



ARTICLE

What happens when you put “right-brain” thinkers together with “left-brain” thinkers? Collisions.

But innovation depends on collisions—of ideas, perceptions, and ways of judging.

*New sections to guide you through the article:*

- *The Idea in Brief*
- *The Idea at Work*
- *Exploring Further...*

# Putting Your Company’s Whole Brain to Work

by Dorothy Leonard and Susaan Straus

**S**UCCESSFUL innovation relies on people—and people have different cognitive approaches for assimilating data and solving problems:

- So-called “left-brain” thinkers tend to approach a problem in a logical, analytical way. “Right-brain” thinkers rely more on nonlinear, intuitive approaches.
- Some people prefer to work together to solve a problem; others like to gather and process information by themselves.
- Abstract thinkers need to learn about something before they experience it; for experiential people, it’s just the opposite.

Cognitive differences are often subtle; people don’t naturally appreciate their significance. Managers who dislike conflict or who value only their own approach often fall victim to the **comfortable clone syndrome**, surrounding themselves with people who think alike and who share similar interests and training. Even managers who value intellectual diversity may not realize how difficult it can be for people with different styles to understand or respect each other. But to achieve **creative abrasion**, you have to make the different approaches rub together in productive ways.

**T**o get creative abrasion, start by compiling a cognitive profile of your team. Engage a trained professional to administer one of several readily available diagnostic tools, such as the Myers-Briggs Type Indicator.

- 1. Do your own profile first.** Become familiar with the ways in which your preferences shape your leadership and patterns of communication. If you’re not paying attention, your own style can stifle the very creativity you’re looking to foster among team members.
- 2. Create “whole-brained” teams.** Once you understand your own thinking styles and those of the other team members, identify the styles that are missing so you’ll know what to focus on when hiring opportunities arise. This results in a team with a wider variety of problem-solving approaches. At Nissan Design, Jerry Hirschberg hires designers in pairs—a free-form thinker alongside someone with a more analytical approach—to ensure intellectual diversity. If you don’t have the luxury of hiring new people, look elsewhere in the company for the critical thinking styles your group lacks.
- 3. Employ strategies that exploit the team’s full spectrum of approaches.** At Xerox PARC, anthropologists work alongside

computer scientists to create cyberspace meeting rooms that have a welcoming, human touch in addition to being technologically sophisticated.

#### **4. Actively manage the creative process.**

Abrasion is not creative unless managers make it so.

- Take time at the outset to acknowledge team members’ differences.
- Before problems surface, devise clear, simple guidelines for working together. For example, one group decided to handle conflict by stating that anyone could disagree with anyone else about anything, but no one could disagree without saying the reason.
- Keep the project’s goal in front of the group at all times.
- When scheduling a project, create time for both **divergent thinking** (uncovering imaginative alternatives) and **convergent thinking** (focusing in on one option and then implementing it).
- Don’t treat team members the way you want to be treated—tailor your communications to the receiver.
- Depersonalize conflict when it does arise. Acknowledge that other approaches are not wrongheaded, just different.



---

*Conflict is essential to innovation.  
The key is to make the abrasion creative.*

# PUTTING YOUR COMPANY'S **WHOLE** **BRAIN** TO WORK

by Dorothy Leonard and Susaan Straus

Innovate or fall behind: the competitive imperative for virtually all businesses today is that simple. Achieving it is hard, however, because innovation takes place when different ideas, perceptions, and ways of processing and judging information collide. That, in turn, often requires collaboration among various players who see the world in inherently different ways. As a result, the conflict that should take place constructively among ideas all too often ends up taking place unproductively among people who do not innately understand one another. Disputes become personal, and the creative process breaks down.

---

*Dorothy Leonard is the William J. Abernathy Professor of Business Administration at the Harvard Business School in Boston, Massachusetts. Her research focuses on organizational innovation, technology strategy, and the commercialization of new ideas. Leonard is author of more than 35 articles and books; her latest book, Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation, was published in 1995 by the Harvard Business School Press. Susaan Straus is an independent consultant based in Newton, Massachusetts, specializing in personal and organizational effectiveness. Her research has explored how cognitive preference and management style influence the effectiveness of leaders, managers, and teams in times of change.*



## Creative abrasion can be productive.

Generally, managers have two responses to this phenomenon. On the one hand, managers who dislike conflict—or value only their own approach—actively avoid the clash of ideas. They hire and reward people of a particular stripe, usually people like themselves. Their organizations fall victim to what we call the *comfortable clone syndrome*: coworkers share similar interests and training; everyone thinks alike. Because all ideas pass through similar cognitive screens, only familiar ones survive. For example, a new-business development group formed entirely of employees with the same disciplinary background and set of experiences will assess every idea with an unvarying set of assumptions and analytical tools. Such a group will struggle to innovate, often in vain.

On the other hand, managers who value employees with a variety of thinking styles frequently don't understand how to manage them. They act as if locking a group of diverse individuals in the same room will necessarily result in a creative solution to a problem. They overlook the fact that people with different styles often don't understand or respect one another, and that such differences can

fuel personal disagreements. The “detail guy” dismisses the “vision thing”; the “concept man” deplores endless analysis; and the individualist considers the demands of a team an utter waste of time. They simply can't work together without help.

