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Decisions Without Blinders

by Max H. Bazerman and Dolly Chugh

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By the time Merck withdrew Vioxx from the market in September 2004 out of concern that the pain relief drug was causing heart attacks and strokes, more than 100 million prescriptions for it had been filled in the United States alone. Researchers now estimate that Vioxx may have been associated with as many as 25,000 heart attacks and strokes. And more than 1,000 claims have been filed against the company. Evidence of the drug's hazards was publicly available as early as November 2000, when the *New England Journal of Medicine* reported that four times as many patients taking Vioxx experienced myocardial infarctions as did those taking naproxen. In 2001, Merck's own report to federal regulators showed that 14.6% of Vioxx patients suffered from cardiovascular troubles while taking the drug; 2.5% developed serious problems, including heart attacks. So why, if the drug's risks had been published in 2000 and 2001, did so many doctors choose to prescribe it?

Social science research has shown that without realizing it, decision makers ignore certain critical information. Doctors, like the rest of us, are imperfect information processors. They face tremendous demands on their time and must make life-and-death decisions under highly ambiguous circumstances. In the case of Vioxx, doctors more often than not received positive feedback from patients taking the drug. And, as we now know, the Merck sales force took unethical steps to make Vioxx appear safer than it was. So despite having access to information about the risks, doctors—even those who had read the *New England Journal of Medicine* article—may have been blinded to the actual extent of those risks.

And why did Merck's senior executives allow the product to stay on the market for so long? Evidence points to intentional misrepresentation by the sales force, but it is quite possible that some members of Merck's top management team did not fully understand how harmful the drug was. In fact, many respected individuals have vouched for the ethics of former chairman and CEO Raymond Gilmartin, insisting that he would have

pulled Vioxx from the market earlier if he had believed that it was killing people. Although senior executives are, ultimately, responsible for what happens in their organizations, the lapse here may have been more in the quality of their decision making than in any intentional unethical behavior.

In this article, we'll examine the phenomenon of *bounded awareness*—when cognitive blinders prevent a person from seeing, seeking, using, or sharing highly relevant, easily accessible, and readily perceivable information during the decision-making process. "The information that life serves is not necessarily the information that one would order from the menu," notes Dan Gilbert of Harvard University's psychology department, "but like polite dinner guests and other victims of circumstance, people generally seem to accept what is offered rather than banging their flatware and demanding carrots."

Most executives are not aware of the specific ways in which their awareness is limited. And failure to recognize those limitations can have grave consequences, as the Vioxx example demonstrates. Simply put, pain relief and profits may well have been within doctors' and executives' bounds of awareness, whereas the risks of Vioxx may have fallen outside these bounds.

It's important to note that bounded awareness differs from information overload, or having to make decisions with too much information and too little time. Even when spared a deluge of information and given sufficient time to make decisions, most individuals still fail to bring the right information into their conscious awareness at the right time.

Bounded awareness can occur at various points in the decision-making process. First, executives may fail to see or seek out key information needed to make a sound decision. Second, they may fail to use the information that they do see because they aren't aware of its relevance. Finally, executives may fail to share information with others, thereby bounding the organization's awareness.

Failure to See Information

The ability to focus on one task is undoubtedly useful, but focus also limits awareness. Consider a study by Cornell psychologist Ulric Neisser, for instance. Neisser had participants watch a videotape of two teams (wearing different-colored jerseys) passing basketballs and asked everyone to count the number of passes between players on one of the teams. The assignment was more difficult than it might sound, because each team had played at different times but their footage was superimposed onto one video. So focused were the subjects on their task that only 21% of them reported seeing a woman walking with an open umbrella among the players. But anyone who watches the video without an assignment notices the woman there for a significant part of the video. When we use this tape in the executive classroom, even fewer than 21% of executives spot the woman. That's cause for concern, since executives need to stay alert to peripheral threats and opportunities as well as concentrate on the job at hand. Failure to notice regulatory, political, or market-oriented changes in their environment will keep them from adapting their strategies so that their organizations can thrive.

