
7 Problem Identification for Risk Management

7.1 INTRODUCTION

There is a great chapter in Morgan D. Jones's (1998) book *The Thinker's Toolkit*. It is called "Thinking about Thinking," and its primary thesis is that the human mind is not analytical by nature. He explores the fallibility of human reasoning and suggests that the best remedy for the mind's ineffectiveness is to impose some structure on the way we think. This is what risk analysis does well. Jones argues, persuasively in my opinion, that structuring our analyses is at odds with the way our minds work naturally.

He argues that, left to our own devices, we often begin a problem analysis by formulating our conclusions, thus beginning where we ought to hope to end our analysis. With an intuitive preference for one solution, often the first one that seems satisfactory, we tend to give insufficient consideration to alternative solutions. We tend to confuse the gathering and analysis of data with the process of thinking about a problem.

Jones identifies seven traits that get in the way of our ability to analyze and solve problems. Risk analysis attempts to influence our thinking by making it more analytical. This can simultaneously limit the "damage" our fallible human reasoning can inadvertently do to decision making. The first of these traits is the emotional dimension to our thoughts and decisions. Emotion can hijack our ability to reason, as anyone who has thrown a broken item across a room has discovered. Serious mistakes can be made if decisions are made when emotions are hot. Risk analysis avoids emotional decisions.

Our minds are constantly taking shortcuts. We do not teach our minds how to work. They work as they work, and most of us rely on such shortcuts as stereotyping, personal bias, prejudice, hunches, jumping to conclusions, intuition, and the like. Risk analysis strives to replace shortcuts with science and evidence.

A third trait is that we are driven to see patterns in the world around us. We are conditioned to fill in missing information and to edit out what does not fit the pattern. The mind is not objective; it can construe random events as nonrandom or, when convenient, reverse the process and see no pattern where there is one. This compulsion to see patterns can mislead us when we analyze problems. Risk analysis requires evidence to support patterns.

DO YOU SEE A PATTERN?

The numbers 9/11 (9 plus 1 plus 1) equal 11
American Airlines Flight 11 was the 1st plane to hit the World Trade Center
There were 92 people on board (9 and 2)
September 11 is the 254th day of the year (2 and 5 and 4)

There are 11 letters each in “Afghanistan,” “New York City,” “the Pentagon,” and “George W. Bush”

The World Trade Center buildings themselves formed the number 11

Then what of the second flight, United Airlines Flight 175, or American Airlines Flight 77 that hit the Pentagon, or United Flight 93 that crashed in Pennsylvania? If you see patterns you may have a ready answer, these did not involve New York!

We rely on our biases and mind-sets for much of our decision making. Bias is the unconscious belief that conditions, governs, and compels our thinking and our behavior. It is instinctive and beyond the reach of our conscious mind. Our biases ensure that we give high value to information that reinforces our biases and assumptions, and they encourage us to discount or reject inconsistent information. We are unwitting slaves to our biases and the perspectives they create. They constrain and bound what we think and see. Consequently, our minds often operate analogically, and our logic is largely superficial. New experiences are interpreted in light of old ones, and our inferences are based on similarity. When we rely on bias, our reasoning only needs to be plausible to satisfy us. Good risk analysis avoids bias.

Fifth, we need to provide explanations for this uncertain world, regardless of the accuracy of those explanations. Jones calls us an explaining species: An eclipse is a dragon eating the moon or, in the twentieth century, rocket launches cause weather extremes. We seek cause and effect even when there is none. We want our perceptions to mean something because knowing is pleasing and not knowing is not. When an event has no particular meaning, we find one anyway. Subconsciously, we do not care if it is valid; it enables us to move on, and that is often sufficient. We are quite adept at coming up with explanations that do not fit the evidence very well, and our stunning indifference to the validity of our explanations is profoundly telling. Explanations need not be true to satisfy our need to know and explain. Risk analysis seeks sound, evidence-based explanations for what we see and what we do about what we see.

We tend to seek evidence that confirms our beliefs while devaluing what does not. In other words, we naturally prefer what confirms our existing views. When that causes us to (subconsciously) seek out evidence that supports our beliefs and judgments while eschewing information that does not, decision making can suffer. We focus by nature. In fact, our very survival is aided by our ability to focus. The problem often is that we tend to see in a body of evidence what we expect to see, that is, what we are looking for, and we do not see what we do not expect or want to see. The mind is very good at reconfiguring evidence to make it consistent with our expectation. This advocacy position is the basis of our political and judicial systems. Advocates are trained to take a position and marshal supporting evidence to defend that position while doing their best to weaken all other perspectives. Our systems reward subjective argument more often than objective analysis. When the advocate is also the decision maker, advocacy can be destructive. Risk analysis does honor values

and the explanations they can lead us to, but it also seeks a scientific explanation whether it conforms to social values or not.

Finally, Jones asserts that we can stubbornly cling to untrue beliefs. In fact, we often treat beliefs like prized possessions. They make us feel good, and so we cherish and protect them, but many of our most cherished beliefs are untrue because we often prefer to believe what we prefer to be true. Our willingness to embrace untrue beliefs can have disastrous effects on our ability to analyze and resolve problems. Risk analysis challenges beliefs. It separates what we know from what we do not know and then identifies key uncertainties and addresses them. It identifies assumptions and challenges them. It forces us to consider different perspectives and challenges the way we think. Risk analysis is analytical decision making, and it asks us to change the way we think about things.

This is where people often struggle. We humans are prone to reacting to what we think the problem is instead of seeking to understand what the problem really is. As a consequence, we often treat symptoms and ripple effects of problems instead of the problems themselves. You have got to get the problem right. Then you have to write the problem down. Risk analysis is oriented toward finding the right problem. If you solve the wrong problem, well, you've still got problems. Remember that risk comes in two "flavors": loss and opportunity. A successful process depends on your ability to find the right problem or the right opportunity.

You are the risk manager and your boss has just said, "We have to do something about...." How do you begin to do that? You begin by asking, "Why? Why are we initiating this activity?" If your answer involves the words authority, regulation, law, previous studies, the boss, and the like, you may be technically correct, but you're missing the point. There is a reason for every risk management activity. You face problems or have opportunities. Risk management begins by identifying and clearly articulating those problems and opportunities, which we call risks. This comes before budgets, schedules, milestones, profits, stakeholders, shareholders, politics, or any of the other pressing duties you might have with a risk management activity.

Assemble as many of the risk analysis team members as you can identify, sit down together, and begin where you are: "What are the problems here?" "What opportunities do we have to improve conditions here?" In some cases, you may have to rely on the vague and generic wording of a higher authority that set you in motion. In other cases, you may have three full hard drives and a bank of file cabinets full of information about a situation that has been bedeviling you for the last 30 years. At times, the problem may kick down your door unexpectedly. Wherever you are, this is where you begin.

Take a piece of paper. At the top of your paper write "Problems and Opportunities." Date the page, because this is going to change many times before it is finalized. Risk analysis is an iterative process, and so is the identification of problems and opportunities. Your first entry is, "Waterfowl are disappearing in the Babylon Ranch area of the Voodoo River." In time you will learn what kind of waterfowl are disappearing, and you will understand why they are disappearing. But today you are beginning, and you work with what is available to you.

It is easier to identify problems than opportunities. Human nature finds it easier to point out negatives than positives. But on day one, while you have your team

assembled in one place, you also need to begin to think about the opportunities you might have to improve conditions. Write them down, too. Your second entry might be, “Preserve wildlife at Babylon Ranch on the Voodoo River.” Never mind that you might not have the authority to do this. Never mind that you are not sure anyone “out there” wants to do this. You need a place to start, and this is it. Now you have the first draft of your “Problems and Opportunities Statement.”

When people ask why you are doing this risk management activity, you can say, “Because waterfowl are disappearing from the Babylon Ranch area of the Voodoo River and because we are exploring the possibility of preserving wildlife there.” The takeaway point here is that you must have a clear understanding of why you are doing what you are doing. At this point it is better to be clear than to be right. It is day one.

There will be time to understand the problems and the opportunities better. In time you can be both clear and right. Risk management is always best when its purpose is clear. In an iterative process, that purpose will and should change and evolve as uncertainty is reduced. That is okay. That is a good risk management process.

If it is day two of your activity and you do not yet have the first draft of your problems and opportunities statement, you are not managing as well as you could. That piece of paper is the “why” of what you are doing. Do not neglect it.

Problem identification was defined earlier as a three-part process of problem recognition, problem acceptance, and problem definition as seen in [Figure 7.1](#). Problem identification is the “seemingly” simple act of recognizing that a problem exists and figuring out what it is. It is also the subject of this chapter.