The manager successful at fostering innovation figures out how to get different approaches to grate against one another in a productive process we call *creative abrasion*. Such a manager understands that different people have different thinking styles: analytical or intuitive, conceptual or experiential, social or independent, logical or values driven. She deliberately designs a full spectrum of approaches and perspectives into her organization—whether that organization is a team, a work group, or an entire company—and she understands that cognitively diverse people must respect the thinking styles of others. She sets ground rules for working together to discipline the creative process. Above all, the manager who wants to encourage innovation in

her organization needs to examine what she does to promote or inhibit creative abrasion.

We have worked with a number of organizations over the years and have observed many managers who know how to make creative abrasion work for them. In order to create new ideas and products, such managers actively manage the process of bringing together a variety of people who think and act in potentially conflicting ways.

## How We Think

What we call *cognitive differences* are varying approaches to perceiving and assimilating data, making decisions, solving problems, and relating to other people. These approaches are *preferences* (not to be confused with skills or abilities). For instance, you may prefer to approach problems intuitively but in fact may be better trained to approach them analytically. Preferences are not rigid: most people can draw on a mixture of approaches and do not live their lives within narrow cognitive boundaries. We often stretch outside the borders of our preferred operating modes if the conditions are right and the

stakes are high enough. That said, we all tend to have one or two preferred habits of thought that influence our decision-making styles and our interactions with others – for good or for ill.

The most widely recognized cognitive distinction is between left-brained and right-brained ways of thinking. This categorization is more powerful metaphorically than it is accurate physiologically; not all the functions commonly associated with the left brain are located on the left side of the cortex and not all so-called right-brained functions are located on the right. Still, the simple description does usefully capture radically different ways of thinking. An analytical, logical, and sequential approach to problem framing and solving (left-brained thinking) clearly differs from an intuitive, values-based, and nonlinear one (right-brained thinking).

Cognitive preferences also reveal themselves in work styles and decision-making activities. Take collaboration as opposed to independence. Some people prefer to work together on solving problems, whereas others prefer to gather, absorb, and process information by themselves. Each type does its best work under different conditions. Or consider thinking as opposed to feeling. Some people evaluate evidence and make decisions through a structured, logical process, whereas others rely on their values and emotions to guide them to the appropriate action.

The list goes on. Abstract thinkers, for instance, assimilate information from a variety of sources, such as books, reports, videos, and conversations. They prefer learning *about* something rather than experiencing it directly. Experiential people, in contrast, get information from interacting directly with people and things. Some people demand quick decisions no matter the issue, whereas others prefer to generate a lot of options no matter the urgency. One type focuses on details, whereas the other looks for the big picture: the relationships and patterns that the data form.

Not surprisingly, people tend to choose professions that reward their own combination of preferences. Their work experience, in turn, reinforces the original preferences and deepens the associated skills. Therefore, one sees very different problem-solving approaches among accountants, entrepreneurs, social workers, and artists. Proof to an engineer, for example, resides in the numbers. But show a page of numerical data to a playwright, and, more persuaded by his intuition, he may well toss it aside. Of course, assessing people's likely approaches to problem solving only by their discipline

can be as misleading as using gender or ethnicity as a guide. Within any profession, there are always people whose thinking styles are at odds with the dominant approach.

The best way for managers to assess the thinking styles of the people they are responsible for is to use an established diagnostic instrument as an assessment tool. A well-tested tool is both more objective

## We all have preferred habits of thought that influence how we make decisions and interact with others.

and more thorough than the impressions of even the most sensitive and observant of managers. Dozens of diagnostic tools and descriptive analyses of human personality have been developed to identify categories of cognitive approaches to problem solving and communication. All the instruments agree on the following basic points:

- Preferences are neither inherently good nor inherently bad. They are assets or liabilities depending on the situation. For example, politicians or CEOs who prefer to think out loud in public create expectations that they sometimes cannot meet; but the person who requires quiet reflection before acting can be a liability in a crisis.
- Distinguishing preferences emerge early in our lives, and strongly held ones tend to remain relatively stable through the years. Thus, for example, those of us who crave certainty are unlikely ever to have an equal love of ambiguity and paradox.
- We can learn to expand our repertoire of behaviors, to act outside our preferred styles. But that is difficult – like writing with the opposite hand.
- Understanding others' preferences helps people communicate and collaborate.

Managers who use instruments with the credibility of the Myers-Briggs Type Indicator (MBTI®) or the Herrmann Brain Dominance Instrument (HBDI) find that their employees accept the outcomes of the tests and use them to improve their processes and behaviors. (See the insert "Identifying How We Think: The Myers-Briggs Type Indicator® and the Herrmann Brain Dominance Instrument.")

### How We Act

All the assessment in the world means nothing unless new understanding brings different actions. Instruments such as the MBTI® and the HBDI will

# IDENTIFYING HOW WE THINK: The Myers-Briggs Type

The Myers-Briggs Type Indicator (MBTI®) is the most widely used personality-assessment instrument in the world. Designed by a mother-and-daughter team, Isabel Myers and her mother Katherine Cook Briggs, the MBTI® is based on the work of Carl Jung. Myers and Briggs developed the instrument during World War II on the hypothesis that an understanding of personality preferences might aid those civilians who were entering the workforce for the first time to find the right job for the war effort. The instrument conforms to standard testing conventions and, at last count in 1994, had been taken by more than two and a half million people around the world. The MBTI® is widely used in business, psychology, and education, as well as in career counseling.

