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Abstract

In this article, we demonstrate that an exercise using metaphors to overcome cognitive biases helped students to proactively imagine and prepare for an expanded set of potential crises. The exercise complements traditional textbook approaches to crisis management and incorporates creativity skill building in a realistic context. Learning outcomes included an enhanced appreciation of detrimental effects of cognitive biases, improved skill in using metaphor to overcome these biases, an understanding of the benefits of proactive crisis management, and experience in formulating a crisis management plan. We describe the exercise, suggest debriefing questions, and discuss benefits to students.

Keywords

metaphor, experiential exercise, framing; cognitive bias, crisis management

The essence of metaphor is understanding and experiencing one kind of thing in terms of another.

—*Lakoff and Johnson (1980, p. 5).*

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Predictable surprises (Watkins & Bazerman, 2003), low probability, high-consequence events that test even the best of managers, have become an inevitable part of today's complex and dynamic environment. One does not have to look far to find that damage results when managers fail to imagine these often *unimaginable* crises. As we write, the financial meltdown and liquidity crisis, melamine in infant formula, and the possible demise of American automobile manufacturers all illustrate this point. We argue that educators have a special responsibility to help students develop the creative thinking skills required to imagine the unimaginable events that lead to crises. Our evidence shows that the exercise described below complemented traditional textbook approaches to crisis management and incorporated creativity skill building in a realistic context.

Management texts devote little to no space to the topic of managing in hard times and rarely present a formal definition of the term *crisis*, leaving instructors to find ways to integrate these important topics into already time-pressed courses. When crisis management receives only brief attention under the umbrella topics of external environment or decision making, the importance of proper preparation for possible crises and the potential detrimental impact of crises on organizations and stakeholders are likely to be omitted from classroom conversations. Even more problematic is the implicit assumption that managers have the necessary skills to imagine all of the possibilities that would demand a response (see, e.g., Daft, 2008; Whetten & Cameron, 2007). Humans tend to believe that things are better than they really are and downplay the possibility of negative future events. This perceptual error, one in an array of cognitive biases that plague effective decision making, can result in inattention to potential problems, failure to take preventive action, and potentially damaging results (Watkins & Bazerman, 2003). Although most management texts include the topic of cognitive biases in discussions of decision making (e.g., Daft, 2008), few provide guidance to students about how to develop creative problem solving skills that enable them to break through these biases.

Crises Happen

Organizational crises come in a variety of forms and have the potential to cause significant harm to people, property, and the environment. Pearson and Clair (1998) provide the following definition:

An organizational crisis is a low-probability, high-impact event that threatens the viability of the organization and is characterized by

ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly. (p. 60)

Some low-probability, high-consequence events can be classified as predictable surprises because they “should have been anticipated and prepared for” (Watkins & Bazerman, 2003, p. 4). Perrow (1984) argued that unthinkable accidents can and should be predicted because systems, especially those that are complex and interdependent, will eventually fail. As Pearson and Clair (1998) note, effective crisis management occurs when there is “. . . a systematic attempt by organizational members with external stakeholders to avert crises or to effectively manage those that do occur” (p. 61). Put simply, preparation is the primary determinant of successful outcomes. Surprisingly, the abundant literature on crisis management (e.g., Carroll, 1995; Cook & Woods, 1994; Shrivastava, 1987; Vaughan, 1996; K. E. Weick, 1993) and high-reliability organizations (e.g., Reinertsen & Clancy, 2006) pays more attention to responding to crises than it does to anticipating them.

Managers simply cannot ignore the risk of catastrophes—whether these result from the natural environment or from human activity. Even those who believe they are prepared for the unthinkable can be shocked when it happens. The list is familiar. Two of the most visible examples are Hurricane Katrina and the September 11 terrorist attacks. Although these events had impact well beyond a single organization, they illustrate the importance of crisis preparation. After Hurricane Katrina flooded Tulane’s campus, Scott Cowen, Tulane’s president, acknowledged that “our plan [for a major hurricane] did not anticipate the total devastation of the city” (Chronicle of Higher Education, 2005, p. A19) or “. . . the possibility of catastrophic damage, of not being able to resume business at the university for a protracted period of time” (Cowen, 2006, p. B12). Although the World Trade Center had experienced a terrorist attack in February 1993, few anticipated the severity of the September 11, 2001, attacks and the chaos caused by the collapse of the twin towers. Many companies were not prepared to deal with such a crisis and took days to identify and locate surviving employees.

