CHAPTER

9

JOINT FACT-FINDING AND THE USE OF TECHNICAL EXPERTS

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Picture yourself in a controversial dispute that puts you at odds with your friends and neighbors. Local developers in your town have proposed to build a 25,000-square-foot office building on the edge of your subdivision, an area zoned for commercial use (but left vacant) for the past 25 years. You are concerned that the development will create traffic and noise problems and will encourage more businesses to move into the area. You also think that, for aesthetic and environmental reasons, the land should remain open. Some of your neighbors, however, argue that a new office building will generate tax dollars, provide local businesses with more customers, and increase property values. Ever since you learned about the project two years ago, you have complained to the city council and the planning board, but they seem unconcerned about possible impacts on the community. The developers have received nearly all the permits they need; barring any delays, they will begin construction in four months.

You recently learned, though, that a rare songbird nests in the area and will soon be listed as a "threatened species" by the U.S. Fish and Wildlife Service. You and your like-minded neighbors have raised money to study the nesting area on the chance that

this rare bird will be disturbed if the development proceeds. Your consultant's findings are conclusive; they support reexamining the construction permits that have already been granted.

As the consultant prepares to present his findings at a city council meeting, you are horrified to learn that an equally prominent biologist has also studied the area and drawn the opposite conclusion. She sees no threat to the habitat. You have been told that, through administrative hearings, public meetings, and even courtroom confrontations, the "dueling experts" might still be able to delay things, but eventually local leaders will make a decision about who "wins." You groan, thinking, "There must be a better way!"

Fortunately, there is. *Joint fact-finding* offers an alternative to the process of *adversary science* when important technical or science-intensive issues are at stake. Joint fact-finding is a central component of many consensus building processes; it extends the interest-based, cooperative efforts of parties engaged in consensus building into the realm of information gathering and scientific analysis. In joint fact-finding, stakeholders with differing viewpoints and interests work together to develop data and information, analyze facts and forecasts, develop common assumptions and informed opinion, and, finally, use the information they have developed to reach decisions together.[1]

Information gaps and scientific uncertainty are inherent in policy disputes in our society. Many disputes, after all, grow out of disagreements over economic, environmental, and social priorities. The "fuel" for these disputes is often data about the likely impact—on a particular group of citizens, on someone's financial investment, or on the environment—of a decision.

Parties with differing interests, therefore, will quite naturally look to scientific experts to influence the outcome of a dispute. This is particularly true when parties are engaged in litigation, in which a judge or jury makes the decision, or when parties are seeking to influence the policy decision of a government agency or body of elected officials. In these traditional decision-making arenas, proponents and opponents of a project might each hire technical experts to provide analyses, forecasts, and impact assessments to support or undermine a proposed project, as in the example above. This creates difficulties for both sides. They both must go to great expense to "buy" technical expertise so that they can participate effectively. And, it seems, there are always experts

available to provide the answers that support each side's point of view. Does this make technical expertise less valuable? No, but it suggests that the manner in which technical or scientific information is gathered may be as relevant as the information itself.

"Joint fact-finding assumes that parties with conflicting interests will interpret material differently."

Consensus-based processes invest decision-making responsibility in a group of stakeholders with diverse interests, not just in an elected or appointed decision maker. Joint fact-finding in a consensus process assumes that parties with conflicting interests will interpret technical material differently but that they ought to gather and develop facts and forecasts together. Specifically, stakeholders should jointly determine the issues of concern that require technical analysis, the questions that the experts ought to ask (and who those experts should be), the best process for gathering information and answering questions, the limitations of the various analytical methods that will be used, and the best way of proceeding once a scientific or technical analysis is completed.

In an effort to describe how these tasks should be completed, the rest of this chapter is organized as follows. It begins by describing the advantages of joint fact-finding, and then it outlines the circumstances under which fact-finding should and should not be used. Next, it looks at the roles participants and technical experts can play in joint fact-finding and offers a process for selecting the appropriate experts. Finally, the chapter describes the five key steps in a typical joint fact-finding effort and the obstacles to effective joint fact-finding.

■ *Advantages of Joint Fact-Finding*

Joint fact-finding offers a unique opportunity for participants in a consensus building process to address information gaps and scientific uncertainty. Participants involved in joint fact-finding often learn a great deal about the scientific underpinnings of various arguments—something they would not otherwise have an opportunity to do. In addition, consensus processes that include a joint fact-finding step will likely produce agreements that are more credible, more creative, and more durable than they would be otherwise. Joint fact-finding also enables parties to build strong relationships, as they gain a better understanding of each other's interests. These benefits are explored below.

