Panel Discussion

Adding Organized Reasoning to the IA Process: Lessons Learned So Far

Glenn Brown, Jona Bjarnadottir, Graham Seagel, Lorraine Seale and Brett Wheler

Abstract

Organized Reasoning workshops were initiated to share tools of reasoning and written communication in the context of Environmental Impact Assessment (IA). The goal is to make IA documents clearer, more logically complete, more understandable, and to reduce risks to a project. The expected results are that documents will be more effective and transparent for external audiences, and faster and cheaper internally. Three organizations whose staff received such training provide feedback on lessons they learned from their experiences, one to two years after their workshops. Although uptake was faster where an IA project was already underway, they all found improvements in clarity from both the tools of reasoning and of writing. They achieved better organization of materials, improved communication among staff and easier understanding by external audiences.

Introduction

The development of an IA document, whether by a proponent or a regulator, involves many decisions, and each decision involves a reasoning process. Our key point is that the reasoning within assessments requires making arguments—that is, identifying and organizing reasons so they lead to a specific conclusion. The process of preparing and creating arguments we call 'Organized Reasoning'. Thus, whether IA authors realize it or not, they are creating and using arguments. There are guidelines and tools available to make such reasoning more complete and to share arguments with audiences more clearly. Such arguments involve, for example, the choice of Valued Components (VCs) and key indicators for each VC, the amount of information required for VCs and their key indicators, and the choice of significance criteria. Important arguments also address decisions about how to deal with traditional use and knowledge, project description, mitigation, cumulative effects, accidents and malfunctions, the strategy for public engagement and consultation and the risk of any one decision impacting the project. Each decision affects the temporal and financial risks to the proponent and regulator. The tools we discuss here can improve reasoning and communications, and reduce such risk.

The presentations and panel discussion in this session explore our experience to provide training in using organized reasoning to improve the IA process with three different organizations.

Organized Reasoning: Goals and Process

Ideas and tools have been assembled from multiple sources to improve thinking and communication among IA practitioners.

The purpose of the Organized Reasoning workshops is to provide IA practitioners and environmental professionals access to tools of thinking and communication that are not part of the usual training of environmental scientists, engineers or social scientists. As the results below show, these skills can make the preparation of Impact Assessments (IA) faster, cheaper, more effective and more transparent.

Inspired by exposure to the reasoning tools of informal logic, one author (Glenn) sought a source of additional tools. It turns out that useful ideas are not found in just one place. Some good tools are found in each of a variety of fields (formal and informal logic, psychology, prose composition, speech communication, rhetoric and decision analysis, among others). However the different fields do not communicate well with each other. Thus, there is no one source to turn to, to provide useful ideas assembled in a convenient way. (For more details about the OR process and literature, see the conference paper by Brown and Seagel (2016).

Glenn summarized ideas from multiple sources and packaged them to be useful to practicing environmental professionals who write reports. The results, called Organized Reasoning (OR) and Structured Presentation (SP), or Organized Reasoning for short, were first prepared for a Master's course called *Analytical Thinking and Communications*. Then, to bring the material to working professionals, some key ideas were packaged into one and two day introductory workshops customized for IA practitioners. The goal is to make documents clearer and more effective for their target audiences, and more logically complete and efficiently prepared by the authors.

The foundation of Organized Reasoning is recognizing that many professional communications, as well as IA documents, are 'arguments'—that is, a set of reasons assembled to lead to a conclusion, for a target audience. This sense of 'argument', as a persuasive form of communication rather than an alternate meaning of 'quarrel', has been recognized since the time of the ancient Greeks.

Argument, in this sense, represents the rational, fair and careful presentation of information to an interested audience of professional peers and near peers, or interested decision makers, stakeholders or members of the public. Composing arguments involves clarity, accuracy and the simple presentation of possibly complex ideas. Our version of a successful argument is one in which the audience, after thoughtful consideration of evidence and reasoning offered, choses to agree with the conclusion offered by the author. If we do not convince some audiences, they can understand our reasoning and clearly identify the origins of disagreement.

In the diagram below 'Organized Reasoning' represents the tools of argument and reasoning and 'Structured Presentation' represents tools of communication and writing.