Vulnerability to predictable surprises increases when managers fail to recognize a threat, recognize but fail to pay sufficient attention to a threat, or recognize and understand the importance of a threat, but fail to respond effectively (Watkins & Bazerman, 2003). Key to imagining a predictable surprise, an essential precursor of avoiding or preparing for an undesirable event, is seeking to know what you do not know (Roberts & Bea, 2001). Recognizing the unknown requires that we break through the frames that

limit our understanding of the world and doing so means we must overcome significant obstacles to imagining the unimaginable: cognitive biases.

“Frames” Limit Possibilities

Imagination breakdowns occur when thoughts and imaginings are insufficient to encompass worst case possibilities (Clarke, 2006). Humans view their experiences through a set of frames or windows, preconditioned lenses and filters that help to understand and negotiate a territory (Bolman & Deal, 2003; MacLean, 2008). Successful managers know that reframing, or using more than one frame to understand a situation, leads to a more effective diagnosis of what they are up against and strategies to move forward than does a singular focus. Unfortunately, most of us rarely use more than one or two frames in everyday problem solving (Bolman & Deal, 2003) and find it challenging and often uncomfortable to reframe. In crisis preparation, the lack of multiple frames can be a fatal flaw if managers fail to imagine *worst case* possibilities.

Crisis management literature offers guidance about *what* steps managers must take to improve decision making and effectively respond to crises; however, little or no attention is paid to *how* to develop skill in anticipating potential crises. Thinking the unthinkable requires that frames be broken and is frequently a task that requires pessimism instead of optimism, the more natural human tendency (Lovallo & Kahneman, 2003). Clarke (2006) argues that managers are good at probabilistic thinking but what is needed to imagine the unimaginable is possibilistic thinking. A probabilistic thinker asks “what’s the likelihood that a crisis will confront us?” whereas the possibilistic thinker asks “what are the really bad things that could happen to us?” In the first terrorist attack on the World Trade Center, a van loaded with explosives destroyed the ground-level floor of a hotel in the complex, several levels of underground parking, and part of the wall and ceiling of the adjacent subway station (Mangan, 1993). Subsequent to the first attack security was tightened at garages and entrances (Post, 1994). Though the possibility of a similar attack was anticipated, reliance on a familiar frame contributed to the inability to see a different kind of terrorist attack—hijacked planes used as fuel-laden bombs.

Cognitive biases, or flaws in information processing that distort the decision-maker’s view, make it hard to view a situation through multiple frames. At their essence, biases help to explain why “. . . people don’t passively perceive reality, but actively filter, create and apply meaning to their environment” (Rudolph & Bartunek, 1998, p. 3). For instance, managers who

depend on past successes and failures for models of what could go wrong are trapped in experience (Clarke, 2006), and those who seek only information that confirms a prior hypothesis, even when evidence suggests that hypothesis is wrong, are caught in a confirmation trap (Horn, Lovullo, & Viguerie, 2005). The Challenger Space Shuttle accident provides a tragic example of another bias, failure to adjust from a convenient anchor, a suggested or known reference point. Until the Challenger launch, the shuttle program had not experienced any accidents, and no shuttle had ever been launched at low temperatures. Referencing this no-accident record likely biased the decision makers' assessment of the probability of an accident, despite internal debate about the dangers that cold weather presented. Biases make frames difficult to break. This is particularly problematic in crisis preparation if, as Pauchant and Mitroff (1992) point out, the frame inhibits managers from seeing their vulnerability (e.g., bad things can't happen to us or our systems are safe) or relies on faulty assumptions (e.g., our size will protect us or if a crisis happens someone will rescue us).