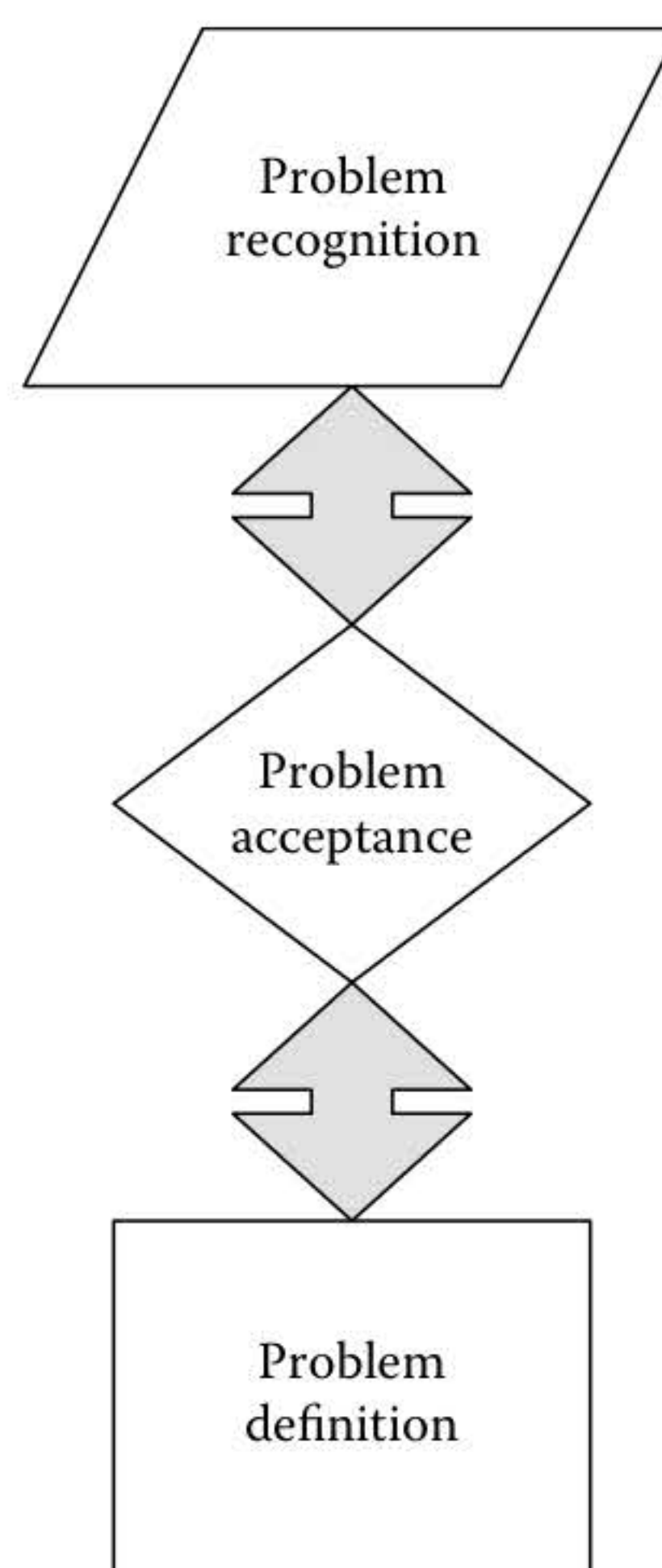


FIGURE 7.1 Problem identification elements.

Following this introduction, we spend some time describing and differentiating problems and opportunities. Next, we consider how people become aware of problems and opportunities by focusing on the notion of triggers and inputs. The chapter presents a number of different techniques for identifying problems and opportunities and concludes by considering the problems and opportunities (P&O) statement, an essential part of risk identification.

7.2 WHAT'S A PROBLEM? WHAT'S AN OPPORTUNITY?

Merriam-Webster's New Collegiate Dictionary defines a problem as follows:

prob•lem

1 a : a question raised for inquiry, consideration, or solution; **b :** a proposition in mathematics or physics stating something to be done

2 a : an intricate unsettled question; **b :** a source of perplexity or vexation synonyms, see MYSTERY

In risk management, we might informally think of a problem as a situation that we would like to address and solve. Most of us are pretty good at recognizing problems. A risky problem is going to involve a potential loss and usually a hazard, while a risky opportunity is going to involve the potential for an uncertain gain.

The most common kinds of problems are well-structured problems. Facts play a larger role than judgment with these problems. With well-structured problems the existing state and the desired state are both clear, and the methods needed to reach the desired state are fairly obvious. Textbook problems are archetypical examples of well-structured problems that simply require you to apply a set of principles to reach a solution. Another example would be when a piece of equipment fails that we know how to fix. We can figure out how many people we need, how long it will take, and what the costs will be. Thankfully many of our problems are well-structured. In an uncertain world, however, a good number of problems are not so well-structured.

Risk analysis is well suited to these poorly structured problems, which tend to be situational and emergent dilemmas. Judgment often plays a bigger role than facts when solving these problems. As the amount of uncertainty increases, the role of judgment increases. Poorly structured problems have existing and desired states that are unclear, making it more difficult to confidently identify the method(s) for reaching the desired state. They are poorly structured because one or more of the problem elements are unknown or not known with any degree of confidence (Wood 1983).

These problems may require the integration of numerous knowledge domains, and there are often no explicit means for determining an appropriate action. The parameters of the problem may not lend themselves to ready manipulation. Understanding them may require people to express their personal opinions or beliefs about the problem (Jonassen 1997). Decision makers must make judgments about these problems and then defend them. Their solutions may require uniquely human interpersonal activities (Meacham and Emont 1989). Complex problems with values in conflict are much more difficult to solve. Understanding the nature of the ill-structured problem is, then, necessarily an essential starting point for problem solving.

We are less adept at recognizing opportunities. An opportunity is defined by Webster as:

op•por•tu•ni•ty

1 : a favorable juncture of circumstances

2 : a good chance for advancement or progress

Informally, we might define an opportunity as a gain or situation we would like to realize or a target we'd like to hit. It is useful to clearly distinguish the terms opportunity and problem so that we can intentionally identify both when initiating a risk management activity. See [Table 7.1](#) for some differences between problems and opportunities.

A problem is usually an existing undesirable condition perceived as negative or objectionable. People, resources, or other assets of value are usually adversely affected under existing or expected future conditions. The implicit objective of responding to a problem is to return to a problem-free circumstance or to create a future condition that is not objectionable. In contrast, an opportunity is usually a positive condition that does not yet exist and will not likely exist unless we take intentional steps to make it happen. Under existing conditions, the absence of an opportunity does not adversely affect other assets, even though their full potential may not be realized.

Management's implicit objective with respect to opportunities is to create a future condition that will realize those opportunities.

TABLE 7.1
Differences between Problems and Opportunities

Characteristic	Problem	Opportunity
Focus	Existing undesirable condition; a description of what is or might be	Future desirable condition; a description of what could or should be
Core message	Negative—an objection	Positive—a desire
Occurrence	Past: usually occurred	Past: usually did not occur
	Existing: usually occurs	Existing: may or may not occur
	Future “without action”: usually expected to occur	Future “without action”: may or may not be expected to occur
Relationship to other assets	An existing condition that may adversely affect other assets	Existing condition does not affect other assets
Implicit objectives of action	Return to a past condition that was not considered objectionable	Create a future condition considered to be desirable
	Create a future condition that would not be objectionable	Return to a previous condition considered to be desirable
Consequences of doing nothing	Usually direct, immediate, and adverse	Usually indirect and long term due to benefits foregone

Source: Yoe, C., and K. Orth. 1996. *Planning Manual*. IWR Report 96-R-21. Alexandria: Institute for Water Resources.

There are also similarities between problems and opportunities, as seen in [Table 7.2](#). They are both often multiple in number, identified by people and through analysis, and stated in practical specific terms. They are measurable in the sense that we can at least tell the difference between better and worse conditions. They are achievable, and ideal situations can sometimes be described for both of them.

A problem statement need not be elaborate. It can be as simple as the example in [Table 7.3](#). The representation or definition of these problems will take considerably more explanation. Each problem needs to be thoroughly developed by the risk managers using a risk identification process like that presented in [Chapter 1](#). It is

TABLE 7.2
Similarities between Problems and Opportunities

Characteristic	Similarity
Number	Variable, few to many
How stated	In practical, meaningful, operational terms in a single statement
Source	Developed from people, observation, analysis, and documentation
Specificity	Specific, narrow; essentially limited
Specific subject	Usually limited to a specific asset
Specific location	Usually found in a particular place or locale (example: “study area”)
Specific measurability	Moderate to high; usually measurable or easy-to-recognize change that would result in a “better” or “worse” condition
Ability to achieve	High; problems can be solved, opportunities can be realized
“Ideal”	An “ideal” usually exists and can be identified The “ideal” is not the same as the existing condition The “ideal” is not the same as the long-term “without” condition

Source: Yoe, C., and K. Orth. 1996. *Planning Manual*. IWR Report 96-R-21. Alexandria: Institute for Water Resources.