The workshops show how these two sets of ideas can be interactive and reinforcing, as represented by the double-headed arrow.

```
┌─────────────┐         ┌─────────────┐
│  Organized  │ ◄─────► │ Structured  │
│  Reasoning  │         │ Presentation│
└─────────────┘         └─────────────┘
```
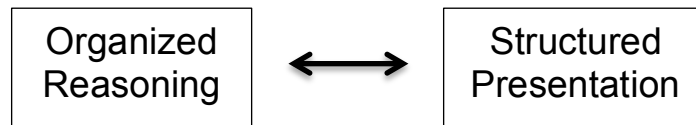
'Organized Reasoning' uses tools of argument to clarify and organize thinking

Guidelines can be assembled to help understand arguments and human reasoning about them, to identify different kinds of arguments, to create different lines of reasoning, for assembling evidence, to support reasoning and to build counterarguments. Those represent tools for thinking.

The main topics of Organized Reasoning include:

- Definitions of argument
- Analysis of arguments in IA documents: Data about arguments in IAs
- Words and their meanings are the foundations of argument
- Distinguishing elements that create hierarchy: Support, evidence, reasons and conclusions
- Three kinds of argument: Fact, evaluation and recommendation arguments
- The role of each kind of argument in IA processes and documents

'Structured Presentation' uses tools of composition, style and communications to make arguments clearer to readers

It is also possible to assemble guidelines for understanding audiences and using different tools of composition and formatting to highlight the main points of one's arguments within written communications.

The main topics of Structured Presentation include:

- Strategies of presentation: Making understandable stories
- Microstructure (presenting argument in paragraphs and short documents)
- Macrostructure (presenting arguments in longer documents)
- A revised approach to research and writing using argument

The workshops involved discussion of the tools and practices described above in the context of IA. The early workshops lasted one day and addressed all topics above. Later a two day workshop was developed, and the list of topics was expanded to include 'Strong Arguments', 'Counter-argument' and 'Avoiding Errors and Fallacies'.

Additional Organized Reasoning Materials are in Preparation

With the introductory workshops working effectively, a flowchart of steps to integrate OR with IA processes was prepared, a book is underway, online teaching tools and advanced workshops are in preparation. See website www.glennbrown.ca for details.

Experience and Perspectives of Three Participating Organizations

The three organizations whose experience is described below participated in, respectively, a one-day workshop in August 2015, a one day workshop in August 2015 and a two day workshop for additional staff in March 2016, and a two day workshop in September 2016.

Mackenzie Valley Environmental Impact Review Board

The 'Review Board' is an independent co-management organization which assesses the biophysical, social, economic, and cultural effects of large developments in the Northwest Territories, Canada. It assembles information from project proponents and gathers further information through multiple written, oral, formal, and informal engagements with affected parties. Based on thorough consideration of all the information, (including evidence about potential impacts and mitigations, and value-based opinions about the significance of impacts) the Board decides whether to approve projects and what conditions to apply to them. Thirteen professional staff, the assessment manager and executive director attended a one-day "organized reasoning" workshop in August 2015. Tools from the workshop were immediately applied to an ongoing environmental assessment of a diamond mine expansion project (The Ekati Jay Project). It was about two thirds through the assessment process, but still had public hearings, board deliberations, and document write-up to go.

The experience and lessons learned, summarized below, are based on six months of applying the ideas of OR internally, and in discussions with Board Members and the public, before the final report and reasons for decision was released in February 2016 (Mackenzie Valley Review Board, 2016).

Summary of results of implementing OR strategies in parts of the EA process that came after the workshop

- Impact analysis: helped with issues tracking lines of evidence, and preparation and testing of draft arguments within our interdisciplinary EA team.

- Pre-hearing and Hearings: summaries of evidence written in the format of draft argument outlines translated into concise pre-hearing briefings for Board and legal counsel; also helped identify missing information to guide cross-examination.

- Board Deliberations: draft argument outlines served as useful evidentiary framework for Review Board's value-based decision-making and as initial framework for drafting sections of the report of EA.

- Drafting Report of EA and Reasons for Decision: argument summaries at beginning of each chapter and more systematic, structured approach to analysis and conclusions that enhance readability; plain language versions of arguments used in executive summary and conclusions.