To examine problems from multiple perspectives demands that we break frames (George, Chattopadhyay, Sitkin, & Barden, 2006; Wright & Goodwin, 2002) and one strategy to do this is to take what Lovullo and Kahneman (2003) term *an outside view*. Mitroff and Alpaslan (2003) argue that metaphors are especially helpful in breaking frames. For example, might the problems that occurred in the days and weeks following Katrina have been better anticipated had leaders of New Orleans asked themselves: "What if we were a Caribbean island struck by a major hurricane?" What if the administration of Tulane University asked another related question: "What if we were a *resort* on a Caribbean island that is struck by a major hurricane?" Might this question have spurred possibilistic thinking, leading to preparation for a semester-long university closure? University administrators could have realized that a major storm could put them *out of business* the same way that resorts shut down in the months following a hurricane or other catastrophe. Why weren't these questions asked, or if they were, why were the answers inadequate? What gets in the way of imagining well?

Breaking Frames Using Metaphor

Metaphors help us to think about organizations in multiple ways because they enable us to deal indirectly with issues that are too complex or threatening to approach head-on (Bolman & Deal, 2003). Sackmann (1989) defines a metaphor as ". . . a figure of speech in which a term or phrase with a literal meaning is applied to a different context in order to suggest a resemblance,

such as the ‘head of the family’” (p. 542). Hogler, Gross, Hartman, and Cunliffe (2008) point to the value of metaphorical thinking because it is “. . . made up of more than facts and information; it is an affective state that simultaneously invokes cognition and produces a crucial sensory response” (p. 394). The clear, vivid, and visual images that metaphors stimulate help individuals capture subtle themes that normal language overlooks (Bolman & Deal, 2003) and thus move dominant mental models aside to think about organizations in ways that are concrete, familiar, and easy to understand yet novel (Taber, 2008). Scholars (e.g., Hogler, et al., 2008) attribute the “theoretical pedigree” (p. 397) of metaphor to Morgan (1986) whose ground-breaking work described organizations using images and language from different contexts, including machines, brains, and psychic prisons.

Metaphor, at its essence, focuses on the similarities between two objects or ideas that appear quite different. For example, the metaphor of work as a game helps to conceptualize the experience of work in familiar game language with players, losers, winners, good moves, and strategies (Hogler et al., 2008). The appeal of metaphors to organizational theorists and managers comes from the fact that they highlight the similarities, rather than differences, between two objects or ideas (Taber, 2008) and excite the imagination (K. E. Weick, 1989). Metaphors help speed comprehension and increase understanding. For instance, students who do not have actual marketing experience can readily understand the value of using marriage as a metaphor for relationship marketing (Cornelissen, 2003). Bolman and Deal (2003) provide another example, directly relevant to this exercise, when they suggest that the President of a university who views his institution as a factory will set different policies than one who conceives of it as a craft guild or shopping center (p. 268).

Metaphors are particularly useful when there is a need to spark creative thinking about something that is relatively familiar (Weinrauch, 2005). They have been used to illuminate similarities between jazz and strategy (Eisenhardt, 1997), evolutionary biology and organizational lifecycles (Henderson, 1989), sports and business strategy (Keidel, 1984; Rapaport, 1993), gardening and online teaching and learning (May & Short, 2003), athletic arenas and organizations (Bolman & Deal, 2003), and the music of groups and team-based learning (Fairfield & London, 2003). One recent and visible example of the value of metaphor comes from the Internet. Individuals and organizations now think differently about information exchange and security on the Internet because of the metaphor of viral infections that spread rapidly, mutate often, and cause damage. In sum, metaphors demonstrate that we can learn to use multiple frames to think about the same organization simultaneously as different things (Bolman & Deal, 2003). Metaphors provide the bridge that

aids managers in *thinking outside the box*, imagining a broad set of possibilities, and in turn enhancing the organization's capacity to prepare for and, if necessary, manage crises.

