore drought-ravaged soil in parts of Asia and Africa. And at least one college student devised a use for empty beer and soda cans: He punched holes in the top and bottom, ran heavy cord through them, and hung the cans in close rows as window curtains.

Agricultural crops have long been used for unusual purposes. Cotton lint, for example, is used to manufacture explosives, and ground-up tobacco is used for insecticide. Scientists have also found new uses for the largest surplus crop in the United States: corn. These uses include de-icing materials, adhesives, disposable bottles, and biodegradable garbage bags. Such creative ideas promise to reduce dependency on oil imports and to reduce pollution.²³

New uses for the computer and the laser continue to multiply, such as this one that combines the two: A Cleveland firm markets a computer device that measures a person for a suit of clothing and then forwards the information to a factory where lasers cut the fabric.²⁴

Improving Things

Far more patents are issued each year for improvements in existing things than for new inventions. There is a very good reason. Nothing of human invention is perfect; everything can be made better. Consider the development of the light, from the prehistoric torch to the latest flashlight, or that of the camera and the automobile.

Developments in the telephone, for example, include call block, call trace, priority call, return call, repeat call, and caller ID, as well as the many variations of the cell phone. Each of these features was developed in response to a particular need that was not being met by the existing equipment.

The use of creativity to improve things is nowhere more evident than in the computer industry. Every few months a significant breakthrough is announced in hardware or software, and minor improvements are constantly being made.

Inventing or Redefining a Concept

We tend to regard the many concepts that help us think and deal with reality as fixed and eternal. Yet that is not so. Concepts are invented, just as products and services are. The concepts of taxation and punishing criminals, for example, may

be very old, but they were once new. Numerous other concepts are relatively recent. It is hard to imagine how mathematics could even be used without the concept of zero. Yet that concept, in the sense of a number, was invented in India around A.D. 500.²⁵ Similarly, the concept of the corporation originated in the sixteenth century, and our ideas of progress and worldly success in the seventeenth. The concept of the zip code is very recent.

The concept of childhood we are familiar with—as a stage of innocence with its own special characteristics—dates back only a few centuries. Before then, children were treated as little adults. The historian J. H. Plumb writes: “Certainly there was no separate world of childhood [in earlier times]. Children shared the same games with adults, the same toys, the same fairy stories. They lived their lives together, never apart. The coarse village festivals depicted by Bruegel, showing men and women besotted with drink, groping for each other with unbridled lust, have children eating and drinking with the adults.”²⁶

STAGES IN THE CREATIVE PROCESS

Being creative means more than *having* certain traits. It means *behaving creatively*, addressing the challenges we encounter with imagination and originality. In short, it means demonstrating skill in applying the creative process. Although authorities disagree over the number of stages in this process—some say three, others say four, five, or seven—the disagreement is not over substantive matters. It is merely over whether to combine activities under one heading or several. There is no real disagreement about the basic activities involved.²⁷

For ease in remembering and convenience of application, we will view the creative process as having four stages: searching for challenges, expressing the particular problem or issue, investigating it, and producing a range of ideas. Each of these stages will be the subject of a separate chapter, but a brief overview of the process will enable you to begin using it right away.

The First Stage: Searching for Challenges

The essence of creativity is meeting challenges in an imaginative, original, and effective way. Often, challenges need not be sought out; they come to you in the form of obvious problems and issues. For example, if your roommate comes home night after night at 2 or 3 A.M., crashes into the room, and begins talking to you when you are trying to sleep, you needn't be very perceptive to know you have a problem. Or if you find yourself in the middle of a raging argument over whether abortion is murder, no one will have to tell you that you are addressing an issue.

However, not all challenges are so obvious. Sometimes, the problems and issues are so small or subtle that very few people notice them; at other times, there are no problems and issues at all, only *opportunities to improve existing conditions*. Such challenges arouse no strong emotion in you, so you will not find them by sitting and waiting—you must look for them.

The first stage of the creative process is the habit of searching for challenges, not at one specific time, but constantly. Its importance is reflected in the fact that you can be creative only in response to challenges that you perceive.