Gaining Knowledge and Understanding

If stakeholders are to forge agreements that address complex, technical issues, they need to develop a common understanding of those issues. Joint fact-finding enables parties to explore difficult topics together, so that they can develop a common knowledge base. It also allows those stakeholders with less knowledge, education, or expertise to learn more about the technical issues involved so that they can negotiate on a more equal footing.

The Northern Oxford County Coalition (NOCC, Case 2) is an excellent example of a situation in which stakeholders gained knowledge and expertise together through joint fact-finding. In this case, some residents of the Androscoggin River valley in northern Oxford County, Maine became increasingly concerned that they faced higher than average risks of cancer due to air pollution from a local paper mill. The media, in fact, dubbed the region "Cancer Valley." Other residents were equally concerned that any action against the mill would cause it to close, costing hundreds of people their jobs and severely damaging the local economy. The mill, which was in compliance with all environmental regulations, disputed the charges made against it, and almost no scientific data existed to support or disprove the various viewpoints.

In response to growing fears, the Maine Department of Environmental Protection convened the NOCC—a diverse group of local residents that included concerned citizens, business owners, public health officials, and representatives of the mill—to study and analyze cancer incidence and air pollution levels in the valley. NOCC ultimately formed two subcommittees (one on public health and one on air quality) and commissioned a study by a jointly selected independent consultant. Most NOCC members did not have any previous technical expertise on these issues and were not scientists, but through a long process of jointly analyzing and synthesizing data and learning from the consultant about basic scientific methods and limitations, group members gained enough of a technical background to feel comfortable presenting their findings in a clear and concise way to the public. Although much of the data they gathered were inconclusive, stakeholders were able to understand why that was the case.

Crafting Better Agreements

When participants in a collaborative process conduct statistical analyses, risk assessments, surveys, or other types of joint research (or work with a technical expert to do so), they have a better chance of identifying the most accurate information possible. The New York Bight Initiative (Case 6) provides a good example of how a sound agreement was based on jointly developed technical data. In that consensus building process, 22 parties met in more than 10 plenary meetings over a three-year period to analyze PCB contamination in the New York Bight and explore Bight management and restoration options. In the end, 18 parties ratified an agreement resulting from the negotiations. Almost all the parties felt that the document was "a good synthesis" of the technical information available about PCB sources, fates, and effects. Clearly, the participants believed that the recommendations for action included in the document were based on the best available scientific information.

Joint fact-finding can also help parties construct agreements that are not just more credible but also more creative. When diverse stakeholders work together to gather and interpret data, they draw on each other's experience, knowledge, and ideas. They can look for innovative ways to develop and use technical information to find an agreement that no single individual could have generated alone.

More durable decisions can also result from joint fact-finding. If all parties who must support an agreement are involved in gathering and assessing the information on which that agreement is based, they are more likely to stand by the agreement that is ultimately reached.

Finally, collaborative processes incorporating joint fact-finding are more likely to reach consensus than might otherwise be the case. In negotiations in which adversary science prevails, coalitions form behind technical experts or interpretations. Each side seeks to discredit the data offered by others. Often, this convinces the public and the press that the technical aspects of the debate are either hopelessly irresolvable or irrelevant. Parties working together, however, investing their ideas, time, and resources into jointly seeking good information, become devoted

to reaching a mutually agreeable outcome and explaining that outcome to their constituencies and the public.

Improved Relationships

Joint fact-finding enables individuals with differing interests to work together toward a shared goal. This process fosters trust, enhances communication, and builds understanding—all of which make for a more productive consensus building process.

In the NOCC case, participants came to know and respect one another better in the joint fact-finding process than they had when verbally sparring in public meetings or through the press. Relationships were so significantly improved, in fact, that the diverse stakeholders agreed to work together after the NOCC process was completed on a Healthy Communities effort, a collaborative endeavor that focuses broadly on improving environmental quality, public health, public safety, and economic health in the area.

■ *When to Use Joint Fact-Finding Procedures*

Joint fact-finding is useful in many situations. Cases involving highly technical, science-intensive decision making often benefit from joint fact-finding procedures. Disputes that hinge on a lack of critical information, or where charges of inaccuracy have been made publicly, should have a fact-finding component. Parties who have a long history of disagreement and poor relationships can benefit from undertaking collaborative research. Joint fact-finding can also be used to assist participants in breaking a deadlock.