The MBTI® uses four different pairs of attributes to create a matrix of 16 personality types:

□ **Introversion Versus Extraversion.**<sup>1</sup> The first pair measures the degree to which one is an introvert (I) or an extravert (E). These I/E descriptors focus on the source of someone’s mental energy: extraverts draw energy from other people; introverts draw energy from themselves. Each finds the other’s preferred operating conditions enervating.

□ **Sensing Versus “iNtuiting.”** The second pair identifies how one absorbs information. “Sensors” (S) gather data through their five senses, whereas “iNtuitives” (N) rely on less direct perceptions, such as patterns, relationships, and hunches. For example, when asked to describe the same painting, a group of S’s might com-

		The MBTI®			
		Sensing Types (S)		Intuitive Types (N)	
		Thinking (T)	Feeling (F)	Feeling (F)	Thinking (T)
Introverts (I)	Judging (J)	<b>ISTJ</b> Serious, quiet, earn success by concentration and thoroughness. Practical, orderly, matter-of-fact, logical, realistic, and dependable. Take responsibility.	<b>ISFJ</b> Quiet, friendly, responsible, and conscientious. Work devotedly to meet their obligations. Thorough, painstaking, accurate. Loyal, considerate.	<b>INFJ</b> Succeed by perseverance, originality, and desire to do whatever is needed or wanted. Quietly forceful, conscientious, concerned for others. Respected for their firm principles.	<b>INTJ</b> Usually have original minds and great drive for their own ideas and purposes. Skeptical, critical, independent, determined, often stubborn.
	Perceiving (P)	<b>ISTP</b> Cool onlookers – quiet, reserved, and analytical. Usually interested in impersonal principles, how and why mechanical things work. Flashes of original humor.	<b>ISFP</b> Retiring, quietly friendly, sensitive, kind, modest about their abilities. Shun disagreements. Loyal followers. Often relaxed about getting things done.	<b>INFP</b> Care about learning, ideas, language, and independent projects of their own. Tend to undertake too much, then somehow get it done. Friendly, but often too absorbed.	<b>INTP</b> Quiet, reserved, impersonal. Enjoy theoretical or scientific subjects. Usually interested mainly in ideas, little liking for parties or small talk. Sharply defined interests.
Extraverts (E)	Perceiving (P)	<b>ESTP</b> Matter-of-fact, do not worry or hurry, enjoy whatever comes along. May be a bit blunt or insensitive. Best with real things that can be taken apart or put together.	<b>ESFP</b> Outgoing, easygoing, accepting, friendly, make things fun for others by their enjoyment. Like sports and making things. Find remembering facts easier than mastering theories.	<b>ENFP</b> Warmly enthusiastic, high-spirited, ingenious, imaginative. Able to do almost anything that interests them. Quick with a solution and to help with a problem.	<b>ENTP</b> Quick, ingenious, good at many things. May argue either side of a question for fun. Resourceful in solving challenging problems, but may neglect routine assignments.
	Judging (J)	<b>ESTJ</b> Practical, realistic, matter-of-fact, with a natural head for business or mechanics. Not interested in subjects they see no use for. Like to organize and run activities.	<b>ESFJ</b> Warm-hearted, talkative, popular, conscientious, born cooperators. Need harmony. Work best with encouragement. Little interest in abstract thinking or technical subjects.	<b>ENFJ</b> Responsive and responsible. Generally feel real concern for what others think or want. Sociable, popular. Sensitive to praise and criticism.	<b>ENTJ</b> Hearty, frank, decisive, leaders. Usually good at anything that requires reasoning and intelligent talk. May sometimes be more positive than their experience in an area warrants.

Modified and reproduced by special permission of the Publisher, Consulting Psychologists Press, Palo Alto, CA 94303 from **Report Form from the Myers-Briggs Type Indicator** by Isabel Briggs Myers.

# Indicator<sup>®</sup> and the Herrmann Brain Dominance Instrument

ment on the brush strokes or the scar on the subject's left cheek, whereas a group of N's might imagine from the troubled look in the subject's eyes that he lived in difficult times or suffered from depression.

□ **Thinking Versus Feeling.** The third pair measures how one makes decisions once information is gathered. Feeling types (F) use their emotional intelligence to make decisions based on values – their internal sense of right and wrong. Thinking types (T) tend to make decisions based on logic and “objective” criteria – their assessment of truth and falsehood.

□ **Judging Versus Perceiving.** The fourth pair reflects how slowly or rapidly one comes to a decision. Judging types (J) have a high need for closure. They reach conclusions quickly based on available data and move on. Perceiving types (P) prefer to keep their options open. They wait until they have gathered what they consider to be enough information to decide. J's crave certainty, and P's love ambiguity.

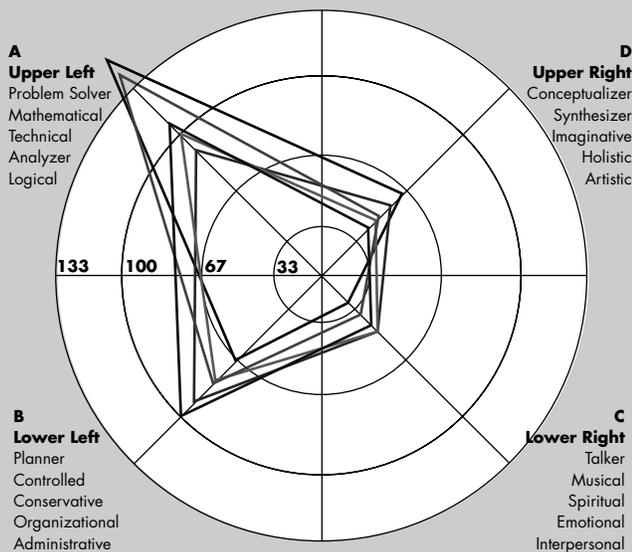
To read descriptions of the personality types identified in the MBTI<sup>®</sup>, see the matrix on the lower left.