TABLE 7.3
Simple Problem Statement Examples

Redlands Creek Basin Problem Statement

The problems in the Redlands Creek Basin are:

1. Loss of fish habitat in Redlands Creek due to urbanization
2. Flood damages in the industrial section of Central City
3. Stream bank erosion along Campus Park
4. Saltwater intrusion in the Redlands Bay estuary
5. Loss of coastal wetlands along the South Ditch section of Redlands Bay

Food Safety Agency Problem Statement

The problems of concern to the regulatory agency are:

1. Increasing resistance of *Campylobacter* in chicken to fluoroquinolones
2. Declining efficacy in the use of fluoroquinolones for the treatment of campylobacteriosis in humans

TABLE 7.4
Simple Opportunity Statement Examples

Redlands Creek Basin Opportunity Statement

There are opportunities in the Redlands Creek Basin to:

1. Increase wildlife habitat along Campus Park
2. Restore indigenous fish species in the upper basin
3. Provide increased recreational opportunities along the waterfront

Food Safety Agency Opportunity Statement

There is an opportunity for the regulatory agency to:

1. Reduce incidence of all campylobacteriosis in humans due to consumption of chicken
2. Provide a healthier work environment for on-farm employees
3. Reduce disease in flocks

important that risk managers and assessors understand exactly what problems they are addressing and that other interested parties can also see a clear statement of the problems under consideration.

Opportunities should, likewise, be clearly stated. An opportunity statement need not be elaborate. It can be as simple as the example shown in [Table 7.4](#).

7.3 BECOMING AWARE OF PROBLEMS AND OPPORTUNITIES

Some problems come bursting through your door at 4:30 on Friday afternoon and set up camp on your desk. Other problems are subtler and do their best to avoid detection. Some are as familiar as the faces of our parents or children, while others we have never seen before nor will we see them again. Some problems stay only a brief while and others refuse to leave. Among these extremes are infinite varieties of ways for problems to be discovered. Although the precise manner in which a problem is identified will vary from one organization to the next, there are some useful generalizations that can be made about the origins of problems and how we initially become aware of them. Likewise, the same is true for opportunities. To avoid the tedium of constantly repeating “and opportunities” after each mention of a problem, I will stop coupling the two terms. The techniques presented here for problem identification are equally adaptable for identifying opportunities.

7.3.1 TRIGGERS AND INPUTS

Some events trigger or initiate a process or reaction that identifies a problem. The *Deepwater Horizon* explosion, melamine in milk products, landing a plane in the Hudson River, or the Grenfell Tower fire in London are examples of problems that force themselves upon us and cannot be ignored, although they can be misidentified. Passive problem identification is sufficient for the more aggressive issues that come to you. Other problems only become apparent as inputs (information, reactions, events, opinions, and the like) accumulate over time; you must look for these kinds of problems.

Triggers and inputs are indicators of problems or opportunities that may require a risk management activity. A trigger may be a single event (e.g., a decision made by a higher authority, a natural disaster, infrastructure failure, terrorist attack, disease outbreak) or an accumulation of inputs into the program manager's continuous program assessment and evaluation. When triggers or early warning signs indicate that a risk cannot be addressed within the current program capabilities, it is reaching a point of importance and urgency that may require a risk management activity.

Triggers come from a variety of sources and can be thought of in several broad types (FDA 2003). They are:

- Authority triggers
- Crisis triggers
- Science and technology triggers
- Emerging or "on the horizon" triggers
- Strategic plan triggers

EXAMPLES OF INPUT SOURCES

Academia
Professional literature
Environmental monitoring
Toxicity testing
Disease surveillance, epidemiological studies
Lack of compliance with standards
Permit applications
Inspection
Community reaction
Legal action
Media or interest group reporting
What other nations do
Research
Staff feedback
Strategic planning

Authority triggers are "pulled" by higher authorities in an organization. Someone with decision-making authority directs what we consider a situation. Examples include Congressional authorizations and appropriations, new policies, ERM risk profiles, and the like.

A real or perceived crisis can trigger a risk management activity. Examples include a message from the media alerting you to an issue, a public outcry and subsequent media involvement, natural or manmade events, and adverse comments by stakeholders, critics, or others. Crisis triggers can also result from growing public awareness of an apparent risk, the concerns of susceptible subpopulations, decreased consumer confidence in your organization and what it does, geopolitical events, natural disasters, accidents, and the like.

Science or improved scientific methodology can act as a trigger. Newly acquired scientific knowledge that reveals previously unknown risks of specific hazards or a technological improvement that presents new opportunities may act as triggers. Examples include emerging concerns like climate change, new information that indicates that a problem or hazard is of greater concern than previously thought such as the “discovery” of acrylamide in fried foods, and new technology that makes new solutions viable, for example, nanotechnology, artificial intelligence, and genome mapping.

A well-planned, forward-looking forecasting practice can identify emerging or on-the-horizon triggers. This entails scanning your organization’s risk landscape to see how emerging events might affect you now and in the future. How might recent or future earthquakes, storms, floods, or civil unrest in the world affect your programs and opportunities? What trends and global events now on the horizon could affect your organization in time? Strategic plan triggers are the things we choose to address in order to realize the organization’s goals and, therefore, its vision.

Among the inputs that may accumulate and steer the risk management process are some recurring elements. Some potentially important inputs include:

- *Science (including research findings):* We need to understand the facts contributing to a problem. Many organizations intentionally collect data and/or evidence and develop or assemble an understanding of the hazards, opportunities, or other risk factors of the situations or issues that may negatively or positively impact their organizational mission.
- *Policy/precedent:* The institutional history of an organization is an important source of information. Standard operating procedures (SOPs), formal policy, and informal ways of doing things can be important sources of input. When SOPs become insufficient, for example, that is useful information that is beginning to accumulate.
- *Legal issues:* The underlying legislative history, authorities, laws, precedents, regulations, programs, and such that support the potential responses of your organization can be important. Furthermore, they can change.
- *Economics:* Costs, benefits, and cost/risk trade-offs are practical elements of any risk management activity that must be considered.
- *Political issues:* Awareness and knowledge of key state, local, Congressional, media, consumer, and international geopolitical concerns with respect to a presenting issue are essential inputs to consider in a risk management response.
- *Cooperation and collaboration:* Working with knowledgeable and expert stakeholders, partners, academicians, industry, other governments, and international expert(s) to ensure that a shared vision of the problems and their solutions is developed is an essential input source.

An accumulation of inputs from any combination of these areas can surface a problem or opportunity and trigger a risk management activity.

When a problem first comes to your attention it is likely to be poorly structured. Once it reaches your radar screen, the next task is to decide whether you will accept the problem or not. In the public sector this decision may be based on authorities, and in the private sector resources or an organization’s mission may provide the basis for

accepting or rejecting a problem. Acceptance is usually the most straightforward of the three problem identification tasks, and it is not considered further here.

The National Levee Database (NLD), developed by the U.S. Army Corps of Engineers, provides an excellent example of a science trigger. The database contains information to facilitate and link activities, such as flood risk communication, levee system evaluation for the National Flood Insurance Program, levee system inspections, flood plain management, and risk assessments. The NLD is a dynamic database with ongoing efforts to continue to add levee data.

Think of problem recognition as articulating the initial understanding or description of the problem. Once an identified problem is accepted as an appropriate issue to pursue, a more detailed problem definition can follow. Problem identification, getting the problem right, is one of the most important steps in the risk management task. To aid you in accomplishing this task, a number of problem identification techniques are offered. These may be applied in the problem recognition or problem description stages of problem identification.

7.4 FRAMING THE PROBLEM

A recent survey (Wedell-Wedellsborg 2017) found 85% of 106 executives strongly agreed or agreed that their organizations were bad at problem diagnosis. Managers, quick to want to take action, slip into solution mode often without really understanding the problem. Frame blindness results in solving the wrong problem because our mental framework causes us to lose sight of important objectives or to overlook the best decision options (Russo and Shoemaker 1989). Framing a decision sets boundaries on a decision just as choosing a window to look through influences how much of the landscape we will see. The way we frame a problem influences the solutions we will ultimately choose.

Wedell-Wedellsborg offers a seven-step process for framing a problem; I add an eighth one. First, establish the legitimacy of framing as a method for problem identification. Get buy-in on finding questions before providing answers. Relating the slow elevator problem (see box) is one way to introduce the notion of framing.

Second, bring outsiders into the discussion. Look for “boundary spanners,” people who understand what you do but are not fully part of your world. Expect input, not solutions; outsiders are not experts so they will rarely be able to solve the problem. Outsiders are present to help the problem owners to think differently. This is the single most helpful framing practice.