People overlook more than just the information they aren't expecting, as Jeremy Wolfe and Todd Horowitz of Harvard Medical School and Naomi Kenner of Brigham and Women's Hospital in Boston have shown. These researchers replicated in a lab the process of screening for weapons at airports. Study participants screened bags for dangerous objects after having been told how often those objects would appear. When they were told that the objects would appear 50% of the time, participants had a 7% error rate. But when they were told that the objects would appear only 1% of the time, the error rate jumped to 30%. Since people didn't expect to see the objects, they gave up looking for them—or as Wolfe explains, "If you don't see it often, you often don't see it."

Another area of perceptual blindness has to do with gradual change, as demonstrated in a study by Harvard Business School's Francesca Gino with Max Bazerman. Participants were divided into two groups: one charged with estimating the amount of money in jars filled with pennies, the other with "auditing" the estimates of others. The estimators were rewarded not when they were accurate but when their high estimates were approved by the auditor. The auditors were rewarded for approving the estimates but penalized if caught accepting an extreme overestimate. When the first group gradually increased its numbers in compari-

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son with the true value, the auditors were less likely to see the estimates as inflated and unethical than if the estimators suddenly moved to the same exaggerated number. In practice, this helps explain how the Enron and WorldCom scandals grew so huge. Small ethical transgressions that were originally overlooked snowballed into larger and larger crimes.

Fortunately, people can learn to be more observant of changes in their environment, which will help to remove their decision-making blinders. U.S. Secret Service agents, for instance, are trained to scan a crowd and notice when someone reaches into his coat or moves to the front of a pack, things most of us would be oblivious to. Similarly, executives can cultivate an awareness of what kind of information could directly affect their organizations. They should also assign responsibility to others for this task. Since different people will have different bounds of awareness, getting multiple views will be more apt to yield all the relevant data necessary for a fully informed decision. Psychologists Dan Lovallo and Daniel Kahneman discussed the wisdom of developing—or buying—an outsider's perspective in "Delusions of Success: How Optimism Undermines Executives' Decisions" (HBR July 2003). We second their advice because an outside view might help you see critical information that you could easily overlook when immersed in day-to-day activities.

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Failure to Seek Information

The *Challenger* space shuttle disaster has been well reviewed through many analytic lenses, but for our purposes, let's consider the decisions leading up to the launch. *Challenger* blasted off at the lowest temperature in the history of the shuttle program, a factor that led to the failure of the O-rings and, ultimately, to the death of all seven astronauts on board. The day before the disaster, executives at NASA argued about whether the combination of low temperature and O-ring failure would be a problem. But because no clear connection emerged between low temperatures and the O-rings in the seven prior launches when O-ring damage had occurred, they chose to continue on schedule.

Tragically, the decision makers did not seek out the temperatures for the 17 shuttle launches in which there was no O-ring failure. The data set of all 24 launches would have unambiguously pointed to the need to delay *Challenger*. Later analyses suggest that, given the low temperature, the probability of disaster exceeded 99%. Like many well-meaning executives, the scientists at NASA and Morton Thiokol limited their analysis to the data at hand—they failed to seek out the most relevant data.

The most worrisome version of the failure to seek information occurs when decision makers are motivated to favor a particular outcome. Many people believe the Bush administration's decision to invade Iraq was a mistake. We will not argue the general case here, but we do contend that the process leading up to the decision was flawed. Senior U.S. government officials were caught up in their own bounded awareness and did not search for information that would argue against an invasion. Specifically, they failed to notice signs that their assessment of the situation in Iraq was wrong, particularly regarding the existence of weapons of mass destruction.