In the exercise described in this article, we explicitly linked creative thinking, metaphor, and a real management problem: anticipating and preparing for a crisis. When students engaged in paradigm-stretching activities (McFadzean, 1998) by using metaphor to introduce new elements into their thought processes, they changed their perspective, and generated a greater range of creative ideas. To our knowledge, none of the published experiential exercises that incorporate metaphor (e.g., Anderson, 2007; Taber, 2008; C. W. Weick, 2003) focus on its use to build skills related to crisis management.

We successfully used this exercise in undergraduate Principles of Management and Organizational Behavior courses and believe it could add value in a Business Strategy capstone course as well as special topics courses that include content on managing in difficult times. As a result of their participation in the exercise, students should achieve the following important learning objectives:

- Appreciate how cognitive biases limit managers' ability to think realistically about the future.
- Develop skill in using metaphor as a tool to help overcome cognitive biases.
- Understand the benefits of proactively imagining an expanded set of crisis possibilities.
- Gain experience in formulating a crisis management plan.

The Exercise

We developed this exercise based on the work of Watkins and Bazerman (2003) and Mitroff and Alpaslan (2003). These authors persuasively argued for deliberate preparation for the unthinkable—whether predictable or not. In addition, our own experience teaching students about managing in difficult times suggests that they have trouble making connections between personal experience and concepts from crisis management. We believe that the exercise, which requires students to apply a metaphor to their college or university, effectively models the usefulness of metaphor in fostering creativity and improving managerial decision making. The small group exercise can easily be incorporated into one regularly scheduled class period and instructors can modify both the exercise and the time required to complete it through out-of-class assignments and course management systems (CMS). We encourage instructors to read one or more of the referenced articles, especially if they

are not already familiar with the work of K. E. Weick (1993), C. W. Weick (2003), Perrow (1984), Watkins and Bazerman (2003), Mitroff and Alpaslan (2003), or Bolman and Deal (2003).

Step 1: Preclass Preparation

Before conducting the exercise, we assigned Watkins and Bazerman's (2003) paper to get students thinking about disaster preparedness as a management responsibility. To enhance student preparation, we also assigned a current reading from the popular press that illustrated a business response to a problem event. For example, students have read about Mattel and the tainted toys from China, AOL's release of anonymous search data, produce tainted with *Escherishica coli*, salmonella outbreaks traced to peanuts, and melamine contamination in infant formula. Current examples reinforce the importance and value of crisis planning and engage students on an affective level. To assess student understanding (and to motivate them to read these articles), we administered a brief quiz either in class or via a CMS.

Step 2: Generating Metaphors

We introduced the exercise with a brief presentation on the power of metaphors to stimulate creativity and break mental barriers and to think about ideas or objects from a different perspective (see Appendix A for an outline of our PowerPoint presentation). Students responded to the exercise more positively when we took sufficient time to explain the distinction between probabilistic and possibilistic thinking and when we gave them concrete examples of how metaphors can provide added insight into what seem to be familiar situations. An example that has worked quite well in our classes is from Watkins and Bazerman (2003). They describe how the metaphor of a food processing organization helped a semiconductor manufacturer recognize how vulnerable its electronics products were to contamination from bacteria or viruses. At the conclusion of this mini lecture, we formed small groups, each with a recorder who was given a copy of the worksheet shown in Appendix B to guide the group through the steps of the exercise. In our experience, a structured worksheet clarified student thinking, avoided confusion, kept groups focused on the task, and added accountability. Next, we instructed students to develop a list of metaphors that might help them to think about their college or university in new or different ways and record this list in the space provided at the top of the worksheet. When students are encouraged to think broadly and to draw metaphors from various industries, organizations, events,

or objects, it helps them to get started quickly in breaking their frames. Once the groups completed their lists, we instructed them to choose one metaphor as the focus of further class activity.

Examples of student-generated metaphors have included a prison (where students are the inmates), a farm (where a new crop is planted at the beginning of each year), a shopping mall (where students shop and departments compete against one another for business), a three-ring circus (where staff and faculty are the trainers and students are the animals), a stadium (where the atmosphere is one of continual contests and there are winners and losers), and an island (where the college community exists within a larger community but is separated from that community in physical and other ways). A variety of crises—of all types—can be imagined for each of these metaphors.