To assess in more detail when joint fact-finding should be used, we will look closely at two situations in which it was very helpful. The first case—that of the Massachusetts Military Reservation (MMR, Case 7)—involves a science-intensive dispute; that is, technical and scientific data, and the interpretation of those data, were central to every aspect of the negotiations. The second case—that of a federal regulatory negotiation involving architectural and industrial maintenance (AIM) paints and coatings (the

"AIM negotiated rulemaking")—is a situation in which the information necessary to make decisions was lacking and had to be compiled in a central database.

The MMR is a 22,000-acre active military facility on Cape Cod that was declared a Superfund site due to soil and groundwater contamination. At MMR, local residents, environmentalists, state and federal agency officials, and the military disagreed about the method that should be used to clean up groundwater contamination plumes and what level of remediation was necessary. There was a great deal of scientific uncertainty and disagreement regarding which cleanup methods would be most effective. To address this uncertainty, stakeholders created a multidisciplinary team of technical experts, called the Technical Review and Evaluation Team (TRET), to develop recommendations regarding treatment options. TRET members included representatives of the U.S. Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection, the National Guard, the U.S. Geological Survey, and the Cape Cod Commission (a regional planning body). The TRET devised a process for jointly gathering information, analyzing it, and developing recommendations. Using a joint fact-finding approach that involved risk assessments and hydrogeological modeling, TRET members devised consensus recommendations within less than two months.

In the MMR case, joint fact-finding made sense for three reasons. First, uncertainty about the likely effectiveness of alternative cleanup technologies was at the heart of the dispute. It made more sense to bring technical experts together to take a first cut at this issue than to ask elected or appointed officials to wrestle with what was a daunting technical task. Second, a great many technical specialties needed to be tapped. It was better to have them working together, drawing on a common database, than working at cross-purposes. Third, joint fact-finding made it easier for the public to understand the scope of the technical uncertainty involved. Because all the technical matter was discussed in a single setting, the decision-making process was very transparent and therefore publicly accountable.

The AIM negotiated rulemaking began in 1993, when the EPA convened a multiparty group to help set federal standards regarding acceptable levels of volatile organic compounds (VOCs)[2] in

paints and other coatings. (The authors facilitated the group's negotiations.) The EPA agreed that if a balanced group of diverse stakeholders could agree on VOC limits for paints and coatings, the draft EPA rule aimed at controlling these emissions would be based on their agreement. Not all the stakeholders who came to the table believed that VOCs were harmful to humans or the environment, but given that the EPA was required by law to regulate this class of products, they decided it was better to take part than to remain on the sidelines.

At the outset, participants agreed that existing information on the VOC content of paints and coatings was inadequate. In particular, the EPA did not know the volume of paints and coatings being manufactured or the current VOC content of each. This information was necessary to negotiate appropriate future levels of VOCs. Participants jointly developed a protocol (i.e., a common set of questions and methods for data collection) regarding the type of information that needed to be collected, how it should be collected, and how it should be analyzed. They decided to undertake a detailed, industrywide survey of paint manufacturers of all types. An independent consulting firm that was acceptable to all parties was selected to conduct the analysis. The firm collected detailed information from 900 companies on more than 9,000 products. Each company reported the volume of paints and coatings it produced and the VOC content of each product. The result of this data-gathering and analysis effort was a list of 22 categories of products with data on the volume produced, volume sold, and VOC content of each category.

The National Paint and Coatings Association (NPCA), an industry group, offered to pay for the consultant, because its members believed that it was in their interest to have the regulation based on the best available information. The other parties readily agreed to have NPCA pay. They were not concerned about NPCA influencing the outcome of the analysis, because all parties helped to design the scope of work and chose the technical consultant. They also interacted directly with the consultant during ongoing discussions.

The results of the survey served as the factual basis for the negotiations that followed. The data compiled were used to assess potential reductions in emissions that might be achieved, as well as to determine the paints that required higher levels of VOCs to

perform as designed. The information-gathering process proved useful in two ways. First, it provided a valuable database of industrywide information; second, it enabled parties to learn more about paint and coating properties and functions and industry trends regarding the use of different products.

The parties worked for three years to develop a negotiated rule. In the final stage of the negotiation, some parties could not support the proposed emissions limits. However, the proposed agreement and the data generated during the joint fact-finding phase served as the basis for the EPA's final regulation.

We will now look at what these two cases reveal about when joint fact-finding can and should be used.

Disagreements about Information

Joint fact-finding is particularly useful in disputes in which parties interpret data and information differently, or where there is a great deal of scientific uncertainty, as in the MMR case. In these situations, some information may be available, but parties differ in their assessment of the quality of the information, the reliability of the methodology used to develop it, what additional data are needed, how they should be used, and so forth. Participants can always argue that more information might lead to a better decision, which they may be inclined to do if they are not happy with the direction in which a negotiation is headed.