Third, before the meeting, get each person to define the problem in writing. To understand what people think, you need to hear from them. Bring these definitions to the meeting. It’s not unusual to leave a meeting thinking there is agreement on what the problem is following a discussion, only to discover later some people had very different views of the issue. Opportunities for reframing the problem may be found in one of those definitions.

THE SLOW ELEVATOR

A classic example of problem framing is the slow elevator. The tenants in a building are complaining about the speed of an old elevator. Tenants have requested replacing the elevator, installing a stronger motor, or upgrading the algorithm that runs the elevator. These suggestions share assumptions about what the problem is—a slow elevator.

The building manager suggests a more elegant solution: put mirrors next to the elevator. People tend to lose track of time when they have something utterly fascinating to look at—namely, themselves.

The mirror is not a solution to the stated problem. It does not make the elevator faster, rather it offers a different frame through which to understand the problem. The point of reframing is to find the best problem to solve.

Source: Wedell-Wedellsborg (2017).

Fourth, ask what is missing, that is, what has not been captured or mentioned in these definitions. People tend to discuss what has been said in detail and pay less attention to what has been left out.

Fifth, consider the category of problem they think they are facing. Then consider multiple categories. Is it a property damage problem, life safety, production, expectations, attitude? It is easy to think of a problem too narrowly. Is the problem a hazard or an emotional reaction to the existence of a hazard? Highlighting how the group thinks about a problem (metacognition, i.e., thinking about thinking) can help the group reframe it. It may be helpful to arrange the written definitions in broad categories in advance of the framing meeting.

CHALLENGING YOUR PROBLEM FRAME

1. Challenge it yourself—does it make sense?
2. Seek other opinions—have others challenge your frame.
3. Role-play your adversaries—take your competitors viewpoint.
4. Welcome diversity—include a wide array of perspectives.
5. Brainstorming—look for ways to change the problem frame.
6. Lateral thinking—side-step or redefine the problem.
7. Synectics—think via analogy to seemingly unrelated elements.
8. Consider alternative metaphors—is your company an army, a football team, an orchestra, or a Japanese garden?
9. Find out how the other guy does it—has someone already solved this problem?
10. Monitor the changing world—track frame shifts that are occurring.

Source: Russo and Shoemaker (1989).

Sixth, analyze positive exceptions. Look for examples where the problem did not or does not occur. Explore what is different about those situations. Exploring positive exceptions makes the discussion less threatening, avoiding confrontation and defensiveness. These bright spots might uncover hidden factors the group may have overlooked. A positive exception makes it easier for individuals to consider their own role in problem situations.

Seventh, question the objective. Question the predefined and long-standing objectives of the organization. Pay explicit attention to the objectives of the parties involved. Begin by clarifying their objectives and then challenge them.

Eighth, reiterate the process as often as is necessary to explore a number of frames and arrive at an acceptable framing of the problem.

7.5 PROBLEM AND OPPORTUNITY IDENTIFICATION TECHNIQUES

Focus on the major things, circumstances, events, and conditions that cause something to happen or not happen. These are the factors that cause issues to arise, and therein lie your problems and opportunities. Focus on the factors that drive situations. Do not waste time on subtleties, as they are not significant. When a subtlety becomes important, it is no longer a subtlety (Jones 1998).

What is not as it should be? Be specific. Are you sure you have identified the actual problem and not just its symptoms? Some problems are relatively routine and quite familiar. They require little problem identification effort. When the needle on your fuel gauge is at or below E and the car engine chokes and dies, there is little uncertainty about what the problem is or how to solve it. Other problems are a little harder to solve; there is a lack of information and some general uncertainty about what the problem really is. Often, we can modify existing problem frameworks to accommodate these. The most difficult problems are those that are complex and ambiguous, the ill-formed problems spoken of earlier. They are accompanied by little information and a lot of uncertainty. These poorly structured problems require the most effort to identify.

A team has some leeway in how they define a problem. Consider [Figure 7.2](#), which depicts the food supply chain from-farm-to-fork as consisting of seven components. Food safety problems may be identified at any step in the process. Government regulators may define the problem as occurring in the food processing step, perhaps because of their regulatory authority over this step in the process. Consumers may define it in the preparation and consumption stage. A holistic view of the problem might consider the entire supply chain. Varying perspectives give rise to alternative views of the symptoms and causes of problems. A cause in one view, such as *E. coli* on carcasses in a meat processing plant, may be a symptom of a food production problem, for example, a contaminated water supply, in another perspective. Thus, it is critically important to clearly define the problem you will be seeking to solve. Unless real causes are addressed, a solution may be temporary at best.

When a diverse group of people, however large or small, is expected to come to a common understanding of anything, process is important. Problem identification requires at least the risk managers and their assessment team to have a common view of

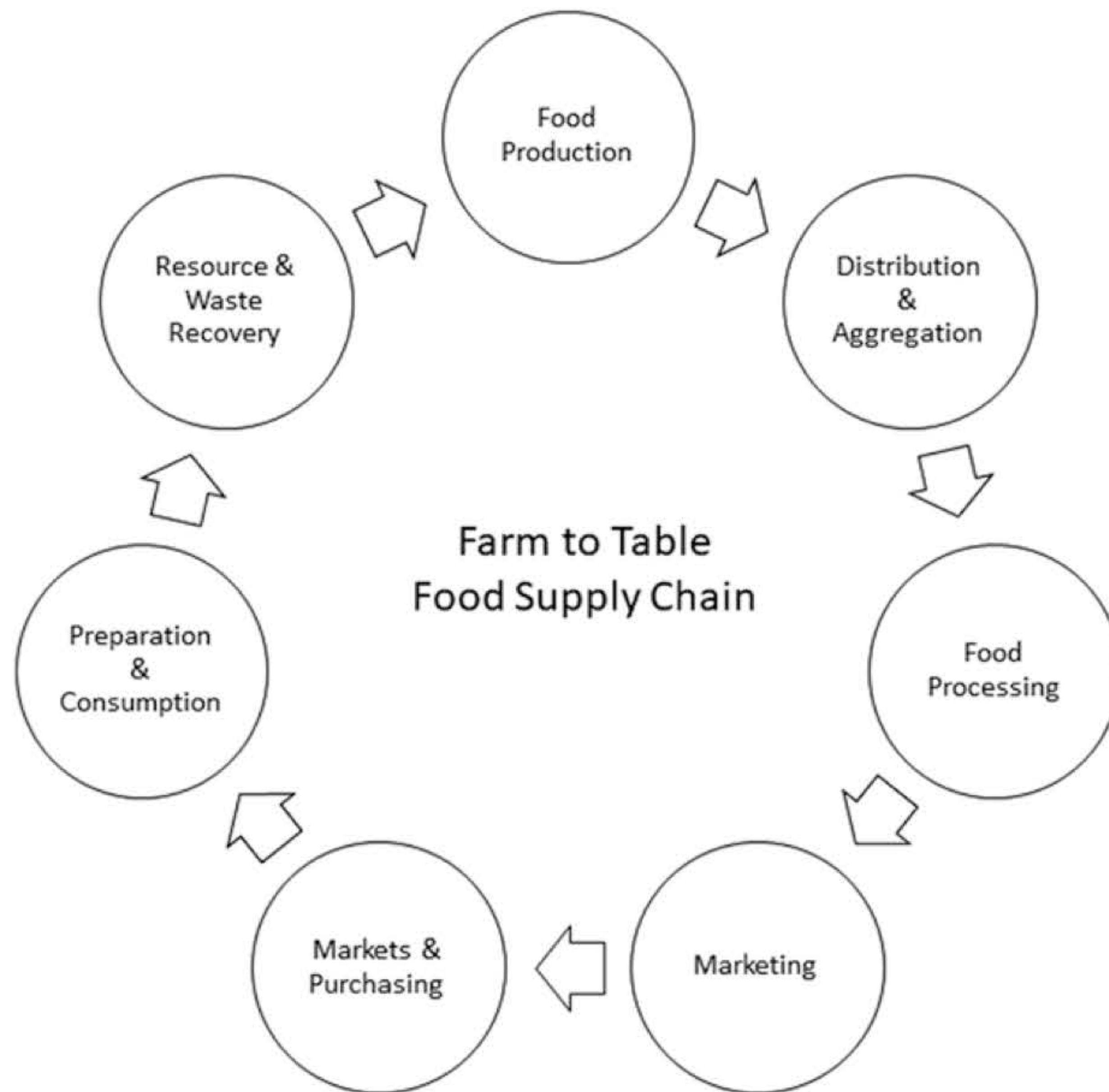


FIGURE 7.2 The farm-to-table food supply chain.

the problem(s). In the cases where the risk management activity is being undertaken by a government organization in some stewardship role (think post-Katrina New Orleans, H1N1 flu, food safety, airport security), it can involve a great many more people.