The most disturbing evidence comes from Richard Clarke's account of the events of September 11 and 12, 2001. Clarke, the antiterrorism czar at the time, claims in his book *Against All Enemies* that on the night of September 11, he was directed by then–National Security Advisor Condoleezza Rice to go home for a few hours of sleep. When he returned to work the next morning, Clarke reports, Vice President Dick Cheney, Defense Secretary Donald Rumsfeld, and Deputy Secretary of Defense Paul Wolfowitz were discussing the role that Iraq must have played in the attack. We now know that this overly narrow assessment was wrong, but in the months that followed, the Bush administration conducted a motivated search to tie Iraq to 9/11 and terrorism. With such a confirmatory effort, information inconsistent with the preferred viewpoint lay outside the bounds of awareness.

How can we be expected to seek out information that lies beyond our very awareness? The key is vigilance in considering what information actually addresses the decision you must reach. Imagine, for instance, that you are in a classroom and the professor gives you the sequence "2–4–6." She then asks you to identify the specific rule she is thinking of that is consistent with the 2–4–6 sequence. In order to guess the rule, you can call out other sequences of three numbers, and the professor will tell

you whether or not each sequence you offer follows her rule. You can query as many sequences as you like, but you have only one chance to guess the rule.

We use this exercise, adapted from psychologist P.C. Wason, in our executive education classes. We write 2–4–6 on the board and have a volunteer guess other sequences to determine the rule. The volunteer usually offers only a few sequences before making his final—and always incorrect—guess (most commonly, "numbers that go up by two" or "the difference between the first two numbers equals the difference between the last two numbers"). We then ask for another volunteer. This executive comes up with another hypothesis, tries sequences that are consistent with that hypothesis, and then guesses a rule—again, incorrectly. At this stage, it is rare that we will have answered no to a sequence proposed by either executive, because the rule is "any three ascending numbers."

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Solving this problem requires participants to accumulate contradictory, rather than confirming, evidence. Thus, if your mind places the bounds of "numbers that go up by two" on the problem, you must try sequences that do not conform to find the actual rule. Trying 1–3–5, 10–12–14, 122–124–126, and so on will lead you to "confirm" that going up by two is correct, though it is not. Seeking disconfirming information is a powerful problem-solving approach, but it is rarely a part of our intuitive strategies.

That exercise had one correct answer, but in the real world, few decisions are so cut-and-dried. And yet, by the time information reaches an executive's desk, it is often framed as a recommendation and supported by considerable data. While it's true that executives must rely on others to streamline the data flow for them, they must also be skeptical of the absence of contradictory evidence: It is a red flag indicating highly bounded awareness. When an executive sees it, he should send team members back to search for and articulate the missing contradictory evidence.

Take, for example, the legendary flop of New Coke in 1985. In the mid-1980s, Pepsi was gaining ground on Coke, largely by shifting consumers' attention to taste through the Pepsi Challenge taste tests. The success of Pepsi's campaign also persuaded Coca-Cola executives to focus on the taste dimension—and to devote a massive amount of research and development to the reformulation of the 99-year-old Coke recipe.

Let's put this situation in the context of the 2–4–6 puzzle. Pepsi's focus on taste became the hypothesis at Coke's headquarters. All the focus groups, taste tests, and reformulations that followed seemed to confirm that taste was the problem. However, executives didn't attempt to collect contradictory evidence. Sergio Zyman, Coke's chief marketing officer at the time, reflects, "We didn't ask ... 'If we took away Coca-Cola and gave you New Coke, would you accept it?'" That question could have proved the taste theory wrong. Just as the way to test the "increase by 2 hypothesis" is not to say 1–3–5 but 1–3–6, the way to test the taste hypothesis is to test worse-tasting Coke recipes against Pepsi to see if Coke drinkers remain loyal.

Generating contradictory evidence should be part of everyone's job. But one way to integrate this form of thinking is to assign a "devil's inquisitor" role to a member of the group. This is not the same as a devil's advocate, who argues against the status quo. By asking questions instead of arguing an alternate point of view, the devil's inquisitor pushes people to look for evidence outside their bounds of awareness. Moreover, this role can be comfortably worn by those who are reluctant to take on the majority; it gives them a safe way to contribute.