Step 3: Imagining Accidents

Once the groups selected a specific metaphor, we instructed them to develop a list of possible disasters that might occur using their chosen metaphor as their frame of reference and record these in Column A of the worksheet in Appendix B. We stressed to students that they should not think about a college or university yet; rather, they should focus on their chosen metaphor and identify several disasters that would be classified as low probability/high consequence events. In agriculture, for example, the crises listed in Column A of Appendix C helped our students understand the kinds of connections that can be made between a metaphor and possible disasters.

Step 4: Using Metaphor To Imagine Crises In College Or University Settings

We prepared students for the next step by holding an interactive discussion to develop a list of analogous crises in higher education settings using the list of crises from agriculture (see Column B of Appendix C). After this discussion, we asked students to assume the role of university administrators and then use the list of metaphorical crises developed in Step 2 to identify analogous crises in higher education. A recorder for each group completed Column B of the worksheet in Appendix B.

Step 5: Anticipating the Effects of a Crisis

Students used the list generated in Step 4 to describe several possible effects of selected crises in higher education and then they completed Column C

of the worksheet in Appendix B. Building on the agriculture metaphor in Appendix C, we found it useful to review the examples provided in Column C to guide this step of the exercise. Next, spokespersons for each group stated their chosen metaphor, provided one example of a crisis from their metaphorical setting, the analogous crisis in higher education, and the effects of that crisis on the university. Instructors may choose to close the exercise at this point and move to a debriefing discussion (Step 7); however, we provide instructions for developing a response plan should time and course schedule permit.

Step 6: Developing a Response Plan (Optional)

When we used this optional step, we asked students to complete it during class; however, an individual out-of-class assignment can be used if time does not permit. Students were instructed to choose one crisis from their list and then they developed a proactive plan that began to address the following questions:

1. What steps can university administrators take to prevent this accident from happening?
2. If, despite the best efforts of administrators, this accident does occur, what key steps needed to minimize damage from the accident?

Including this step as part of the exercise provided an opportunity to emphasize important components of effective crisis management: a detailed plan, a crisis management team and spokesperson, and a reliable communication system (Daft, 2008). Other helpful references include Perrow's (1984) typology of accidents and key ideas from the high reliability organizational literature, especially how managers can delay or prevent major catastrophes (e.g., Roberts & Bea, 2001). Research shows that training employees to be on the lookout for anomalies, finding a balance between rewarding efficiency and rewarding reliability, building redundancy into systems, and fostering a culture where members are encouraged to talk about what is happening and how it affects the whole organization (Roberts & Bea, 2001) are steps that increase effectiveness in preparing for and managing crises.

Step 7: Debriefing

This step can be handled in a variety of ways—group discussion in class, a virtual class discussion in a CMS, or brief individual written reaction papers.

We asked students to describe their experiences with the metaphor exercise and emphasized that we were interested in understanding both what they learned from the experience and how it felt to them. The following questions are intended to guide, but not limit, student responses:

1. What did you learn about crisis management?
2. What did you learn about metaphors?
3. What did you learn about disaster planning from this exercise?
4. In what other ways could you make use of the knowledge and skills you practiced today?

Closing the exercise with these additional reflective questions personalized the experience for students: Do you have a disaster kit at home (water, food, battery or hand-crank radio, and light, 2 weeks supply of medicines, etc.)? Do you have a plan to reconnect with your family in the event of being separated by an emergency? Why or why not?