In my experience, many adults have little use for a formal process, especially well-educated adults. We are all adults, some with advanced degrees; certainly, we can identify a problem, right? Maybe we can't, at least not easily. Communication is still our species' greatest challenge, and a formal process can greatly aid communication.

The techniques presented in this section will help you better understand complicated and difficult situations. Having a structured and methodical way to accomplish this all-important first step for risk managers keeps problems from seeming huge and overwhelming. If we cannot provide certain structure to the problem itself, we can at least provide structure to the search for that problem. Techniques often help provide the laser-like focus needed for a successful problem identification process. (See [Chapter 3](#) for a description of this process.)

This section presents 13 examples of techniques that can be helpful in identifying problems and opportunities. There are many more than that identified in the literature (see VanGundy 1988). Use these techniques. Invent your own. Be systematic in identifying problems and you will never regret it. Haphazard approaches are often

regretted. Look through the summaries of the techniques presented here. Find a couple you like and give them a try the next time you need to identify a problem.

7.5.1 RISK IDENTIFICATION

[Chapter 1](#) introduced a risk identification technique. It consisted of four core steps and a bonus step. They are:

- Identify the trigger event.
- Identify the hazard or opportunity for uncertain gain.
- Identify the specific harm or harms that could result from the hazard or opportunity for uncertain gain.
- Specify the sequence of events that is necessary for the hazard or opportunity for uncertain gain to result in the identified harm(s).
- Identify the most significant uncertainties in the preceding steps.

These steps are explained in [Chapter 1](#).

7.5.2 PROBLEM DEFINITION PROCESS

Spradlin (2012) offered an updated four-step problem definition process in the *Harvard Business Review*. That process is summarized below.

Step 1: Establish the Need for a Solution—you articulate the problem in the simplest terms possible. This initial framing answers three questions:

- What is the basic need?
- What is the desired outcome?
- Who stands to benefit and why?

Step 2: Justify the Need—you explain why your organization should attempt to solve the problem. This is done by answering the following questions:

- Is the effort aligned with our strategy?
- What are the desired benefits for the company, and how will we measure them?
- How will we ensure that a solution is implemented?

Step 3: Contextualize the Problem—you examine past efforts to find a solution to save time and resources and generate highly innovative thinking. This is done by considering these questions:

- What approaches have we tried?
- What have others tried?
- What are the internal and external constraints on implementing a solution?

Step 4: Write the Problem Statement—you write a full description of the problem you are seeking to solve and the requirements the solution must meet. This requires answering these questions:

- Is the problem actually many problems?
- What requirements must a solution meet?

- Which problem solvers should we engage?
- What information and language should the problem statement include?
- What do solvers need to submit?
- What incentives do solvers need?
- How will solutions be evaluated and success measured?

7.5.3 APPRECIATION

Appreciation (Mind Tools 2007) is used to extract maximum information from the sparse facts that are available. Simply start by stating a fact about your problem or opportunity and ask the question, “So what?” What are the implications of this fact as far as the problems it may present? Keep on asking the question until the team has drawn all the inferences possible from the fact. Turn to the next fact and repeat the process. The inferences and facts can then be used to provide an initial description of the problem. This technique is useful when little information is available about a problem.

This technique is especially useful for unanticipated events like the explosion at the *Deepwater Horizon* oil-drilling rig in 2010: There has been a fire and explosion aboard the platform. So, what? So, lives may be lost. So, what? The answer to this question can lead down many paths. Another response may be that we do not yet know its cause. So, what? We do not know the risks to which we may still be exposed. So, what? And so it goes.

7.5.4 BE A REPORTER

Investigative reporters identify and describe problems and opportunities all the time. You can do a lot worse than to ask somewhat, where, how, why, when, and who questions to help you identify problems. What makes you think there is a problem? Where is it happening? How is this problem occurring? Why is there a problem? When is it happening? Who is involved with this problem? Be as specific in answering these questions as you can be.

When you have answers to these or similar questions, write the lead to the newspaper story describing this problem. If you do not have a unique “hook” for the story, consider one of these: “This is what is happening and it should not be happening.” or, “This is what is not happening that should be happening.”

Do not leap to fixing blame for a problem. Understand the facts of the problem first. Once BP was blamed for the Gulf oil spill in 2010, our attention was divided between stopping the oil spill and blaming BP at a time when perhaps addressing the oil spill was the greater of the two concerns. When a person’s temperature spikes into a dangerous fever, it is more important to bring the fever down than to pinpoint the cause. Sometimes you must treat the symptoms as the problem because you are unable to address the cause, but never confuse the symptoms with the cause.

Often the solution is more important than the cause. Nonetheless, there are times when understanding the cause is essential to solving the problem. So, provide the most specific answers to these questions that you can. Specifics make a better story and they define the problem more precisely.

Good reporters follow a good story. You should feel free to continue to ask additional questions once you have the basic facts. If the problem involves an asset or resource, for example, we might zero in on an aspect of the story and ask: What happened or will happen to the resource/asset? What is or will be that event's impact? Who or what does that impact affect? When did or will that impact happen? How did it or will the impact occur? Why did it or will it occur? What could be done about what happens, its impact, who or what it affects, and when, how, or why it occurs? Ask and answer good questions. Write the lead to the story. Follow the story. These three simple steps will give you a good start on identifying a problem.

PITFALLS IN PROBLEM DEFINITION TO AVOID

1. No focus: Definition too vague or broad.
Example: Lack of biodiversity in the watershed.
2. Focus is misdirected: Definition is too narrow.
Example: How can we improve conditions for the mottled duck?
3. Statement is assumption-driven.
Example: How can we stop harmful human disturbances?
4. Statement is solution-driven.
Example: Mallow Marsh needs a water control structure.

7.5.5 UTOPIA

Problems may affect an organization, a system, a process, a population, or any other number of targets. A problem may be an event, a situation, or an ongoing issue. For the next several techniques it will help to develop a little shorthand for all these possibilities. So, when you hear the word "situation," feel free to think any or all of the causes of problems discussed here. Likewise, the decision context is generalized to an organization to keep the language simple.

Look at your organization's situation. Create an idealized or utopian situation for your organization. What do you want to see happen? What do you want to ensure does not happen? What does an ideal future look like? Now compare the existing situation to this utopian ideal. What are the differences? Why do these differences exist? What do the differences suggest to you about the problems and opportunities in your situation? Use the insights gained through a comparison of your situation to a utopian situation to articulate your problems.

7.5.6 BENCHMARKING

Xerox is credited with developing this technique for comparing practices among businesses. It can be easily adapted to any situation. Who is the very best at what they do in your situation? Who sets the standard for performance? What is that standard? In benchmarking, you identify a situation similar to your own in significant resources, size, and other important aspects that is considered the best there is. Then you compare your situation to the benchmark.

Just as with the utopia technique, you are looking for deviations, that is, the gap between where you are now and where the benchmark situation is. These deviations should be described as specifically as possible. What are the deviations? Where are they occurring? When do they occur? How large are the deviations? Can you explain the deviations? What factors explain them? What are the possible explanations for the most important deviations?

Make each possible cause stand on its own or in combination with others to satisfactorily explain the deviation. Now choose the most likely cause(s) of the deviations and you have an initial problem identification.

This technique differs from utopia in that it uses an actual situation as the benchmark for comparison rather than a utopian ideal. Utopia is used when there is no benchmark for your organization or situation.

7.5.7 CHECKLISTS

Examine your situation with checklists in hand. The best checklists provide a comprehensive set of questions to ask, conditions to monitor, factors to consider, and the like. Deep and Sussman (1997) provide a set of 140 lists to aid in decision making. *That's a Great Idea* by Tony Husch and Linda Foust (1986) has several situation analysis checklists. Many of these lists are designed to help you identify problems and opportunities. Arthur B. VanGundy's (1988) *Techniques of Structured Problem Solving*, though out of print, is well worth the search; it offers 105 different creative problem-solving techniques. James T. Higgins (2005) offers some very practical techniques in his excellent book, *101 Creative Problem Solving Techniques*.

The best checklists may be the ones you develop specifically for your own situation. Many food processors, for example, have adopted the Hazard Analysis and Critical Control Point (HACCP) plan approach to food production. This approach breaks the production process down into its basic elements and identifies those points at which things can go wrong. Such an analytical process helps identify classes of problems associated with the production process. The medical profession provides many excellent examples of checklists useful in diagnosing health problems. You may have to develop your own checklists initially, but once developed they can prove to be an invaluable aid in identifying recurring kinds of problems.