In other cases, such as the AIM negotiated rulemaking, adequate information simply is not available in a useful form and must be developed. A carefully constructed process of joint fact-finding can enable stakeholders to obtain additional information, gain agreement on how it should be used, and agree on methods to check whatever analysis is done. Similarly, joint fact-finding can assist parties when information or data are available but some people believe them to be inaccurate or flawed.

Low Levels of Trust among Participants

In complex public disputes, participants often say they want to rely on "good science." Many factors influence their determination of what good science is and what it is not. One important

factor is the strength of the parties' relationships and the level of trust among them. Parties that do not trust or respect each other are more likely to criticize each other's interpretations of scientific findings.

In cases in which trust is low and the dueling-experts problem seems likely to emerge, joint fact-finding can be useful. As in the AIM case, collaborative information gathering can enable participants to work together to develop a common base of knowledge from which to negotiate. A successful joint fact-finding endeavor can help improve the dynamics of a group, giving participants confidence that they may be able to reach consensus.

One joint fact-finding process, initiated by a regional transportation agency, began as an effort to confirm that a decision made by state and federal agencies to extend an urban mass transit system into a sensitive environmental area in the surrounding suburbs was reasonable. Through a multiyear joint study of impacts and options, a 45-member task force was able to generate an entirely new transit system design and assist the agencies involved in modifying their plans for highway changes and related land uses. By the end of the process, the participants had worked together long enough to be able to transform their concerns into detailed, jointly agreed-on alternative plans (Forester, 1994).

Design of the Process

Joint fact-finding procedures can be tailored to almost any consensus building effort. They should be used, however, only when they are fully incorporated into a process—when explicit ground rules have been developed for conducting the joint research and when participants have agreed on a way to incorporate the results of this effort back into the deliberations of the consensus building group. In addition, the full range of stakeholders should be involved in the design and delivery of the process.

Joint fact-finding should increase, not detract from, the fairness of a negotiation. For example, it would not be appropriate for a set of parties representing one view to pay for an outside expert, unless the arrangement were acceptable to all the participants (as in the AIM case). Also, a fact-finding process that is forced on participants or seems to have no connection to the main

deliberations will only exacerbate the tendency for parties to polarize on the issues involved.

Availability of Human and Financial Resources

Joint fact-finding can be expensive and time-consuming, in part because it often involves selecting and hiring technical or scientific experts. The selection process involves a small consensus building effort in and of itself, and thus takes some time. The expert(s) chosen generally have to be paid a daily fee. In addition, sufficient time and funds must be available to ensure that all parties have a fair opportunity to have input into a fact-finding process. No single interest group's perspective should dominate simply because it has more resources. Joint fact-finding should be used only after participants carefully assess the human and financial resources necessary to carry it out and determine that those resource are available.

When Not to Use Joint Fact-Finding

In certain circumstances, it may not be appropriate to pursue joint fact-finding. In cases in which there are significant power imbalances among the parties, for example, and powerful parties are seeking to use joint fact-finding to reinforce that imbalance, it is not in the interests of some parties to pursue a collaborative effort. When there is a severe disparity in expertise, joint fact-finding may not be appropriate if ways cannot be found to equalize access to expertise.

If parties do not believe they can construct a fair fact-finding process that will be used to garner mutually beneficial data and information, it should not be pursued. When fact-finding cannot be effectively integrated into a dispute resolution or consensus building process, it may not be appropriate to introduce it. If there are not adequate financial resources to complete a thorough and satisfactory process, parties may elect to use existing information. Stakeholders should work to jointly develop a fact-finding process, but if they are unable to develop a mutually agreeable plan, they should perhaps proceed in another manner.

■ *Who Does the Fact-Finding?*

"Participants themselves may gather and analyze information, or they may hire outside experts."

In a consensus building process that includes joint fact-finding, participants themselves may gather and analyze information, or they may hire outside technical or scientific experts to do these tasks. This section explores these two options and includes a discussion of how best to select outside experts if the second option is chosen. We also examine the important role that neutral parties (e.g., mediators) can play as interlocutors on behalf of technically less knowledgeable groups.

Parties as Fact-Finders

Sometimes, participants in consensus-based negotiations possess scientific or technical expertise. In such cases, the parties themselves can address technical matters. Critical to the implementation of this approach is an agreement that a fact-finding component is needed. Participants may then choose to form a work group to investigate scientific issues, or the full negotiating group can be involved. Several important design issues should be considered if a work group is to be appropriately used.