1. MBTI<sup>®</sup> preferred spelling.

Ned Herrmann created and developed the Herrmann Brain Dominance Instrument (HBDI) while he was a manager at General Electric. Starting his research with large groups within GE, he expanded it over 20 years through tens of thousands of surveys and has validated the data with prominent psychometric research institutions, including the Educational Testing Service.

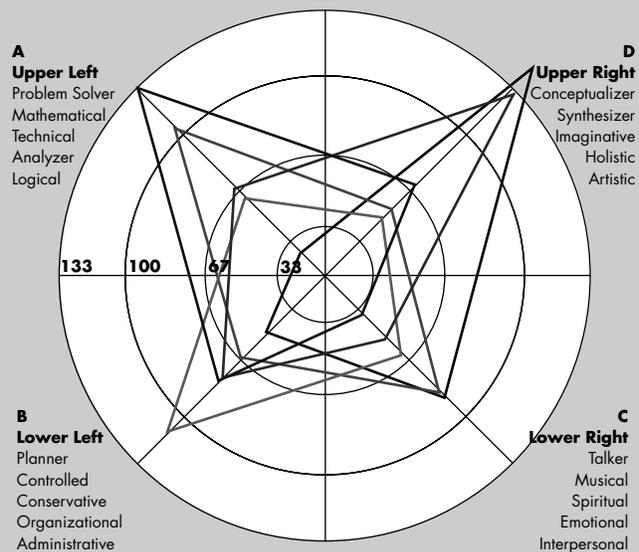
The HBDI measures a person's preference both for right-brained or left-brained thinking and for conceptual or experiential thinking. These preferences often correspond to specific professions. Engineers, for example, consistently describe themselves as analytical, mathematical, and logical, placing them on the left end of the continuum. Artists, in contrast, describe themselves as emotional, spatial, and aesthetic, placing them on the right end of the continuum.

The charts below show how the different preferences combine into four distinct quadrants and how one can use the chart to analyze teams with different cognitive preferences:



## Composite One: The Homogeneous Team

The chart above shows that everyone in the group approaches problems and challenges with the same emphasis on correctness. As engineers, the members of the team know how to do things correctly. Although the quality of their work is excellent, the members are difficult to work with. They have their own ways of doing things, and they reject variations from set standards. As a corporate function, the team has long enjoyed a captive audience in the company. Recently, members found themselves in trouble when the company restructured and other functions in the organization were allowed to outsource engineering.



## Composite Two: The Heterogeneous Team

The Management Services Group includes managers from information technology, the mail room, and the cafeteria. Although members share such goals as an orientation toward quality, they encounter a wide range of business problems. The manager's dominant thinking style is in the lower right quadrant: a natural facilitator, she develops people, listens empathetically, and fosters a spirit of respect among her reports. Her leadership unified what had been a fragmented, inefficient collection of functions. Members regard one another as resources, enjoy the group's diversity, and take great pride in their work.

help you understand yourself and will help others understand themselves. The managerial challenge is to use the insights that these instruments offer to create new processes and encourage new behaviors that will help innovation efforts succeed.

**Understand yourself.** Start with yourself. When you identify your own style, you gain insight into the ways your preferences unconsciously shape your style of leadership and patterns of communication. You may be surprised to discover that your style can stifle the very creativity you seek from your employees. Consider the experiences of two managers of highly creative organizations. Each was at odds with his direct reports—but for very different reasons.

Jim Shaw, executive vice president of MTV Networks, is a left-brained guy in a right-brained organization. Said Shaw:

I have always characterized the creative, right-brained, visionary-type people here as dreamers. What I've realized is that when a dreamer expressed a vision, my gut reaction was to say, 'Well, if you want to do that, what you've got to do is A, then B, then you have to work out C, and because you've got no people and you've got no satellite up-link, you'll have to do D and E.' I've learned that saying that to a creative type is like throwing up on the dream. When I say that stuff too soon, the dreamer personalizes it as an attack. I've learned *not* to put all of the things that need to be done on the table initially. I

can't just blurt it all out—it makes me look like a nay-sayer. What I've learned to do is to leak the information gradually, then the dreamer knows that I am meeting him halfway.

Jerry Hirshberg, president of Nissan Design International, ran into precisely the opposite problem. Hirshberg discovered that some of his employees craved the very kind of structure that he personally abhorred. Before this epiphany, he inundated them with information and expected creativity in return. In short, he tried to manage his employees the way *he* would have wanted to be managed. Hirshberg found, however, that a few individuals reacted to every suggestion with a "yes, but..." Initially, he interpreted such hesitancy as an anti-innovation bias. But he eventually realized that some of his employees preferred to have more time both to digest problems and to construct logical approaches to his intuitively derived ideas. Given a bit of extra time, they would return to the project with solid, helpful, and insightful plans for implementation. Ironically, it was their commitment to the success of the initiative that caused the employees to hesitate: they wanted the best possible result. Hirshberg recognized that their contributions were as critical as his own or those of any of the other "right-brainers" in the company.