7.5.8 INVERSE BRAINSTORMING

Inverse brainstorming unleashes the destructive energy in us that we have been suppressing since childhood! In this technique, you begin by considering your situation satisfactory. Then you nitpick it. See how many things you can find wrong with it. These potential obstacles and shortcomings become the bases for your problem identification.

Inverse brainstorming can be especially useful in dealing with opportunity risks. With this technique you look at an opportunity and brainstorm all the things that might prevent it from being fully realized. Why can't ecosystem habitats be increased? The technique can be particularly good at exposing the implicit assumptions that lie in our unconscious minds. When only one person or when like-minded people look for what can go wrong, beliefs and values may limit our ability to see the reality of a

situation. These beliefs can often be exposed by expanding the inverse brainstorming circle to include those outside your organization or the immediate situation.

Little gets people's creative juices flowing faster than deconstructive criticism. Ask people to find ways to create problems with your situation. Do a *premortem* on your situation and think about what can go wrong. Ask people how we can decrease habitat, increase cases of food-borne illness, introduce radon into our homes, cause the structure to fail, and so on. Get into a destructive problem-causing mode. Think like a bad guy or at least a severe pessimist. The insights gained from this process can help you identify the things that can go wrong as well as the ways they can happen.

7.5.9 BITCHING

Closely related to the inverse brainstorming technique is bitching. This gives full reign to the negative energy of humans. It differs in that while it can consider obstacles to opportunities, it may be more useful for problems. It simply invites people to let it rip and tell us what is wrong with our situation.

As a practical matter, you gather as many people as possible who know the situation and brainstorm (see [Chapter 8](#)) their lists of complaints. As the number of complaints begins to grow, they can be organized into subject areas. The subject areas are in turn grouped as necessary to get to a definition of problems.

7.5.10 DRAW A PICTURE OF THE PROBLEM

Draw a picture of the problem to make sure you are identifying the real problem. Drawing pictures taps into the creative side of the brain. Seeing the problem in a picture is a useful way to gain insights into the problem and its linkages with other ideas. The picture can be a flow diagram or a crude symbolic drawing; do not let a lack of artistic sense stop you from drawing the problem. Many problems often lend themselves nicely to visualization. There are no further rules to this technique. In one version of this technique, each member of the group is invited to draw a picture of the problem. The group then develops a consensus picture from the various individual versions. In another version, the group is tasked with developing a drawing jointly from scratch. The pictures are explained to everyone's satisfaction, and this explanation becomes the basis for the problem description.

7.5.11 MIND MAPS

Mind maps are a specific kind of problem picture that is growing in popularity and ease of use. Mind maps are diagrams used to represent many ideas and their linkage to a central concept. They are extremely useful for visualizing, structuring, and classifying ideas. They are also useful for analyzing, comprehending, synthesizing, recalling, and generating new ideas as well as for illustrating problems. Mind maps can be done by hand. The basic steps for creating a mind map are:

- Write the key problem word or phrase in the middle of a blank sheet of paper. Draw a circle around it.

- Think of as many related subtopics as you can. Write them down and connect each of them to the center with a line.
- Treat each subtopic as if it is the central idea in its own mind map. Identify facts (or, for a complex model, another tier of subtopics) for your subtopics and repeat the process. Generate as many of these lower-level subtopics as you see fit. Connect each one to its corresponding topic.
- Be as visual as you can be. Use colors, photographs, stick-figure drawings, sketches, and symbols generously.
- Limit your words. Keep your topics, facts, and phrases as short as possible. One word is good; a picture is better.
- Engage your brain; use variety. Different-size print or script, colors, thickness, lengths, curvature, alignments, and so on should be used. They encourage our creativity.

Figure 7.3 shows how a mind map aids thinking about the problem of the Asian carp reaching Lake Michigan in the United States. There is concern that this invasive species may become established in the Great Lakes. Once a map like this is drawn, it becomes easier to see the complexity of the problem and to develop a well-focused problem statement from it.

The example here is kept intentionally simple. The map suggests ways to frame the problem in terms of pathways, impacts, science, or even solutions. The map shows entry pathways, impacted areas, structures on the waterways, and even the species itself. The pictures are often more effective than words in stimulating thought. The eventual problem description can be developed by integrating the key insights from the mind map.

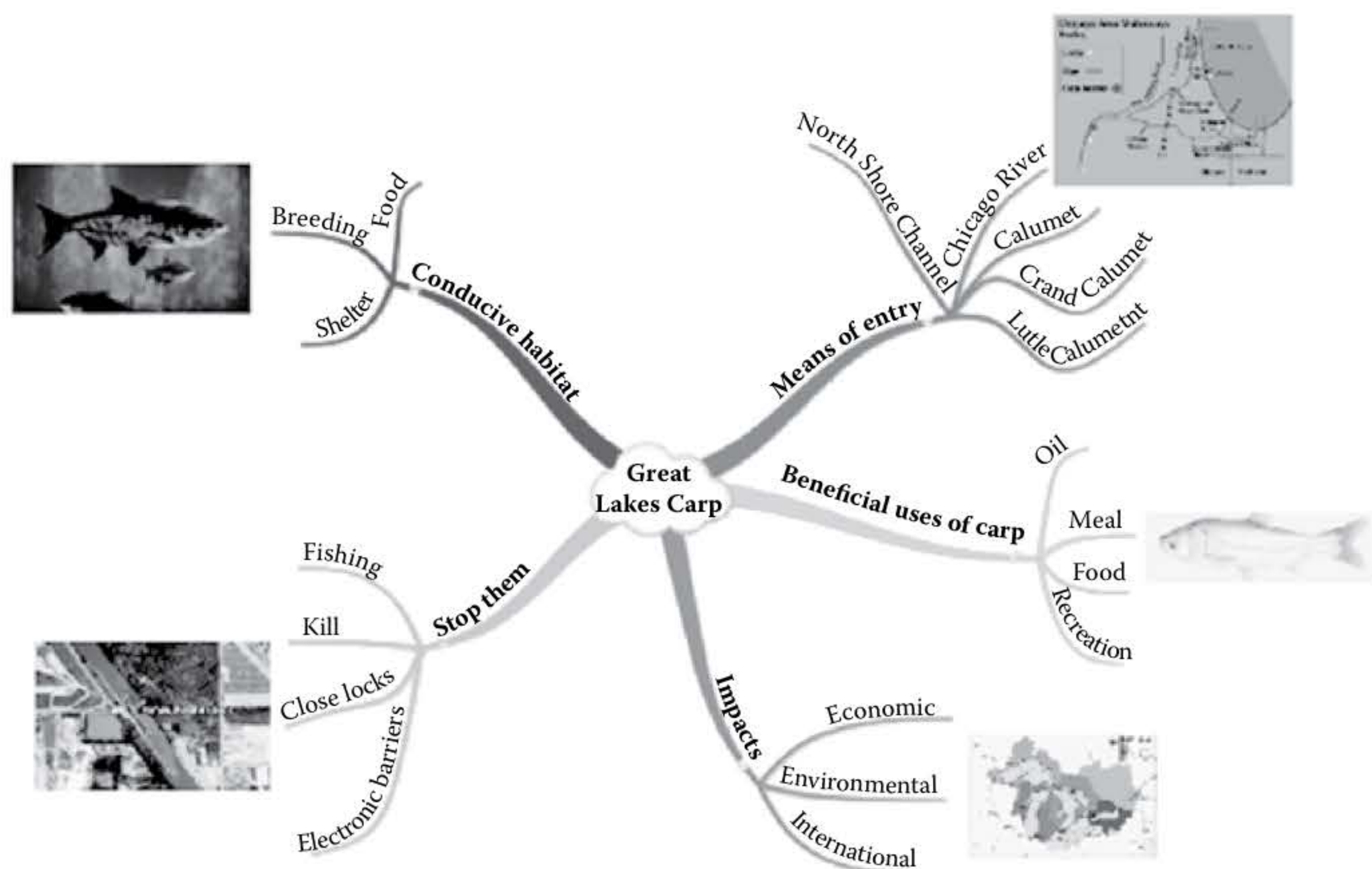


FIGURE 7.3 Mind map example for Asian carp entering Lake Michigan.