Outcomes

We have successfully used this exercise with undergraduates of different ages, work experience, and socioeconomic classes over the past 3 years in management, organizational behavior, and management skills courses. To assess the added value of using metaphor as a tool to teach students about crisis management and to evaluate the degree to which learning objectives were achieved, we conducted an informal experiment with two sections of a Principles of Management course at one of the author's institutions. Both classes received identical preclass readings and an assignment to provide, in their own words, a definition of a crisis. We collected these definitions before beginning the exercise. Both classes listened to an introductory lecture before beginning the actual exercise (following the suggested PowerPoint outline included in Appendix A). During this mini lecture, we distinguished between probabilistic and possibilistic thinking and emphasized the constraints that cognitive biases exert on managers' ability to imagine possible crises. However, the slides related to metaphors were omitted in the mini lecture presented to one of the classes (we refer to this group as the control class), whereas the other class (we refer to this group as the metaphor class) was instructed on the benefits of using metaphors to break through biases. We then instructed both classes to generate the list of possible crises that could challenge a college or university. The metaphor class followed the steps described in this exercise to help expand the list of possible crises in

higher education; whereas, the control class simply developed a list without using metaphors. We conducted a brief postsurvey in both classes to assess student outcomes.

Learning Objective 1: Appreciate How Cognitive Biases Limit Managers' Ability to Think Realistically about the Future

Although the control class received information about cognitive biases and seemed to understand that they could limit managers' thinking, their disaster list consisted of relatively predictable events. The metaphor class showed a deeper appreciation of the limits that cognitive biases place on managers' ability to think realistically about the future. One student commented that "The not-so-obvious accidents were brought to our attention" and another said that "It [the exercise] allowed me to see the problem in a completely different setting." A particularly insightful comment from one younger student reflects the tension between the rational model of decision making and the irrationality that appears a part of life: "Often business people think in logic, but things happen that aren't always logical. Creativity breaks that down."

Learning Objective 2: Develop Skill in Using Metaphor as a Tool to Help Overcome Cognitive Biases

The metaphor class developed skills that enabled them to begin overcoming cognitive biases and generate a more imaginative list that included student riots, kidnapping of a college president, negative publicity about the value of a liberal arts education and liberal arts students as employees, a flash flood on campus that destroys housing, and a donor backing out of a major financial commitment. These students also noted that using metaphors could spark creativity "when you're 'stuck in a rut,' in advertising" or when you need to "come up with ideas to improve your business." In general, their comments reflected recognition that metaphors can help them see themselves in a different light—an important lesson on the value of breaking frames in one's personal life, not just in work organizations. The control class generated a list of crises that was more predictable and often drawn from experience or current events, that is, campus shootings, food poisoning, and so on. It is apparent to us that the control class was more probabilistic in their thinking and the metaphor class was more possibilistic. Feedback from students in the control group suggests that they were intrigued by and wanted to learn more about possibilistic thinking, but had trouble actually thinking in possibilistic ways.

Learning Objective 3: Understand The Benefits of Proactively Imagining an Expanded Set of Crisis Possibilities

Noting the value of thinking proactively about potential crises and developing metaphors across domains, another student said that “If I were not comparing the educational system to some other type of industry, I may not have thought of certain accidents.” Students recognized the importance of thinking possibilistically as evidenced in these two comments: “. . . [I] learned a lot . . . it makes me nervous wondering [what can happen] if people don’t ask themselves the ‘what if’ questions . . . ,” and “I have learned how important it is to think about the impossible, because nothing is impossible.” On the other hand, the limited and relatively predictable list developed by the control class did not engender student comments about possibilistic thinking.

Learning Objective 4: Gain Experience in Formulating a Crisis Management Plan

Students reported that metaphors helped them to devise plans to manage accidents more effectively, in part, because they imagined a broader set of creative solutions. As one student reported, “It was helpful because it [metaphor] allowed me to see the problem in a completely different setting, which helped to see different solutions to the problem.” Students consistently report that a key learning point is the realization that “Devising plans to manage accidents once they happen is the easy part. The hard part is to have the foresight to see them coming and have a plan in place.”

Discussion

We developed this exercise to help students break the frames that restrict their ability to imagine the unimaginable by using metaphors to help them proactively imagine and prepare for an expanded set of crises. Expanding the set of possibilities requires that students (and managers) overcome bounded awareness, a condition that prevents people from “seeing, seeking, using, or sharing highly relevant, easily accessible, and readily perceivable information during decision making” (Bazerman & Chugh, 2006, p. 91). A consequence of bounded awareness is that even with sufficient time to make decisions, most people “. . . still fail to bring the right information into their conscious awareness at the right time . . . If you don’t see it often, you often don’t see it” (p. 91). Here we offer additional comments about the evolution of the exercise, some tips to keep it fresh, and some caveats about using metaphors.