Failure to Use Information

Although it may be hard to believe, many executives simply disregard accessible and valuable information when they are making an important decision. Consider the case of Citibank in Japan. According to Insead's Mark Hunter, soon after the Financial Services Agency (FSA) was created in 1998, it undertook inspections of Japan's 19 major banks. Foreign banks came under intense scrutiny, and the license of the Tokyo branch of Credit Suisse Financial Products, the derivatives arm of Credit Suisse First Boston, was revoked in November 1999. The FSA's message was clear: Many formerly gray areas in banking were now unacceptable, such as cross selling financial products across corporate units. Even so, cross selling remained a core strategy for Citibank.

The FSA also made it clear that transactions aimed at concealing losses were illegal. In May 2000, it suspended Deutsche Bank's Tokyo se-

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curities unit from selling equity derivatives products for six months because the unit had sold securities designed to conceal the losses of corporate clients. That was one of many similar punishments levied against banks. In sum, the FSA sent unambiguous signals that hard-selling tactics and practices that would be tolerated elsewhere would lead to punishment in Japan.

In 2001, under pressure from the FSA, Citibank reported that it had offered products to about 40 companies that would let them transfer book losses on securities holdings and foreign exchange losses to later reporting periods. Obviously, upper-level managers at Citibank had seen newspaper accounts of the punishments of their competitors for this sort of behavior. Yet Citibank executives played aggressively and publicly in the gray areas of the Japanese marketplace. In 2003, to take one example, when a Tokyo fashion school sought a $6.7 million loan, other bankers who saw the school's books turned it down. But Citibank's private bank found a solution: Six of its customers bought three buildings from the school. The school then bought them back a year later, for the same price plus rent and transaction fees, which added 26% to the cost. Citibank kept 11% for itself; its customers got the rest of the profit. Citibank's bounded awareness led it to miss warning signals from the Japanese government and to engage in many other inappropriate behaviors.

Eventually, Citibank paid for its poor decisions. The FSA revoked the licenses of the company's four private-banking offices in September 2004. The FSA also damaged Citibank's reputation by claiming that the bank had cheated customers by tacking excessively high margins onto financial products. Why, in the face of mounting evidence of the FSA's enforcement practices, hadn't Citibank executives protected their own interests by stopping this questionable behavior in their Japanese offices? The information about FSA activities was available to Citibank executives, but their focus appeared to have been primarily on financial performance, and marginal violations of Japanese law lay outside their bounds of awareness.

It seems that success itself can create bounds that prevent executives from using readily available information. Swiss watchmakers invented quartz technology, but as Michael Tushman of Harvard Business School and his colleagues have shown, their dominance in mechanical watches prevented the Swiss from recognizing the future path of the entire watch industry. They essentially gave the quartz technology away and, as a result, lost most of the global watch market to U.S. and Japanese firms. More broadly, Tushman documents a common pattern: Success in a given technical area impairs firms from using new technologies outside that area, even when they are available in-house.

Another common pattern of bounded awareness is not using information about competitors. Don Moore of Carnegie Mellon University and his colleagues have found that decision makers may succeed at focusing on how well they can perform a task but tend to ignore how well the competition can do the same task. As a result, individuals are much more likely to compete on easy tasks, even when facing a great deal of competition, than to compete on harder tasks, despite the fact that it will also be harder for the competition. According to Moore, this tendency often leads firms to enter product domains that have easy access and to enter more difficult product domains too infrequently.

One way to decide if the information at your disposal is useful is to think about the actions of other parties involved and the rules governing their actions. For instance, imagine that you are thinking about acquiring a small firm with a great new product that fits your portfolio. The firm could be worth as little as $5 million or as much as $10 million in the hands of current management, depending on valuation assumptions. Under your ownership, you believe, it would be worth roughly $20 million because of the unique synergies that your company can create. You know that the other firm's founders hold three equal shares and that they have different opinions about the worth of their firm. How much do you offer?