1. The role and objectives of a fact-finding group must be clearly articulated. If all stakeholders agree about a work group's goals, they will likely accept the results that emerge from it. The full group must provide a clear mandate to any sub-work groups that are formed.
2. Participants in a work group should reflect the diversity of interests and perspectives in the overall group, so that the conclusions they reach will be credible to all parties. Sometimes, people representing one set of interests may not have the right expertise to send someone to a work group. In this case, they might want to ask one of their constituents, who does have the right knowledge, to take part.
3. A work group must have adequate time and resources to carry out its joint fact-finding tasks.

The use of participants to conduct joint research provides a side benefit: It increases the analytical capabilities and knowledge

of all representatives, creating a more level playing field. In the AIM process, for example, it would have been almost impossible for the environmental interests to have adequate information about industry practices without joint fact-finding. This would have put them at an extreme disadvantage in the negotiations. Due to the joint data collection effort, one of the lead environmental representatives was able to use the raw data to develop a computer analysis of the potential VOC reductions that would be forthcoming from any proposal offered by other parties.

The structure of the joint fact-finding work groups is important. One option is to invite anyone who wants to join to attend. Another is to limit membership to only those with technical credentials. We would almost always opt for the first, although we would also work hard to ensure that the most technically sophisticated members of the group had agreed beforehand to join the work group. On highly technical and controversial issues, such as selecting a site and a disposal method for handling low-level nuclear waste, it is critical that a site selection task force includes the political representation of potential host communities, the lead scientists from federal and state agencies, and industry representatives. Although any number of consultants are capable of collecting the relevant information, ranking sites, and suggesting the "most appropriate" location for a new repository, the final siting recommendations will have no credibility unless the full range of stakeholder interests is directly involved (Susskind & Laws, 1994).

Using Outside Scientific and Technical Resources

Parties often opt to use outside help to gather and analyze data, particularly when they do not have sufficient expertise among them. A group may choose to use a single outside expert, a panel of experts, a consulting firm, or the resources of an academic institution.

Single Expert

In some cases, a single individual can be identified who has the appropriate expertise and will be acceptable to all parties. The NOCC in Maine, for example, chose one expert (an epidemiologist) to work with them to devise a cancer incidence study. Given

the complex dynamics that typically characterize science-intensive consensus processes, however, it may not be possible to find one individual who is trusted by all parties or has sufficient breadth of expertise to be helpful.

Panel of Experts

Often, as a result of having to build a process that is acceptable to diverse participants and can handle the full range of issues involved, consensus building groups select a panel of experts. In these instances, attention should be paid to the process used to select the experts so that a range of opinions and methodological backgrounds is represented. In the New York Bight process, a very systematic approach was employed in selecting experts. When the mediation team interviewed stakeholders during the convening process, they asked interviewees to nominate scientists whose expertise could illuminate technical aspects of the issues at hand. This process yielded a roster of about 80 people from diverse specialties. Of this list, 40 were academics and 40 were agency staff or consultants. The parties were able to narrow the list once it was clear that PCBs were to be the focus of the negotiation. The mediation team and the parties then determined which experts were the most appropriate to assist in the joint fact-finding process. Ultimately, 23 scientists provided assistance to the project at various points.

Academic and Consulting Resources

In some cases, an academic institution or consulting firm can serve as a resource for fact-finding. In the AIM case, a consulting firm was retained to conduct the data collection and analyses. In a case like that, in which information gathering is the primary objective, a consulting firm can often provide the necessary services. Negotiators should remain directly involved in designing the scope of work and assessing and monitoring the results. Academic assistance is often more credible than consulting help, because university-based scientists are presumed to be working in the public interest while private consultants are presumed, often unfairly, to be motivated by profit. These presumptions must be tested and dealt with in each case.

In the New York Bight case, the experts who participated were recruited from many organizations, but the overall research effort

was conducted under the auspices of the New York Academy of Sciences. At the end of the process, the academy endorsed the final report. Support of the academy throughout and at the conclusion of the process was critical to the positive outcome since it is held in such high regard by public officials in the region.

Selecting Outside Technical Experts

Once participants have decided what kind of expert(s) they need, they must define criteria for the selection of those experts, identify potential sources of candidates, and determine a fair process for selection. They should also develop a budget for technical services and identify potential sources of funding.

Criteria for Selection

Before a group can identify appropriate technical expertise, its members must determine what they want the expert(s) to do. In particular, they must assess what issues need to be addressed and what questions need to be answered. (These decisions are discussed at length in the next section.) This will help to define criteria for the selection of experts. Criteria might include type of expertise, level of experience, reputation, references, availability to complete the tasks in the desired time, ability to work within the budget, and experience in a multiparty, collaborative setting.