This exercise evolved in content and form over a 3-year period. We learned the importance of providing concrete examples and clear, precise instructions to avoid student confusion, make efficient use of classroom time, and prompt linear thinkers to be more playful and creative, while not losing sight of foundational concepts. We constantly updated the list of current examples so that students better understood the importance of good crisis management and the impact a crisis can have on an organization.

As students develop and test their metaphors, share their ideas with their groups, and choose one metaphor to apply to higher education, they begin to appreciate that a mix of similarity and difference are necessary for a useful metaphor, because although they help to reveal some aspects of a situation, they conceal other aspects (Alvesson, 1993; Gross & Hogler, 2005; Meyer & Gent, 2003). Asking groups to share their metaphors with the class helps students see that multiple metaphors illuminate more and different potential crises than a single metaphor can reveal (Akin & Palmer, 2000; Palmer & Dunford, 1996). From the beginning we have conducted this exercise using small groups and emphasized the variety of metaphors that emerge from the exercise. Students continue to be excited about the effect that creative thinking through metaphors can have on their thinking and many recognize how easy it is to rely on traditional frames that limit their ability to imagine a broad set of possibilities. The small group structure can also be used to illustrate the power of team decision making. Students can be asked to develop metaphors individually before putting them in groups and then compare the individual and team results.

We applied metaphors to higher education so that our undergraduate students would use a common frame of reference. We have not had the opportunity to conduct the exercise with MBA students or managers, but see no reason why the setting cannot be adapted to serve these audiences who presumably would have greater organizational experience. In a graduate business class, groups could choose the type of organization they want to reference with their chosen metaphor. In the case of an executive training session for managers from one organization, the focus could and should be the common employer. Alternative settings are likely to work well with these groups because they bring a more realistic frame of reference, one that is often missing with traditional-age undergraduate students.

Finally, we acknowledge the tendency for linear thinking that characterizes many managers and business students; thus, they may be uncomfortable with the creative process and metaphorical thinking (McFadzean, 1996 as cited in Sweetman, 1997). We tried to ease the discomfort of students who were uncomfortable with metaphorical thinking by making it clear from the beginning that this exercise allowed students to use their creativity—to think

outside the box. We emphasized that one does not need to be an expert to imagine possible crises. Moreover, we encouraged students not to censor the possibilities that emerged. We reminded them that what may appear to be fantasy may in fact be realizable if taken seriously (Sweetman, 1997). Using lots of examples seemed to aid students in pushing through mental blocks and tendencies to favor linear thinking. There are so many possible metaphors that instructors need not worry about exhausting the possibilities—the agricultural example developed in Appendix C proved quite effective in illustrating how a metaphor can spark creative thinking. Both of us use small group activities frequently in all of our courses and undoubtedly the familiarity of this learning strategy also contributed to reducing student discomfort.

In conclusion, this exercise helped students to push the limits of bounded awareness and provided an innovative approach to learning about crisis preparation and management that adds value to existing text treatments. Through using metaphor, students experienced first-hand the power of breaking frames that limit the possibilistic thinking that is required for effective crisis preparation. The use of metaphor to spark creativity also has many benefits beyond crisis preparation, including improved problem solving and decision-making skills—competencies required for both personal and managerial success.