Both Shaw and Hirshberg came to realize that their own cognitive preferences unconsciously shaped their leadership styles and communication patterns. In fact, their automatic reactions initially stifled the very creativity they sought from their employees. And note that it was just as important for the predominantly right-brained manager to recognize the contributions of the logicians as it was for the left-brained manager to acknowledge the organic approach of the visionaries. Except in theoretical models, creativity is not the exclusive province of one side or the other.

If you want an innovative organization, you need to hire, work with, and promote people who make you uncomfortable. You need to understand your own preferences so that you can complement your weaknesses and exploit your strengths. The biggest barrier to recognizing the contributions of people who are unlike

## Loosen control to unleash creativity.



you is your own ego. Suppose you are stalled on a difficult problem. To whom do you go for help? Usually to someone who is on the same wavelength or to someone whose opinion you respect. These people may give you soothing strokes, but they are unlikely to help spark a new idea. Suppose you were to take the problem instead to someone with whom you often find yourself at odds, someone who rarely validates your ideas or perspectives. It may take courage and tact to get constructive feedback, and the process may not be exactly pleasant. But that feedback will likely improve the quality of your solution. And when your adversary recovers from his amazement at your request, he may even get along with you better because the disagreement was clearly intellectual, not personal.

**Forget the golden rule.** Don't treat people the way you want to be treated. Tailor communications to the receiver instead of the sender. In a cognitively diverse environment, a message sent is not necessarily a message received. Some people respond well to facts, figures, and statistics. Others prefer anecdotes. Still others digest graphic presentations most easily. Information must be delivered in the preferred "language" of the recipient if it is to be received at all.

For example, say you want to persuade an organization to adopt an open office layout. Arguments appealing to the analytical mind would rely on statistics from well-documented research conducted by objective experts that prove that open architecture enhances the effectiveness of communication. Arguments geared toward the action-oriented type would answer specific questions about implementation: How long will the office conversion take?

## To innovate successfully, you must hire, work with, and promote people who are unlike you.

Exactly what kind of furniture is needed? What are the implications for acoustics? Arguments aimed at people-oriented individuals would focus on such questions as, How does an open office affect relationships? How would this setup affect morale? and Are people happy in this sort of setup? Arguments crafted for people with a future-oriented perspective would include graphics as well as artists' ren-

derings of the proposed environment. In short, regardless of how you personally would prefer to deliver the message, you will be more persuasive and better understood if you formulate messages to appeal to the particular thinking style of your listener.

**Create "whole-brained" teams.** Either over time or by initial design, company or group cultures can

## In a cognitively diverse environment, a message sent is not necessarily a message received.

become dominated by one particular cognitive style. IBM, in the days when it was known as "Big Blue," presented a uniform face to the world; Digital Equipment prided itself on its engineering culture. Such homogeneity makes for efficient functioning—and limited approaches to problems or opportunities. Companies with strong cultures can indeed be very creative, but within predictable boundaries: say, clever marketing or imaginative engineering. When the market demands that such companies innovate in different ways, they have to learn new responses. Doing so requires adopting a variety of approaches to solving a problem—using not just the right brain or the left brain but the *whole* brain.

Consider the all-too-common error made by John, a rising star in a large, diversified instrument company: he forfeited an important career opportunity because he failed to see the need for a whole-brained team. Appointed manager of a new-product development group, John had a charter to bring in radically innovative ideas for products and services for launch in three to six years. "Surprise me," the CEO said.

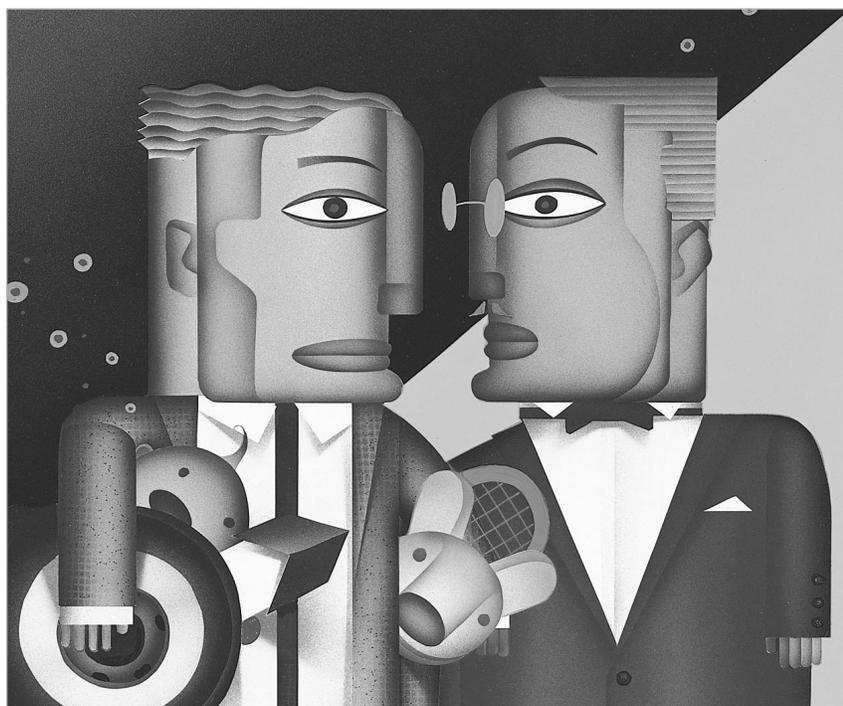
Given a free hand in hiring, John lured in three of the brightest M.B.A.'s he could find. They immediately went to work conducting industry analyses and sorting through existing product possibilities, applying their recently acquired skills in financial analysis. To complete the team, John turned to the pile of résumés on his desk sent to him by human resources. All the applicants had especially strong quantitative skills, and a couple were engineers. John was pleased. Surely a group of such intelligent, well-trained, rigorous thinkers would be able to come up with some radical innovations for the company. Ignoring advice to hire