Sources for Candidates

Experts might come from universities, consulting firms, government agencies, or other private and public entities. Parties might identify potential candidates by talking to professional contacts, references from those contacts, or staff of appropriate professional associations. Computer-based searches of the World Wide Web offer another quick way to generate possible advisers, as do library searches aimed at generating a list of well-known authors on a topic.

Fair Selection Process

A consensus building group must design a fair selection process that allows for the identification of the most qualified and affordable candidates who will be acceptable to all parties. In some cases, the full group may wish to help choose the experts,

advice, while others may feel it is not warranted. In this circumstance, a group may need to hire technical experts to assist the parties who want help to create a more equal level of knowledge and understanding of the critical issues. There is the danger, of course, of other parties bringing in opposing consultants, resulting in the old problem of dueling experts. To avoid this, parties should agree there is a need for the assistance, jointly design an acceptable selection process, and then establish common rules for how the assistance will be used. They may need the help of a mediator if they disagree strongly on any of these items.

■ *Building Lasting Agreements: Steps in a Joint Fact-Finding Process*

Joint fact-finding comes in many shapes and sizes. Parties entering into joint fact-finding at the beginning of a consensus process can integrate it into all stages of their negotiations. A joint fact-finding component can also be added later in a decision-making process, if critical information is found to be missing or if parties reach an impasse. In this section, we describe the critical steps in a joint fact-finding effort initiated at the beginning of a consensus building process.

The idea of undertaking fact-finding generally arises when participants realize that they need a deeper understanding to resolve a problem or find a way to deal with scientific uncertainty. In a joint fact-finding process, participants must determine (1) the issues of concern that require further information, (2) a process for gathering information and answering key questions, (3) the questions to be asked and the method of analysis to be used, (4) any limitations on the analytical methods to be used, and (5) the best ways of proceeding once new information is available.

Define Issues of Concern

Participants should begin a joint fact-finding endeavor by defining the problem or issue to be resolved. They might do this by having people state the issues of concern from their perspec-

tives and the questions they believe need to be addressed to reach consensus. Parties may wish to brainstorm these issues and withhold criticism until all possible ideas are on the table. Once participants fully understand each other's perspectives, they can begin to delve further, through dialogue, to get at the underlying interests that drive those concerns. With a more complete basis of understanding, parties can begin to jointly identify the most crucial information gaps or uncertainties that exist and the issues that could be appropriately pursued in a fact-finding process.

This first step is often the most difficult. For example, in the case of efforts to site low-level radioactive waste repositories, getting agreement on what questions to ask is almost impossible. Opponents of nuclear power, who believe that by making it impossible to dispose of waste safely they can create additional pressure to close down power plants, will insist that the question that needs to be answered is, "How can a completely safe site and disposal technology be found?" Others, who take a narrower view of their task, will be looking for a disposal site that will meet federal and state requirements—requirements that do not call for zero risk.

Parties should also discuss potential frameworks for analyzing issues and how the information gathered will be used. To define a framework, parties should assess the information that exists on the problems or issues and then identify a mechanism for filling in gaps or resolving unanswered questions.

It is important during this phase that parties at the table discuss the potential for joint fact-finding with the constituencies they represent, so that the full set of issues likely to be of concern is identified at the outset. Such a list can be refined and narrowed over time, but problems are likely to emerge later in a process if a major topic of concern is missed at the beginning. In the case of environmental impact assessment, the process for considering the environmental damage likely to be caused by a proposed project, this initial step is called *scoping* (Jain et al., 1993). Scoping is done in a very public way to ensure that all the issues of concern to stakeholders are enumerated.

Define the Process for Gathering Information

In creating a process for gathering and analyzing information, participants must define ground rules, determine who will man-

age the process (e.g., a subgroup or the full group), select appropriate experts to assist (if necessary), determine confidentiality needs and reporting requirements, and, preliminarily, discuss how the information will be used in the consensus building negotiations. The selection of experts and the use of work groups to manage a process were discussed in the previous section; the other tasks in this step will be described here.

Ground rules should cover the roles and responsibilities of participants who will be involved, the expert selection process, confidentiality, reporting, and general intentions on how the information will be used. These should be circulated and agreed to by the parties before the fact-finding effort begins. Just like ground rules governing an overall consensus process, these guidelines help to clarify the "rules of the game," so that questions do not arise at the end of a process about how it was carried out.

These kinds of ground rules are not that difficult to formulate. For example, it is often helpful to have a ground rule such as "Participants in this joint fact-finding process agree not to distribute any information they receive until the group as a whole agrees on the timing and method of its distribution." This can avoid misinterpretation and further conflict.