Appendix A

Sample PowerPoint Outline

1. Expanding Possibilities Through Metaphor: Breaking Biases to Improve Crisis Management
2. The Clock is Ticking . . . “If you don’t see it often, you often don’t see it” (Bazerman & Chugh, 2006, p. 91)
3. Breaking Through the Limits of Human Imagination
 - a. Overcome cognitive biases
 - b. Think in “possibilistic” ways
 - c. Question common assumptions
4. What Is a Crisis?
 - a. “. . . A low-probability, high-impact event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly” (Pearson & Clair, 1998, p. 60)
 - b. Sudden and smoldering

(continued)

Appendix A (continued)

5. Vulnerability to Crisis Increases When Managers
 - a. Fail to recognize a threat
 - b. Recognize but fail to pay sufficient attention to a threat
 - c. Recognize and understand the importance of a threat, but fail to respond effectively (Watkins & Bazerman, 2003).
6. Ways of Thinking . . .
 - a. What's the likelihood that a crisis will confront us?
Probabilistic
 - b. What are the really bad things that could happen to us?
Possibilistic
7. Tulane University: Asking Probabilistic Questions
 - a. What's the likelihood that a major hurricane will hit new orleans?
 - b. What's the likelihood that a major hurricane will affect university operations?
8. Tulane University: Asking Possibilistic Questions
 - a. What catastrophic events could hit new orleans?
 - b. If a catastrophic event hits new orleans, what are the possible effects on tulane?
9. Cognitive Biases as Barriers
 - a. "trapped in experience"—managers who depend on past successes and failures for models of what could go wrong.
 - b. "confirmation trap"—managers who seek only information that confirms a prior hypothesis, even when evidence suggests that hypothesis is wrong.
 - c. "unrealistic optimism"—it is especially problematic when managers view the future through the lens of optimism and operate under the illusion that they are in control.
10. Examples of Metaphors
 - a. "work" as a "game"
 - b. "marketing" as a "marriage"
 - c. "organizations" as "organisms" or "brains"
 - d. "university" as a "farm"
 - e. "teams" as a "jazz ensemble"
11. How Metaphors Enhance Creativity
 - a. Facilitate nonlinear thinking
 - b. Challenge existing mental models and break away from the familiar

(continued)

Appendix A (continued)

- c. Introduce new pieces to an existing puzzle and create new relationships among existing elements
 - d. Enable us to deal with issues that are too complex or threatening to approach head-on
 - e. “take concepts out of context” through vivid, concise and memorable language
12. Why Metaphors Are Useful in Crisis Preparation
- a. Facilitate multiple perspectives about future “worst case” possibilities
 - b. Enhance the organization’s capacity to prepare for and manage crises by encouraging pessimistic thinking
 - c. Lead to an expanded set of different and creative responses → more effective crisis preparation
13. Leadership and Crisis Management
- a. Effective response to a crisis depends on
 - i. Whether the crisis has been imagined ahead of time
 - ii. Preparation—quality of training provided to those employees likely to be directly involved
 - iii. Appropriate management (timely, good decisions, leadership, etc.)

Appendix B

Metaphor Worksheet for Students

List of Metaphors to Be Applied to Your College or University
 You can use an industry, organization, event, or object

COLUMN A	COLUMN B	COLUMN C
Crisis in Chosen Metaphor	Crisis in Higher Education	Effects of Crisis in Higher Education

Appendix C

An Example Using Metaphor: Agriculture and Higher Education

A: Agricultural Crises	B: Educational Crises	C: Potential Effects
Seeds do not germinate, no time to plant another crop	Expected yield of freshman class is below anticipated levels	Reduced revenues, possible layoffs, excess capacity
Mad cow disease shuts down beef production	Infectious disease outbreak causes evacuation of faculty, staff, and students	Disruption to the academic calendar, difficulty recovering lost time, demands by students for refunds, students transfer to other schools
Expose of mass produced farm animals leads to consumer boycott of meat	College administrator indicted or arrested; lurid expose of students' risky behaviors at your institution	Damage to reputation, reduced enrollment, and difficulty fundraising and recruiting faculty and staff
Federal government ends agricultural subsidies	Federal government implements substantial cuts in loan programs	Private schools have difficulty attracting students; increased dropouts; capacity stressed at public schools in the face of high demand
Genetic engineered crops proven harmful to humans	Demand by employers for graduates of your programs evaporate as quality questions are raised	Difficulty in placing students in internships or jobs, reduced sponsorship opportunities

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