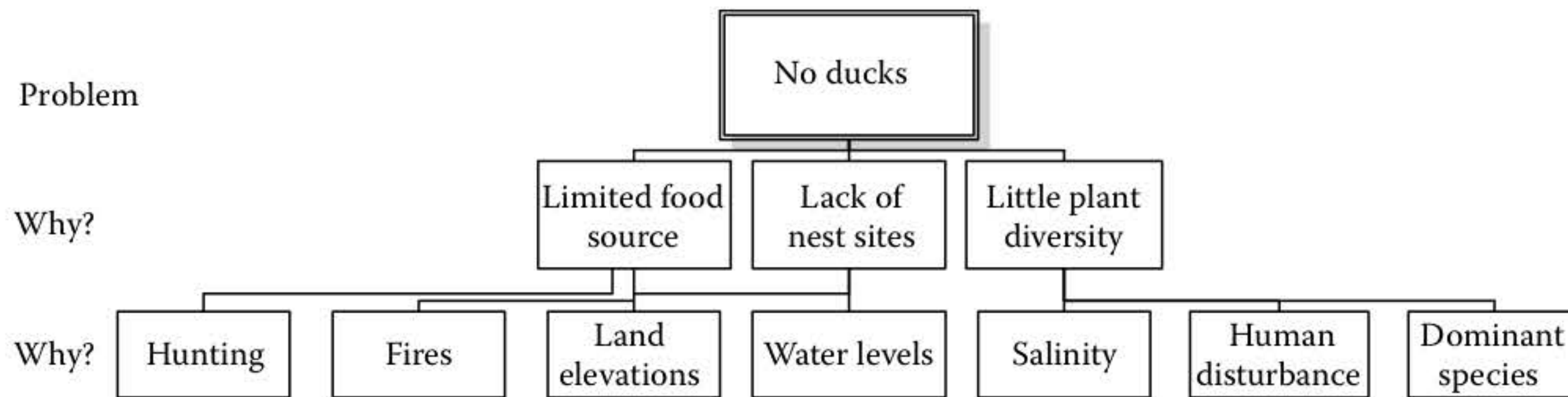


FIGURE 7.4 Why-why example for mottled duck habitat.

7.5.12 WHY-WHY DIAGRAM

The why-why diagram identifies possible causes of a problem, and when done well it quickly sorts ideas into useful categories. It is sometimes called a cause-and-effect diagram, fishbone diagram, or Ishikawa diagram. This technique is most useful when causes are important to know. It helps the team think through the causes of a problem in a thorough manner. It pushes the team to consider all potential causes of a problem rather than focusing too quickly on a single cause, a symptom of the problem, or on affixing blame. The why-why approach is a useful tool for moving from an early recognition of the problem to a more mature description of the problem.

It can be done simply. Divide a piece of paper into at least three horizontal sections. Write the problem in one section of the paper. In the middle section ask why this is a problem, ask why it happens, and list as many reasons for the problem as possible. The third section is the second level of “whys.” Here you write the reasons for the factors identified in the middle section. Add as many subsequent why sections as you need to sketch and understand the problem. An example, explaining the absence of ducks at a marsh site, is shown in [Figure 7.4](#).

Convenient and easy-to-use software tools have been developed to assist more sophisticated why-why models. Such tools can be easily found on the Internet by using the search term “fishbone diagram.”

7.5.13 RESTATEMENT

Once you have begun to define a problem or opportunity, restate it in as many ways as you can. Look at and imagine your situation from as many different perspectives as possible. The basic idea is to see your problem through many different sets of eyes to broaden your perspective of a problem.

The obvious place to begin is with your situation’s different stakeholders. Consider the problem of public elementary education in the United States. How would school administrators phrase the problem? What would politicians, students, teachers, administrators, janitorial services, the local newspaper, textbook makers, neighbors, crossing guards, and so on say?

Once you have exhausted the list of stakeholders, it can be helpful to think about how different professions and demographic groups would state the problem? What would engineers say? What about medical doctors, police officers, African-Americans, Asians, liberals, conservatives, the uneducated, the wealthy?

Imagine how different media would characterize your problem. What would CNN say? What about Fox News or ESPN? How would the magazines *Time*, *All About Beer*, *Vanity Fair*, *Popular Mechanics*, *Mad*, or *Home and Garden* state your problem? Finally, you might consider how specific individuals, real or not, might state the problem. What would the mayor or governor say? How about the president of the company or your fourth-grade teacher? What would JFK, Aristotle, Bart Simpson, Popeye, or Superman say about the problem?

This technique can be a lot of fun when an honest effort is made to explore the different perspectives on a problem. It is especially helpful for identifying biases and assumptions when your original problem description is compared to those you

TECHNIQUES FOR PROBLEM RESTATEMENT

Every problem can be viewed from multiple perspectives. Restating a problem as many ways as possible is a good way to explore these perspectives and the dimensions of a problem. To obtain a good definition of the problem, restate it in as many ways as possible. Here are a few ways to restate a problem that have proven effective. Restating should take no more than 5 or 10 quality minutes when you start with a basic statement of a problem.

Initial statement: Freshwater fish and invertebrate species are being eliminated.

1. Paraphrase: Restate the problem using different words without losing the original meaning.

Paraphrased: How can we preserve and restore freshwater fish and invertebrates?

2. 180 degrees: Turn the problem on its head.

180 degreed: How can we eliminate freshwater fish and invertebrate species?

3. Broaden the focus: Restate the problem in a larger context.

Broadened focus: How can we achieve greater biodiversity?

4. Redirect the focus: Boldly, consciously change the focus.

Redirected focus: Saltwater fish species are on the increase.

5. Use the why-why approach: Ask “why” of the initial problem statement.

Then formulate a new problem statement based on the answer. Then ask “why” again and restate the problem based on the answer. Repeat this process a number of times until the essence of the “real” problem emerges.

Why? Because salinity levels are changing in the marsh.

Restatement: Salinity levels are changing in the marsh.

Why? Because salt water has entered this formerly freshwater marsh.

Restatement: Salinities in the freshwater marsh are increasing.

Why? Because the navigation channel has introduced a saltwater wedge to the river that feeds the marsh.

Restatement: Dredging has increased salinities in the marsh, eliminating freshwater fish and invertebrates.

identify. The goal is simple: Identify as many different ways of seeing and expressing the problem as possible. Write them down. Do you see the problem any differently? Do you understand it better? How can you best consolidate these views into a cohesive statement? The preceding text box (Techniques for Problem Restatement) offers a slightly different approach to the restatement technique.

7.6 THE P&O STATEMENT

Your problems and opportunities (P&O) statement is not real until it is written down. Your risk management activity should never be without a written list of current problems and opportunities. Once your list starts to take shape, it takes very little time, for example, in a team meeting, to ask if there are any revisions or evolutionary changes to be made to the P&O statement. Keep it current and up to date. Make sure every team member and all the significant stakeholders always have access to a current copy.

Publish it on your web page. Tell people that these are the problems as you see them. Ask them, “Do you agree? Did we get them right? Have we missed anything? Is there anything here that does not belong?” If your risk management activity is not in the public sector, ask your risk analysis team these same questions. Vet your work. It takes some time, but it takes less time to do it right than to do it over.

What should the P&O statement look like? It is short, a page or two at most if you have multiple problems and opportunities. Each problem and opportunity is succinctly stated in a sentence or two at most. They are numbered for convenience. Eventually, you may develop an expanded definition and description of each item, but you need not do so for the P&O statement. This is where risks are initially documented.

None of this brevity is intended to reduce you to sound bites and clichés. It is intended to focus the risk management activity and crystallize the attention of managers, assessors, and stakeholders. The statement enables you to say why you are conducting a given risk management activity. The risk assessment can still weave a story and explain the problems and opportunities in as much detail as necessary. Your P&O statement needs to be clear, concise, and complete. It is the reason for the risk management activity. In this respect, it is like a mission statement for the activity. Continuing the analogy, the objectives and constraints statement, then, is like the vision statement for the activity.

An optional step between the P&O statement and the risk assessment’s full definition of the problem is to prepare a fact sheet or problem profile, not to be confused with the risk profile. For example, a profile might identify the source that first recognized the problem, the public or extra-organizational concerns about the problem, as well as a few technical details to help flesh out the problem a little more. A simple template for a problem profile is shown in [Table 7.5](#).

How do you know you have a good P&O statement? When people understand it. If you show it to someone and they understand why you are doing an assessment, you have succeeded. How do you know if they understood it? You must vet it, publish it, communicate it, and seek feedback on it. How do you know when it is final? When people agree with it or at least accept it. It is final when you no longer find a reason to change it.

Do not wait until you have a good P&O statement to begin using it. A good statement takes time to develop, but a useful statement is the one you have. There are two things to do with a useful P&O statement: you can improve it or you can use it.