Confidentiality may be necessary if the information to be gathered is proprietary or otherwise not public knowledge. Participants will need to determine how to use such information without compromising its confidentiality. In the AIM negotiations, for example, industry representatives reported data on their paint-manufacturing inputs and processes to a neutral party (acceptable to all the participants), who then prepared summary statistics. No single company's data could be identified, but the group had what it needed to engage in joint problem solving.

Parties need to determine how consultants or experts, if they are to be used, will report back to the consensus building group. Will they give a final oral presentation to a subgroup? To the full group? Should they also prepare a written report? How many interim reports or meetings are necessary? Interim reports enable group members to assess each step, so that they can handle any disagreements about methodology or assumptions as they arise and fine-tune the process. This helps to ensure that the results will be acceptable to the full group. It is also important to be clear that experts and consultants serve at the will of the group; in other words, they should proceed with data gathering and analysis only at the participants' discretion.

Group members should also develop preliminary agreements on how information will be used. For example, will it be used to develop policy or regulatory options? They must also figure out how it will be integrated into the consensus decision-making process. For example, in some regulatory negotiations the group has used the products of joint fact-finding to draft legal language. In others, the participants have used it to simply generate a statement of principles that the agency staff then used to draft a specific regulation. This should be clear before the group begins its joint fact-finding efforts.

Define the Questions to Be Asked and the Method of Analysis

The next step is to translate the general questions to be answered into specific questions to be asked of the experts. These are not the same thing. For example, the group may want to know which sites for a facility are available in a predesignated area, but the question to the consultant needs to be much more specific, asking about the detailed criteria used to evaluate each possible site. Questions can be developed in one of three ways: Representatives can jointly identify a comprehensive list, they can individually submit questions and then compile and sort them jointly, or a small subgroup can be charged with this task.

Parties must then decide what method(s) of analysis will be used. Some participants will have greater confidence in highly rigorous, quantitative methods, while others will prefer techniques of analysis that do not allege that complicated phenomena can be quantified. They may disagree, for example, over the use of a cost-benefit analysis that seeks to quantify the value of aesthetic impacts or the value of a human life. Another common method is the statistical analysis, which assists in plotting trends and can be used to forecast future events or the likelihood of certain things occurring. Risk assessment explores the hazards and exposure levels associated with various options. Case studies provide one-of-a-kind illustrations, while surveys can be used to compute and assess patterns and perceptions drawn from many cases.[3]

Methodological battles are quite prominent in many fact-finding situations. While the strengths and weaknesses of each

method of forecasting and analysis are well-known to technical professionals, they often lead to esoteric debates that completely befuddle the general public. In these circumstances, a properly trained mediator can play an interlocutor's role: asking hypothetical and clarifying questions of an expert panel on behalf of the less technically skilled stakeholders. The most important thing is to help the fact-finding group to imagine beforehand what kinds of information it might end up with. The mediator should be able to help the group anticipate the form that the information will take and the extent to which findings and forecasts are sensitive to the way in which questions are asked. Indeed, it is always helpful to have a sensitivity analysis that shows all the participants how small changes in the data-gathering protocols form or in the choice of analytic assumptions can alter the results rather markedly.

As information is collected and an analysis conducted, the questions are often refined. This step should be accounted for in the design of a process.

Define the Limitations of Analytical Methods

"It is important to become familiar with the limitations of analytical methodologies."

It is important that those responsible for joint fact-finding become familiar with the limitations of various analytical methodologies. For example, statistical analyses should be accompanied by a clear explanation of the likely margin of error that, if large, can sometimes invalidate the results. Risk assessment may not cover key questions of interest because insufficient prior information exists to make acceptable forecasts. Cost-benefit analyses may not be meaningful if certain costs or benefits are not readily quantifiable. Some individuals find the very concept of risk assessments and cost-benefit analyses to be objectionable because monetizing all values violates their sense of what is appropriate. Case studies and surveys take time and money to conduct and may not offer results in a timely fashion. Moreover, the results are entirely dependent on the samples chosen, which can be easily manipulated. Parties should examine the potential limitations of each analytical method they choose and keep those limitations in mind when reviewing findings. Even with all these limitations, it is still better to proceed using joint fact-finding than to allow each party to procure an analysis that it alone finds

attractive. Only when all the stakeholders struggle with these methodological deficiencies together are they likely to end up with a pool of information that they can build on. The goal is to have a believable database that is prepared in a transparent way. It is quite appropriate, once such a database exists, for the parties to interpret the data differently, driven by their varying interests.