Final Thoughts and Next Steps

Implementation of the strategies from the organized reasoning workshop helped with:

- Staff collaboration and testing of lines of evidence
- Board and counsel briefings
- Cross-examination at hearings
- Report drafting and structure
- Report clarity and accessibility

For the reasons described above, we intend to use organized reasoning strategies in all EAs going forward. The systematic approach to explaining why the Board makes the decisions it does is beneficial to all parties, the public, and the Board itself. In applying this approach to our EAs, we also keep in mind that: (1) the Board is a court-like tribunal and has a responsibility to explain how all the evidence fits in, not just the evidence that supports the Board's conclusion; and, (2) for the Board, the evidentiary record is paramount, and to a certain extent, we need to honor that by setting out the evidence in an objective manner, then moving into analysis, and then into conclusions.

Government of Northwest Territories

The organization and its role in Impact Assessment

The GNWT is the public government for the Northwest Territories in northern Canada. The NWT covers an area of approximately 1 million km^2, with a population of about 44,000 people spread across 33 communities. About half the population is Aboriginal, including people of Inuvialuit, Dene and Métis origin. Aboriginal governments and organizations play significant roles in many aspects of NWT governance, including land, water, and resource management.

The GNWT plays multiple roles in impact assessment. Key functions include providing technical input to assessment bodies such as the Mackenzie Valley Environmental Impact Review Board, making decisions on recommendations from assessment bodies, collaborating to advance best practices, and managing many elements of the legislative and policy framework for impact assessment. GNWT's input to impact assessments takes into account a wide range of responsibilities, including land management and administration, wildlife, forestry, air quality, water resources, contaminants, economic development, health and social services, community wellness, the justice system, public health, community governments, archaeological and heritage resources, employment and training, the public transportation system, and the negotiation and implementation of land, resource and self-government agreements with Aboriginal peoples.

An emerging impact assessment role for the GNWT is acting as the proponent for infrastructure projects such as public highways.

Who attended?

In August 2015, we held a one day workshop for GNWT employees from multiple departments. In March 2016, we held a two day workshop with (mostly) different

participants. For the second workshop, half the participants were from GNWT departments and the other half were staff from the Land and Water Boards of the Mackenzie Valley.

For most GNWT participants, impact assessment is one of a diverse set of job requirements and may not be a daily activity. Many workshop participants acquired their impact assessment knowledge on the job and had not had formal training in impact assessment.

The Land and Water Boards are involved in the initial and follow-up stages of impact assessment (i.e. the Boards screen applications to determine if an in-depth assessment is needed and implement environmental assessment conditions and outcomes).

What we did after the workshop / Results and Conclusions

Positive feedback from the one day workshop prompted GNWT to hold a second longer (two-day) workshop. Participant feedback surveys indicated that both workshops were useful for impact assessment work as well as a range of other functions. Some participants commented that the organized reasoning techniques supported and reinforced GNWT's efforts to implement plain language in government communications.

Participants have applied organized reasoning techniques to varying degrees in impact assessment and other contexts. The emphasis on stating conclusions at the beginning has been one of the biggest take-aways.

The Review Board's use of organized reasoning in the Ekati Jay Project report, as discussed above, made our review of their EA easier and more efficient. Because our staff had taken the same training as the Board staff, we understood how the Board had structured the report and arguments. In other words, we were speaking the same language.

We also incorporated some organized reasoning techniques in our briefings to the government Ministers who made the decision on the Review Board's report.

Final Thoughts and Next Steps

The training stimulated valuable interdisciplinary discussions and helped build working relationships within our organization. We are interested in providing introductory courses to more staff, and in continuing to apply organized reasoning to our work. For staff who are familiar with organized reasoning, we may be able to use the techniques to help work through some of the consistent challenges we encounter in impact assessment processes.

We want to explore using graphic depictions (flowcharts) showing how organized reasoning can be applied to different stages of the EA process. We think these kinds of flowcharts can be useful tools to communicate impact assessment requirements and processes to non-specialists within a large organization. In particular, we'd like to explore using these kinds of flowcharts to show how our government's decision-making requirements can be integrated with the phases of the EA process.

Landsvirkjun: National Power Company of Iceland

The organization

Landsvirkjun - The National Power Company of Iceland is a state owned company that produces 73% of Iceland's electricity from hydro, geothermal and wind. During design and preparation of new power stations, the projects go through the EIA process. Ten professional staff of Landsvirkjun, two staff from the transmission line company which distributes the power that Landsvirkjun generates, and five consultants attended a two day workshop. The day after our workshop, Iceland's National Planning Agency, which our group submits their IAs to, also received an organized reasoning workshop.