TABLE 7.5
Problem and Opportunity Profiling Template

Problem/Opportunity Profile

1. Source: What source first identified the problem or opportunity? Examples: higher authority, media, stakeholders, conversation with elected officials, experts, field observations.
2. Public concerns
 - a. Advocate: Who is the spokesperson for the problem or opportunity? Identify specific groups, agencies, and individuals.
 - b. Basis: What is the advocate's basis for the problem or opportunity? Examples: homeowners who have experienced flooding, state agency legally mandated to oversee wildlife resources.
 - c. Background: In the advocate's view, what is the problem or opportunity, and what are the causes and effects?
 - d. Other stakeholders: Who else believes the problem or opportunity does or does not exist? Why or why not? Identify specific groups, agencies, and individuals.
3. Technical analysis
 - a. Subject: State the problem or opportunity.
 - b. Location: Describe the location of the problem or opportunity; map it if possible.
 - c. Measurement: Identify one (or more) measurable indicator that is used to measure change in the problem or opportunity.
 - d. Conditions: Describe past, present, and future conditions related to the problem or opportunity:
 - (i) Historic condition
 - (ii) Existing condition
 - (iii) Future "without project" condition
 - e. Decision criteria: Identify any standard, target, or other criteria that may be used to define the magnitude of a problem or opportunity. For example: state water quality standards, design specifications, legislated targets, strategic plan goals, profits, costs, and so on as appropriate.

Causes and effects: Describe causes and effects of the problem or opportunity.

Conclusion: Does the technical analysis support the public concerns about the problem or opportunity? Why or why not? How do the historic, existing, and future conditions compare to any applicable decision criteria?
4. Problem/opportunity statement: Write a clear and brief description of the problem or opportunity.
5. Information

Sources: List sources of information about the problem or opportunity.

Information needed: Briefly describe the types of additional studies needed to address the problem or opportunity.

Source: Yoe, C., and K. Orth. 1996. *Planning Manual*. IWR Report 96-R-21. Alexandria: Institute for Water Resources.

7.7 TWO PROBLEM SOLVING TRAITS

Once the problems are identified, it remains to solve them. That, to a great extent, is what risk analysis is all about. Cognitive diversity and psychological safety can help you do that. Reynolds and Lewis (2017) report that increased diversity of gender, ethnicity, and age is apparent on executive teams. Popular wisdom suggests that more diverse teams are more creative and productive. Their research found no correlation between this type of diversity and team performance but it found *cognitive* diversity—differences in perspective or information processing styles—to be a good predictor of performance.

Information processing is the extent to which individuals prefer consolidating and deploying existing knowledge to generating new knowledge, when facing new situations.

Perspective is the extent to which individuals prefer deploying their own expertise to orchestrating the ideas and expertise of others, when facing new situations.

Source: Reynolds and Lewis (2017).

It is common practice to recruit in our own image. We gravitate toward the people who think and express themselves as we do. As a result, organizations can end up with like-minded teams. Functional bias is a problem for teams that face the new uncertain and complex situations that present themselves to risk managers. With little cognitive diversity, teams have limited ability to see things differently, engage in different ways like experiment versus analysis, or create new options. Cognitive diversity could generate accelerated learning and performance in the face of new, uncertain, and complex situations. When everyone agrees on what to do about your problem, find someone who disagrees and cherish them.

In more recent research, Reynolds and Lewis (2018) identify cognitive diversity and psychological safety as the two traits of the best problem-solving teams. Groups that perform well treat mistakes with curiosity. They share responsibility for the outcomes—an admirable trait for risk management organizations. This climate of psychological safety encourages people to express themselves, their thoughts, and ideas without fear of social retribution. [Figure 7.5](#) provides a taxonomy of four types of problem solving organizations. Characteristic behaviors and emotions of these organizations are described below (Reynolds and Lewis 2018).

Oppositional teams with high cognitive diversity and low psychological safety tend to be cautious, controlling, flexible, hierarchical, reasoned, and resistant. Defensive teams with low cognitive diversity and low psychological safety tend to be cautious, conforming, controlling, directive, hierarchical, and resistant. Uniform teams with low cognitive diversity and psychological safety tend to be appreciative, considered, controlling, competitive, flexible, and hierarchical. Generative teams, the best performers, have high cognitive diversity and psychological safety, and they tend

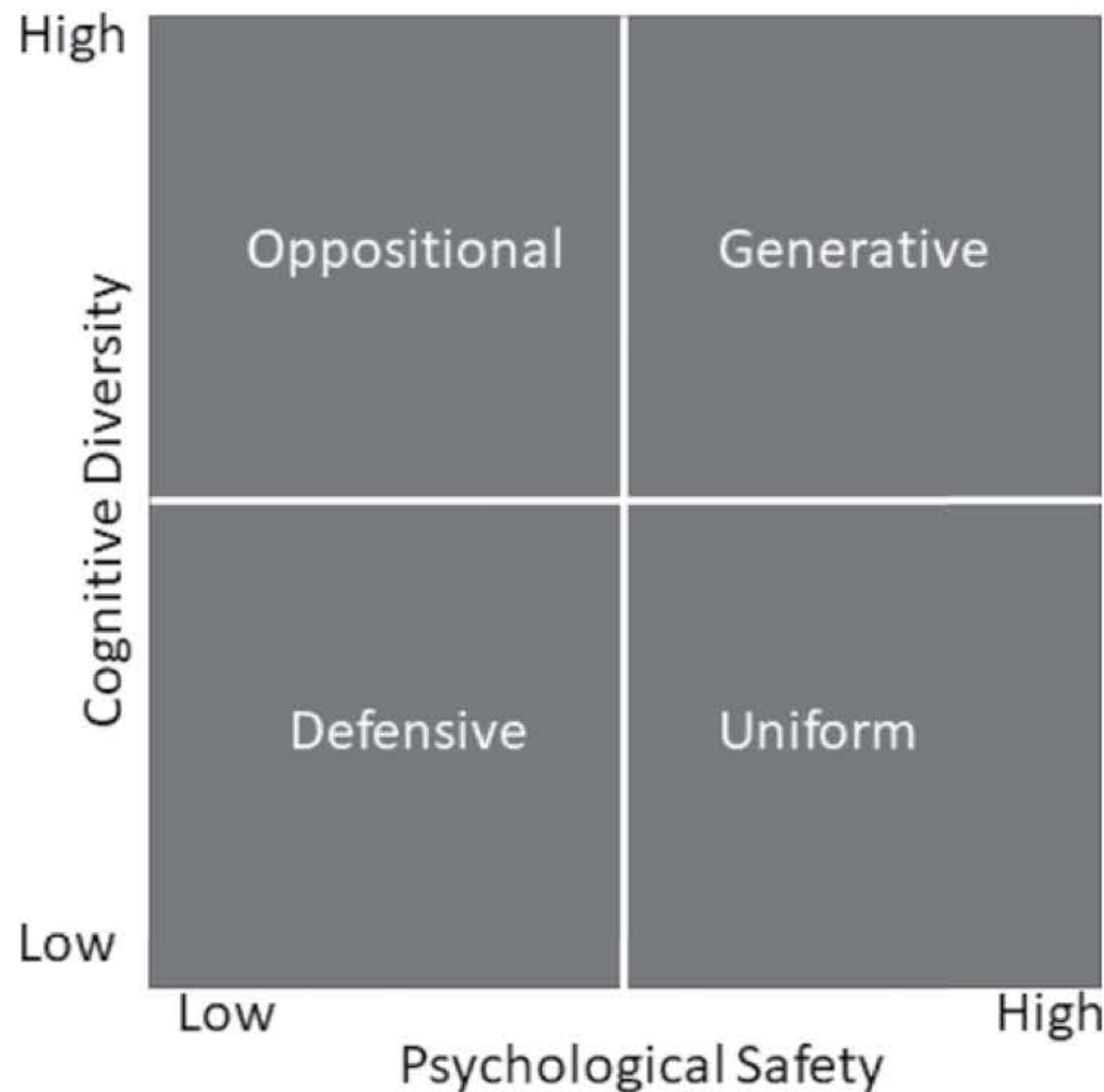


FIGURE 7.5 Reynolds and Lewis typology of team types.

to be curious, encouraging, experimental, forceful, inquiring, and nurturing. To be an effective risk managing organization, cultivate generational teams.

7.8 SUMMARY AND LOOK FORWARD

Problems are undesirable conditions we want to avoid. They usually require risk-avoidance strategies. Opportunities are desirable conditions we seek to capitalize upon. They usually require risk-taking strategies. It is critically important that problems and opportunities be as clearly and carefully identified from the outset of a risk management activity as possible. One of the most common and most avoidable weaknesses of a poor risk management activity is solving the wrong problem or failing to realize an opportunity.

Identifying problems and opportunities is important, these are your risks. Risk managers would be well served to know and use one or more problem-identification techniques. Several techniques to help you prepare an effective problems and opportunities statement have been offered in this chapter.

Many professionals are wary of techniques; they tend to regard them as gimmicky and unnecessary. My experience says some parts of the risk management process can be vastly improved with a good technique or two. Problem and opportunity identification is one such instance. Another instance is at the points in the risk management process where divergent thinking is needed. This is where brainstorming, another useful tool for the risk manager's toolbox, can be very helpful. Brainstorming is the topic of the next chapter.