some right-brained people to stimulate different ideas, he continued to populate his group with left-brained wizards. After 18 months, the team had rejected all the proposed new projects in the pipeline on the basis of well-argued and impressively documented financial and technical risk analysis. But the team's members had not come up with a single new idea. The CEO was neither surprised nor pleased, and the group was disbanded just short of its second anniversary.

In contrast, Bob, a successful entrepreneur embarking on his latest venture, resisted the strong

small company. Wally contributed a key element that was otherwise missing in the management team: a sensitivity to human needs that helped the company foresee and forestall problems with employees. So Bob learned to meet Wally halfway. Describing his success in learning to work with Wally, he told us, "You would have been proud of me. I started our meetings with five minutes of dogs, kids, and station wagons." Although the concern Wally demonstrated for the workers in the company did not eliminate union issues completely, it did minimize antagonism toward management and made disputes easier to resolve.

## Bob came to appreciate Wally's point of view.



temptation to tolerate only like-minded people. He knew from his prior ventures that his highly analytical style alienated some of his most creative people. Despite his unusual degree of self-awareness, Bob came within a hair's breadth of firing a strong and experienced manager: Wally, his director of human resources. According to Bob, after several months on board, Wally appeared to be "a quart and a half low." Why? Because he was inattentive in budget meetings and focused on what Bob perceived as trivia—day care, flextime, and benefits. Before taking action, however, Bob decided to look at the management team through the lens of thinking styles. He soon realized that Wally was exactly the kind of person he needed to help him grow his

The list of whole-brained teams that continue to innovate successfully is long. At Xerox PARC, social scientists work alongside computer scientists. For instance, computer scientist Pavel Curtis, who is creating a virtual world in which people will meet and mingle, is working with an anthropologist who understands how communities form. As a result, Curtis's cyberspace meeting places have more human touches and are more welcoming than they would have been had they been designed only by scientists. Another example is the PARC PAIR (PARC Artist In Residence) program, which links computer scientists with artists so that each may influence the other's perceptions and representations of the world. At Interval Research, a California think tank dedicated to multimedia technologies, Director David Liddle invites leaders from various disci-

plines to visit for short "sabbaticals." The purpose is to stimulate a cross-fertilization of ideas and approaches to solving problems. The resulting exchanges have helped Interval Research create and spin off several highly innovative start-ups. And Jerry Hirshberg applies the whole-brain principle to hiring practices at Nissan Design by bringing designers into his organization in virtual pairs. That is, when he hires a designer who glories in the freedom of pure color and rhythm, he will next hire a very rational, Bauhaus-trained designer who favors analysis and focuses on function.

Complete homogeneity in an organization's cognitive approach can be very efficient. But as managers at Xerox PARC, Interval Research, and Nissan

Design have learned, no matter how brilliant the group of individuals, their contributions to innovative problem solving are enhanced by coming up against totally different perspectives.

**Look for the ugly duckling.** Suppose you don't have the luxury of hiring new people yet find your organization mired in a swamp of stale thinking patterns. Consider the experience of the CEO of the U.S. subsidiary of a tightly controlled and conservative European chemical company. Even though the company's business strategy had never worked well in the United States, headquarters pushed the CEO to do more of the same. He knew he needed to figure out a fresh approach because the U.S. company was struggling to compete in a rapidly changing marketplace. But his direct reports were as uniformly left-brained as his superiors in Europe and were disinclined to work with him to figure out new solutions.

Rather than give up, the CEO tested thinking preferences further down in the organization. He found the cognitive disparity that he needed in managers one layer below his direct reports—a small but dynamic set of individuals whose countercultural thinking patterns had constrained their advancement. In this company, people with right-brained preferences were seen as helpful but were not considered top management material. They were never promoted above a certain level.

The CEO changed that. He elevated three managers with right-brained proclivities to the roles of senior vice president and division head—lofty positions occupied until then exclusively by left-brained individuals. The new executives were strong supporters of the CEO's intentions to innovate and worked with him to develop new approaches to the business. They understood that their communication strategy with headquarters would be critical to their success. They deliberately packaged their new ideas in a way that appealed to the cognitive framework of their European owner. Instead of lecturing about the need to change and try new ideas as they had in the past, the Americans presented their ideas as ways of solving problems. They supported their positions with well-researched quantitative data and with calculated anticipated cost savings and ROI—and described how similar approaches had succeeded elsewhere. They detailed the specific steps they would follow to succeed. Within two years, the U.S. subsidiary embarked on a major organizational redesign effort that included such radical notions as permitting outside competition for

internal services. The quality of internal services soared—as did the number of innovations generated by the company in the United States.