If you learned that the founders have an agreement that they will sell the firm only if all three accept an offer, would your offer change? Or if instead you learned that any one of the three founders can force the sale of the firm (unless the other two buy her shares at an equivalent price, which you are fairly certain the others cannot afford), would that change your offer?

Once you realize that the other players' deci-

sions will probably vary, the decision rule about the seller's reservation value (that is, the minimum price that the seller will accept) becomes very important. Imagine that the three founders place their reservation values for selling the firm at $6 million, $7 million, and $9 million. Clearly, if one founder can force the sale, you can offer a much lower price than you could if all sellers must be in agreement. For most negotiators, however, the decisions of other parties and the rules of the game lie outside their bounds of awareness. When we present this scenario to executives in our classes, they typically disregard the decision rule in effect, and they don't consider the likelihood that the founders would vary in their reservation values.

Executives can take steps to gain access to similarly critical information. One method is to "unpack" a situation, or make the full context of the relevant information clear. Individuals asked to predict how happy or unhappy they would be a few days after their favorite football team won or lost a game, for instance, tend to expect that their happiness will rely heavily on the game's outcome. But when Tim Wilson of the University of Virginia and his colleagues asked participants to list a dozen other things that were happening on the days following the game, they predicted that their happiness would depend far less on the outcome of the game. In other words, they "unpacked" the situation to bring easily available, but previously unused, information into awareness.

Team members frequently discuss the information that they are all aware of and fail to share unique information with one another.

Research by Nick Epley of the University of Chicago and Eugene Caruso and Max Bazerman of Harvard University shows that people tend to take more credit than they deserve for a group's accomplishments. When four group members are each asked, "What percentage of the group's accomplishments is due to your ideas and work?" the sum of the four percentages typically far exceeds 100% (this finding applies to academic coauthors). But when they are asked instead, "What percentage of the group's accomplishments can be attributed to each of the four group members?" the degree of self-serving bias declines dramatically. Essentially, the latter question "unpacks" the contributions of the other members, bringing their contributions into the respondent's bounds of awareness.

Other questions that are likely to bring useful information within the bounds of awareness include: What information do we already know in our organization? What information is relevant to the problem at hand? Is it rational to ignore the information that we have not been using? Obviously, the more important the problem, the more care you should take to use the most appropriate inputs.

Failure to Share Information

Executives work in teams because, as the saying goes, two heads are better than one. Members are chosen to represent different parts of the organization so that the group can access different sources of information when making decisions and setting strategy. Yet research suggests that most groups have cognitive boundaries to sharing information. Team members frequently discuss the information that they are all aware of, and they typically fail to share unique information with one another. Why? Because it's much easier to discuss common information and because common information is more positively rewarded as others chime in with their support. Cognitively, individual executives don't realize the importance of sharing their own unique information and fail to seek unique information from others. That dysfunctional pattern undermines the very reason that organizations form diverse teams.

As an example, consider "hidden profile" tasks, developed by Gerald Stasser at the University of Ohio and now a common element of executive courses on group decision making. In a typical hidden profile task, group members are asked to identify the best choice from a number of options, such as the best person for a key executive position. When all group members are given all the information available about all the candidates, the vast majority of groups identify one specific candidate as the best choice. But in one version of the study, excellent information about the best candidate is distributed to only a few group members, while good (but not excellent) information about another candidate is common knowledge to everyone on the team. In that case, most groups choose the lesser candidate because members keep the information about the best candidate to themselves.