What we did after the workshop

The workshop was held in September 2016. Participating were project managers of development projects and EIA consultants. No new EIAs have been initiated by Landsvirkjun since the workshop but our consultants have been using the OR method to improve an environmental statement/report for us and in projects for other clients as well.

Results

The report is shorter and the reader should get a better view of the content by reading the headlines alone. The findings are stated clearly in the beginning of each section instead of coming in the end after long technical explanations.

Conclusions and Next Steps

The method is a very promising technique to help to organize the EIA work and report writing of the EIA team. Organizing the reasoning in the EIA reports in a systematic way can shorten the text and make it more easily understood by all audiences, not only the professionals. Putting more time and effort into the report writing to highlight the main aspects of the project in question and the main findings can reduce the time required for reviewers and other readers to comprehend the content and form an opinion of the project and its possible impacts.

The next step for us will be to use the OR method from the beginning in the next development project, so we use it from screening to final EIA report.

References Cited

Brown, G. & Seagel, G. (2016). *Adding Organized Reasoning into impact assessment to support key decisions*. Proceedings of 2016 IAIA conference, Aichi-Nagoya, Japan. Downloadable at: http://conferences.iaia.org/2016/Final-Papers

Mackenzie Valley Review Board. 2016. *Report of Environmental Assessment and Reasons for Decision. Dominion Diamond Ekati Corp. Jay Project* EA 1314-01. Yellowknife, NWT: Mackenzie Valley Environmental Impact Review Board. Downloadable at: http://www.reviewboard.ca/upload/project_document/EA1314-01_Report_of_Environmental_Assesment_and_Reasons_for_Decision.PDF

Biographies of Co-chairs and Panel Members

Jona Bjarnadottir (panel member) is a project manager at Landsvirkjun - The National Power Company of Iceland, and has been involved in EIA and stakeholder engagement for many years. She leads development projects for new geothermal power stations and advises on EIAs for hydropower and wind energy. Before joining Landsvirkjun she was an environmental consultant for over 10 years assisting industry and government with EIA, environmental management and stakeholder engagement. Email: jona.bjarnadottir@landsvirkjun.is

Glenn Brown (co-chair and panel member) is an ecologist, consultant and educator with over 25 years experience in environmental management, including work with environmental assessment, natural areas, ecosystem restoration, invasive species and ecosystem services. He has worked with industry, government and NGOs in Canada and other countries in the Americas, Asia and Africa. He teaches courses in *Ecosystem Science and Management* and in *Analytical Thinking and Communications* at Royal Roads University, Canada. Email: glenn.brown@telus.net. Website: www.glennbrown.ca

Graham Seagel (co-chair) has 40 years experience working the environmental assessment field. He has worked in Western and Northern Canada, the western Pacific and Southeast Asia, and South America to varying extents. Much of his IA experience arose from his role as a project manager for environmental assessments on projects ranging from hydroelectric energy, geothermal power, water diversions, roads, railways, ports, pipelines, mines, offshore wind power and transmission lines. He has managed capacity building projects related to IA, coastal zone management and harmful algal bloom science and management. Graham also taught at the post postsecondary education level for environmental practitioners. His interest in OR stems from his focus on risk management during implementation of IAs. Email: gseagel@shaw.ca

Lorraine Seale (panel member) has lived and worked in Yellowknife, Northwest Territories, since 1999. She is currently the Director of Securities and Project Assessment with the Government of the Northwest Territories Department of Lands. Her work experience includes cumulative effects management, Aboriginal and public consultation, impact assessment, developing environmental legislation, and managing mine reclamation security. Email: lorraine_seale@gov.nt.ca. Website: http://www.lands.gov.nt.ca

Brett Wheler (panel member) has worked in the integrated resource management system in the Mackenzie Valley, Canada, since 2010. Prior to working in the Mackenzie Valley, he conducted glaciological research and monitoring, coordinated a water and sanitation program in rural Mexico, and contributed to vulnerability and resilience research with the United Nations University International Network for Water, Environment, and Health. Brett holds a B.Sc. & M.Sc. in environmental science. He now works as an environmental assessment policy advisor. Email: bwheler@reviewboard.ca

Online Access to Materials

Panelists' PowerPoint presentations, materials about Organized Reasoning from the 2016 IAIA conference and a video of Alan Ehrlich of the Mackenzie Valley Review Board describing their experiences, are all available at website www.glennbrown.ca. They are under the Menu title "Information Access" and "IAIA Conference Materials".