**Manage the creative process.** Abrasion is not creative unless managers make it so. Members of whole-brained teams don't naturally understand one another, and they can easily come to dislike one another. Successful managers of richly diverse groups spend time from the outset getting members to acknowledge their differences—often through a joint exploration of the results of a diagnostic analysis—and devise guidelines for working together before attempting to act on the problem at hand. Managers who find it awkward or difficult to lead their groups in identifying cognitive styles or in establishing guidelines can usually enlist the aid of someone who is trained in facilitation.

People often feel a bit foolish creating rules about how they will work together. Surely, the thinking goes, we are all adults and have years of experience in dealing with group dynamics. That, of course, is the problem. Everyone has practiced dysfunctional behavior for years. We learn to value politeness over truth at our mothers' knees. (Who hasn't mastered the art of the white lie by age 16?) We often discount an argument if it has an element of emotion or passion. We opt out if we feel ignored—people with unappreciated thinking styles learn to sit against the wall during meetings (the organizational back-of-the-bus). And we usually don't even notice those behaviors because they are so routine.

But the cost of allowing such behaviors to overtake a group is too high. Bob Meyers, senior vice president of interactive media at NBC, uses a sports analogy to make the point: "On a football team, for

Successful managers spend time getting members of diverse groups to acknowledge their differences.

example, you have to use all kinds of people. Like the little, skinny guy who can only kick the ball. He may not even look as if he belongs on the team. This guy can't stand up to the refrigerator types that play in other positions. But as long as he does his job, he doesn't need to be big. He can just do what he does best. The catch is that the team needs to recognize what the little skinny guy can do—or they lose the benefit of his talent."

Managing the process of creative abrasion means making sure that everyone is at the front of the bus

and talking. Some simple but powerful techniques can be helpful. First, clarify why you are working together by keeping the common goal in front of the group at all times. "If the goal is a real-world one with shared accountability and timetables attached," one manager observed, "then everyone

## Managing the process of creative abrasion means making sure that everyone in the group is talking.

understands the relevance of honoring one another's differences."

Second, make your operating guidelines explicit. Effective guidelines are always simple, clear, and concise. For example, one group set up the following principles about handling disagreements: "Anyone can disagree about anything with anyone, but no one can disagree without stating the reason" and "When someone states an objection, everyone else should listen to it, try to understand it, treat it as legitimate, and counter with their reasons if they don't agree with it." Some principles are as simple as "discuss taboo subjects," "verify assumptions," and "arrive on time with your homework done."

Third, set up an agenda ahead of time that explicitly provides enough time for both *divergent* discussion to uncover imaginative alternatives and *convergent* discussion to select an option and plan its implementation. Innovation requires both types of discussion, but people who excel at different types can, as one manager observed, "drive each other nuts." Another manager said, "If you ask people comfortable with ambiguity whether they prefer A or B, they will ask, 'How about C?'" Meanwhile, the people who crave closure will be squirming in their seats at the seemingly pointless discussion. Moreover, if one approach dominates, the unbalanced group process can risk producing an unacceptable or unfeasible new product, service, or change. Clearly allocating time to the two different types of discussion will contain the frustrations of both the decisive types, who are constantly looking at their watches wanting the decision to be made now, and the ambiguous types, who want to be sure that all possible avenues for creativity have been explored. Otherwise, the decisive members generally will pound the others into silence by invoking time pressures and scheduling. They will grab the first viable option rather than the best one. Or if the less decisive dominate, the group may never reach a

conclusion. Innovation requires both divergent and convergent thinking, both brainstorming and action plans.

**Depersonalize conflict.** Diverse cognitive preferences can cause tremendous tensions in any group, yet innovation requires the cross-fertilization of ideas. And because many new products are systems rather than stand-alone pieces, many business projects cannot proceed without the cooperation of people who receive different messages from the same words and make different observations about the same incidents. The single most valuable contribution that under-

standing different thinking and communication styles brings to the process of innovation is taking the sting out of intellectual disagreements that turn personal.

Consider the experience of the product manager of a radically new product for a medical supplies company. Facing a strict deadline of just 14 months to design and deliver a new surgical instrument, the manager's team needed to pull together fast. Design felt misled by marketing, however, and manufacturing couldn't understand design's delay in choosing between two mechanical hinges. The disagreements turned personal, starting with "you always..." and ending with "irresponsible ignorance." Two months into the project, the manager began to wonder whether he should disband the team and start over again. But he knew that his boss, the vice president of marketing, would not agree to extend the deadline. "I was desperate," he recalled. "I decided to make one last attempt at getting them to work together."

The manager decided to experiment with an off-site gathering of his staff, including sessions diagnosing cognitive preferences. When they returned to work, the team members used the new language they had learned to label their differences in opinion and style. "At first, using the terms was kind of a joke," the manager recalled. "They'd say things like, 'Well, of course I want the schedule right now. I'm a J!' Yet you could tell that people were really seeing one another in a different light, and they weren't getting angry." The team made its deadline; perhaps even more important, several members voluntarily joined forces to work on the next iteration of the product. This willingness to work together generated more value for the company than just "warm fuzzies." Critical technical knowledge was preserved in one small, colocated group – knowledge that would have been scattered had project members dispersed to different product

lines. Moreover, keeping part of the team together resulted in a rapid development time for the derivative product.