Define the Best Way to Proceed

As the final products of a joint fact-finding effort are reported, parties should jointly receive and discuss them. The challenging work of integrating the findings into possible options for agreements then begins. Parties may need to develop contingent agreements based on several potential options, if one option does not clearly emerge as the appropriate basis for agreement. For example, if a forecast has been prepared and one set of stakeholders assumes that the worst case will occur while another set is more optimistic and assumes the "most likely case" will occur, the full group can formulate a proposal that spells out a contingent response in case the first group turns out to be right. In other words, they can have an agreement on the most likely case, but include in that agreement a clause saying that if the worst-case scenario turns out to be the correct one, then *X*, *Y*, and *Z* steps should occur and/or the group will reconvene to renegotiate the agreement. A group does not need to agree on a single forecast of future events to be able to suggest an appropriate way of proceeding.

Final reports from consultants or technical work groups may not reveal definitive "answers," in which case participants must decide how to proceed in the face of continuing uncertainty. In the NOCC case, stakeholders found that health data on the incidence of cancer in the area were still not complete or conclusive, but they were able to identify interim actions that would mitigate pollution problems. In cases such as this, parties may need to spell out joint monitoring procedures that can become part of their agreement. Alternatively, they may need to make decisions based on the information they have, even if it is incomplete.

■ *Obstacles to Effective Joint Fact-Finding*

Even the most sophisticated, comprehensive joint fact-finding effort does not always yield useful results. Stakeholders need to consider the following possible obstacles that may arise.

When parties have extreme differences in technical background, joint fact-finding can be very challenging. Those with less knowledge will have to work hard to become familiar with the issues. However, joint fact-finding itself does provide ways to close most knowledge gaps and, ultimately, achieve mutually agreeable solutions. To accomplish this, it may be important to offer less knowledgeable parties additional training or assistance. This offer should be made to all participants, but presumably only those who need it will accept it.

Joint fact-finding can be time-consuming and difficult to coordinate. Deadlines may make it impossible to complete the kind of joint fact-finding that is really appropriate. Representatives and their constituents need to be informed about deadlines and progress to keep expectations in line with reality.

In some cases, parties will not be able to agree on the selection of an expert. Too many technical professionals may have already "taken sides" on the issue. The group should be encouraged to work hard to accommodate each other's interests in the selection process. Sometimes it helps to seek assistance from outside the region, even though this usually adds to the cost.

Occasionally, when the most comprehensive, inclusive fact-finding process has been conducted and the analyses are complete, parties will not be able to agree on how to interpret the results. In this instance, they need to define points where errors may have been made along the way, determine if their mutual assumptions have changed and address those changes, or gather additional information. Sometimes the best that can be done is to prepare a written report highlighting the elements of the analysis and the disagreements that emerged.

One of the most difficult obstacles can be when results are inconclusive. As mentioned, some parties in the NOCC case were forced to accept the fact that attributing health effects directly to the area's pollution problems would require much more research and analysis than they could afford. Parties were still able to agree

on interim measures to undertake to improve public health, however. Often, it helps to search for these kinds of "no regrets" proposals: actions that might (or might not) help solve a problem but that are worth doing for other reasons as well, like improving public health.

Finally, people involved in joint fact-finding often face critical junctures in which some conclusions can be drawn from an analysis, but by gathering more information the analysis could yield better results. They must struggle to determine how much information is enough. Typically, political, financial, or time-related constraints dictate when an analysis must conclude.

■ *Conclusion*

Joint fact-finding, and the appropriate use of technical experts, can play an effective role in many kinds of consensus building efforts. Joint fact-finding is most useful when the parties themselves serve as the experts or when the parties select and manage their own technical advisers. The success of joint fact-finding depends on whether the information generated is adequately integrated into the consensus building process. Fact-finding that proceeds independently from the will of all the parties may fail to yield useful results or durable agreements. If properly structured, however, collaborative fact-finding can contribute to more cohesive relationships among parties and a better understanding of differing views. Fact-finding, however structured, will not necessarily lead to agreements among parties with contending interests. It will, however—if done correctly—lead to the development of increased understanding of the systems involved or the impacts that policies, programs, or projects are likely to have.

■ *Notes*

1. Kai Lee's book *Compass and Gyroscope* (1994) and Connie Ozawa's text *Recasting Science* (1990) are both good general sources of additional information on joint fact-finding.

2. Volatile organic compounds (VOCs) are ozone-forming chemical compounds that contribute to smog. They are released from various consumer and commercial products, such as paints, when those products are used.

3. Gary King, R. O. Keohane, and S. Verba's volume *Designing Social Inquiry* (1994) provides excellent information on research methodologies.

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