The failure to share unique information is a likely factor in the United States' inability to prevent the 9/11 attacks. According to the report of the 9/11 Commission, the U.S. govern-

ment had access to plenty of information that, collectively, should have been used to protect the nation. The White House, the CIA, the FBI, the Federal Aviation Administration, Congress, and many other parts of the government had some of the information needed to head off the attack. Both the Clinton/Gore and the Bush/Cheney administrations failed to adequately improve aviation security and antiterrorism intelligence; they passed up opportunities to mandate systems that would have allowed agencies to share available information. Although we cannot be sure that better information sharing would have prevented 9/11, we are certain that if we could replay history, wise individuals would opt for far better communications among the various organizations.

There are many ways to approach the integration of diverse knowledge in a group. Meetings should have agendas, and the agendas should specifically request individual reports, rather than assuming individuals who have unique information will speak up as needed. If accountability for critical issues lies in multiple areas, then one person or department can be held responsible for ensuring that individuals or groups share information. But before executives can consider the proper structural responses to a situation, they must first recognize the hidden profile effect. Only then can they bring unique information into the bounds of the group decision-making process.

How Can You Increase Your Awareness?

SEE Information

Know what you are looking for, and train your eyes.
Secret Service agents can scan a crowd to recognize risks. Business executives can do something similar by asking questions like "What if our strategy is wrong? How would we know?" Simply asking the questions will force you to pay attention to areas you're typically unaware of.

Develop (or pay for) an outsider's perspective.
Ask this person or group to tell you things you don't see from your vantage point. Even if you know you can't implement radical recommendations, having more data at hand is critical.

SEEK Information

Challenge the absence of disconfirming evidence.
Receiving recommendations without contradictory data is a red flag indicating that your team members are falling prey to bounded awareness. Assign someone to play the role of devil's inquisitor (a person who asks questions, as opposed to a devil's advocate, who argues an alternate point of view).

Undersearch in most contexts, but oversearch in important contexts.
Think about the implications of an error; if it would be extremely difficult to recover from, then oversearching is a wise strategy.

USE Information

Unpack the situation.
Make sure you're not overemphasizing one focal event and discounting other relevant information. By consciously thinking about the full context of your situation, you're less likely to disregard important data.

Assume that the information you need exists in your organization.
It often does, and if you approach it with that mind-set, you're more likely to discover it.

SHARE Information

Everyone has unique information; ask for it explicitly.
Meeting agendas for top executives should require updates from all members, thus increasing the probability that important individual information is shared.

Create structures that make information sharing the default.
Consider making one individual responsible for assembling information from many sources.

Breaking Through Your Bounds

Focus is a good thing. Indeed, many executives have achieved their success because of their ability to focus intently on particular information. But when making important decisions, executives would be well advised to consider whether key information remains out of focus because of their bounded awareness. When executives at major U.S. airlines concentrated on aggressively pursuing market share, for instance, they lost sight of other critical strategic considerations and compromised profitability, customer satisfaction, and aviation security.

Of course, not every decision requires a person to consciously broaden his focus. In fact, one risk of describing the problem of bounded awareness is that executives could become hyperaware of their own limitations and, as a result, collect too much information for every choice they face. That would waste time and other valuable resources. But when something large is at stake—such as emergency preparedness or downsizing or marketing a potentially dangerous product—executives should be mindful of their natural bounds of awareness. In short, if an error would generate almost irrecoverable damage, then they should insist on getting all the information they need to make a wise decision. In this regard, executives would do well to learn from high-level diplomats. Ambassadors tend to think intuitively about how negotiations with one country will

affect neighboring countries. And diplomats seem to have developed a tendency to expand their bounds of awareness by collecting more information rather than less—a goal that might benefit corporate executives.

In their book *Why Not?,* Barry Nalebuff and Ian Ayres of Yale University provide another clear strategy for expanding the cognitive bounds of executives. They argue that people too often take the status quo as a given; by contrast, creative solutions emerge when we question common assumptions about how things work. Nalebuff and Ayres tell many stories of corporate success that have resulted from asking, "Why not?"—including the discovery that ketchup bottles would be more functional if they rested on their tops. To put that in our terms, you can learn to locate useful information outside your bounds of awareness by asking a simple question: Why not?

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