People who do not understand cognitive preferences tend to personalize conflict or avoid it—or both. The realization that another person's approach is not wrongheaded and stubborn, but merely predictably different, diffuses anger. For example, at Viacom, a planning session involving two managers had ground to a halt. One manager simply wouldn't buy into the idea that the other was presenting. Suddenly, the presenter slapped his head and said, "Oooohhh! I get it! You're left-brained! Give me half an hour to switch gears, and I'll be right back. Let me try this one more time." The left-brained manager laughingly agreed—he understood the paradigm—and the meeting resumed with the presenter armed with quantitative data and a much more cohesive and logical presentation. Establishing that kind of effective two-way communication led to a common understanding of the issues at hand and, ultimately, a solution.

Understanding that someone views a problem differently does not mean you will agree. But an important element in understanding thinking styles is recognizing that no one style is inherently better than another. Each style brings a uniquely valuable perspective to the process of innovation, just as each style has some negatives associated with it. Stereotypes of the cold-hearted logician, the absent-minded, creative scientist, and the bleeding-heart liberal have some basis in reality. If people even partially internalize the inherent value of different perspectives, they will take disagreements less personally and will be better able to argue and reach a compromise or a consensus with less animosity. They will be open to the possibility that an alien view of the world might actually enhance their own. They will be better equipped to listen for the "a-ha" that occurs at the intersection of different planes of thought.

## Caveat Emptor

Personality analysis of the type we describe is no more than a helpful tool, and it has many limitations. The diagnostic instruments measure only one aspect of personality: preferences in thinking styles and communication. They do not measure ability or intelligence, and they do not predict performance. Neither the MBTI® nor the HBDI measure other qualities that are critical to successful

innovation such as courage, curiosity, integrity, empathy, or drive.

Preferences tend to be relatively stable, but life experiences can affect them. For example, repeated application of the MBTI® over a period of years has revealed a tendency for people to drift from a thinking style toward a feeling style when they have children. For the most part, however, studies done with both the MBTI® and the HBDI suggest that people retain their dominant preferences throughout a variety of work and social circumstances.

One critical warning label should be attached to any of these diagnostic instruments: only trained individuals should administer them. Not only can results be incorrectly interpreted (for instance, what are intended to be neutral descriptions of preferences might be labeled "right" or "wrong" behavior), but they can also be misused to invade people's privacy or to stereotype them. Of course, it is a human tendency to simplify in order to comprehend complexities; we stereotype people all the time on the basis of their language, dress, and behavior. Because these diagnostics have the weight of considerable psychological research behind them, however, they can be dangerous when misused. Without structured, reliable diagnoses, judgments are likely to be superficial and flawed. And without a substantial investment of time and resources, managers can't expect abrasion to be creative.

One of the paradoxes of modern management is that, in the midst of technical and social change so pervasive and rapid that it seems out of pace with the rhythms of nature, human personality has not altered throughout recorded history. People have always had distinct preferences in their approaches to problem solving. Why then is it only now becoming so necessary for managers to understand those differences? Because today's complex products demand integrating the expertise of individuals who do not innately understand one another. Today's pace of change demands that these individuals quickly develop the ability to work together. If abrasion is not managed into creativity, it will constrict the constructive impulses of individuals and organizations alike. Rightly harnessed, the energy released by the intersection of different thought processes will propel innovation.

---

*If you are interested in reading further about managing conflict in the workplace, see "Fair Process: Managing in the Knowledge Economy" (reprint 97405) and "How Management Teams Can Have a Good Fight," (reprint 97402).*

Product no. 4088

To place an order, call 800-988-0886.

## ARTICLES

**"How to Kill Creativity" by Teresa M. Amabile**  
(*Harvard Business Review*, September–October 1998, Product no. 3499)

Amabile sees intrinsic motivation as the linchpin of the creative process. Many companies unwittingly kill creative ideas before they are fully formed, she writes, by crushing their employees' intrinsic motivation to create and develop them. Creativity has three components: expertise, the ability to think flexibly and imaginatively, and motivation. Making changes that increase the level of intrinsic motivation will show results quicker than trying to increase expertise or creative-thinking skills.

**"The Discipline of Innovation" by Peter F. Drucker**  
(*Harvard Business Review*, November–December 1998, Product no. 3480)

Some innovations spring from a flash of genius. But as Drucker points out, most result from a conscious, purposeful search for opportunities. This process requires diligence, persistence, and commitment. Successful innovators use the left and right sides of their brains. They analyze an opportunity to determine what innovation will satisfy it. They study potential users, their needs, and expectations.

**"What's Stifling the Creativity at CoolBurst?" by Suzy Wetlaufer**  
(*Harvard Business Review*, September–October 1997, Product no. 3502)

In this fictitious case study, five experts discuss how, or whether, a new CEO can encourage employees to start thinking differently in a polite, staid culture that assigns a very low status to creativity. A division manager in a large consumer products company and four academics from leading business schools, one of whom is also a psychoanalyst, focus on the problems associated with trying to change an entrenched culture.

## BOOK

***When Sparks Fly: Igniting Creativity in Groups***  
by Dorothy Leonard and Walter Swap  
(Harvard Business School Press, 1999,  
Product no. 8656)

Contrary to the commonly held notion that innovative ideas come only from "creative geniuses," the most innovative, complex services, products, and processes spring from well-led, well-managed group interactions. Drawing on their research with companies as diverse as Fisher Price and Hewlett-Packard, the authors demonstrate how these companies use group situations to maximize their creative potential.

Visit us on the Web at:



Harvard Business Online

THE WEBSITE OF HARVARD BUSINESS SCHOOL PUBLISHING

U.S. and Canada: 800-988-0886  
617-783-7500 • Fax: 617-783-7555