The Second Stage: Expressing the Problem or Issue

The objective in this stage is to find the best expression of the problem or issue, the one that will yield the most helpful ideas.* “A problem properly stated,” noted Henry Hazlitt,²⁸ “is partly solved.” Because different expressions open different avenues of thought, it is best to consider as many expressions as possible. One of the most common mistakes made in addressing problems and issues is to see them from one perspective only and thus to close off many fruitful avenues of thought.

Consider the prisoner deciding how to escape from prison. His first formulation of the problem was probably something such as “How can I get a gun and shoot my way out of here?” or “How can I trick the guards into opening my cell so I can overpower them?” If he had settled for that formulation, he would still be there (where he belonged). His ingenious escape plan could have been devised only as a response to the question “How can I cut through those bars without a hacksaw?”

Often, after expressing the problem or issue in a number of ways, you will be unable to decide which expression is best. When that happens, postpone deciding until your work in later stages of the process enables you to decide.

The Third Stage: Investigating the Problem or Issue

The objective of this stage is to obtain the information necessary to deal effectively with the problem or issue. In some cases, this will mean merely searching your past experience and observation for appropriate material and bringing it to bear on the current problem. In others, it will mean obtaining new information through fresh experience and observation, interviews with knowledgeable people, or your own research. (In the case of the prisoner, it meant closely observing all the accessible places and items in the prison.)

The Fourth Stage: Producing Ideas

The objective in this stage is to generate enough ideas to decide what action to take or what belief to embrace. Two obstacles are common in this stage. The first is the often unconscious tendency to limit your ideas to common, familiar, habitual responses and to block out uncommon, unfamiliar ones. Fight that tendency by keeping in mind that however alien and inappropriate the latter kinds of responses may seem, it is precisely in those responses that creativity is to be found.

The second obstacle is the temptation to stop producing ideas too soon. As we will see in Chapter 9, research has documented that the longer you continue producing ideas, the greater are your chances of producing worthwhile ideas. Or as one writer puts it, “The more you fish, the more likely you are to get a strike.”

There is one final matter to be clarified before you will be ready to begin practicing the creative process: How will you know when you get a creative idea? By what characteristics will you be able to distinguish it from other ideas?

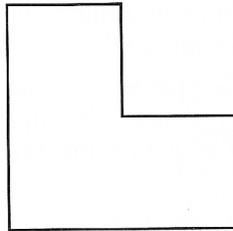
*In the case where there is no real problem or issue but only an opportunity to improve an existing condition, you would treat the situation *as if it were* problematic, saying, for example, “How can I make this process work even more efficiently?”

A creative idea is an idea that is both imaginative and effective. That second quality is as important as the first. It's not enough for an idea to be unusual. If it were, then the weirdest, most bizarre ideas would be the most creative. No, to be creative an idea must work, must solve the problem, or must illuminate the issue it responds to. A creative idea must not be just uncommon—it must be *uncommonly good*. This is the standard you should apply when looking over the ideas you produced.

When you have produced a generous number of ideas, decide which seems to be the best. Sometimes that will be a single idea; other times it will be a combination of two or more ideas. At this point your decision should be tentative. Otherwise, you will be tempted to forgo the valuable critical thinking process by which ideas are *evaluated*.

WARM-UP EXERCISES

- 5.1 Four friends have a large garden in the following shape. They want to divide it into four little gardens the same size and shape, but they don't know quite how to do this. Show them.



- 5.2 How many uses can you think of for old socks, stockings, or panty hose? Be sure to guard against setting unconscious restrictions on your thinking and to resist the temptation to settle for too few ideas.
- 5.3 Every change of season brings a new clothing fashion for men, women, and children. Invent as many new fashions as you can. (If you wish, you may include out-of-date fashions in your list, as long as they have not been popular in recent years.) Observe the cautions mentioned in Exercise 5.2.

APPLICATIONS

- 5.1 For each of the following problems, apply stages two through four of the creative process. Record all your thoughts as they occur, and be prepared to submit them to your instructor. When you have finished with the last stage, state which of your solutions is best and briefly explain why.