CogNexus Institute

The IBIS Field Guide: Exploring Complexity[1]

The purpose of this manual is to explain the basic components and rules of the Issue-Based Information System (IBIS) method, to convey a sense of the power, simplicity, and ease of use of the method and, most importantly, to give the reader confidence that he or she can use the IBIS method to sharpen and organize the exploration of virtually any topic. This is not intended to be a complete course in the use of IBIS nor a tutorial in the use of Compendium[2]. For anyone serious about mastering the use of IBIS we strongly recommend taking CogNexus Institute's Issue Mapping Webinar Series (IMWS).

Background

IBIS, pronounced "eye-bis", was developed by Horst Rittel and colleagues during the early 1970's to provide a simple yet formal structure for the discussion and exploration of "wicked" problems. Problems that are wicked, as opposed to tame, do not yield to the traditional "scientific" approach to problem solving, which is to gather data, analyze the data, formulate a solution and implement the solution. With a wicked problem your understanding of the problem is evolving as you work on a solution. One sure sign of a wicked problem is that there is no clear agreement about what the "real problem" is (See "How to Tell if a Problem is Wicked"). Wicked problems cannot be solved in the traditional sense, because one runs out of resources (time, money, energy, people, etc.) before a perfect solution can be implemented.

This was the environment IBIS was developed to work within. It is an environment of multiple parties with differing views about the problem, differing values and beliefs, little in the way of "hard data," and time pressure for a resolution. The method is powerful because it supports dialogue among the stakeholders in the problem, and it is only through such dialogue that the necessary shared models can emerge. It works because it is simple enough that it does not get in the way of the discourse, yet it provides a structured framework in which the key logical elements of the discourse can be understood and shared.

Its inventors never strictly defined IBIS: it was an evolving standard for them. One of the greatest drawbacks of the IBIS method, historically, was that it was relatively easy for an IBIS discussion to overwhelm any manual system for keeping track of all the issues and their logical relationships. A computer-based tool, QuestMap™, was developed after 10 years of research to support IBIS discussions regardless of the number of people or the duration of the discussion. Today, after additional research and development, the functionality for support of IBIS discussions can be found in the Compendium software. Compendium is a tool that supports collaborative work. As part of the field-testing of QuestMap™ and Compendium, the IBIS method itself was refined; the method as presented here is the result of that experience.

As you work with IBIS and Compendium you will come to appreciate that they make explicit a dimension of communication which normally remains obscured: the moves in a conversation which open the conversation up versus those which close a conversation down. Indeed, one of the most significant benefits of using IBIS with Compendium is the extent to which it can, over time, lead users to more skillful and creative teamwork and

1 This paper replaces "The IBIS Manual", a document that has been on the Internet for a long time.

2 Compendium Institute (http://compendium.open.ac.uk/institute/index.htm)

communication. It does this by demonstrating the power of asking questions that open conversations up and invite thoughtful and creative participation by all. Using IBIS and Compendium also reveals the extent to which important conversations can be "closed down" by statements that on the surface appear fine and normal. The secret is in focusing on the asking of questions, and in how these questions are framed.

IBIS Fundamentals

The key to the power of IBIS is that it is issue-based, but this is also one of the hardest things about it to master. Being issue-based means that whenever there is any misunderstanding or disagreement, the first move is to frame the misunderstanding or disagreement as an issue, or, more precisely, as a question. The creation of the question turns the "argument" into an inquiry -- a dialogue in which the underlying goal is to open up to new possibilities and the mood becomes one of partnership. While this may seem simple and straightforward, in practice finding the best question to ask is an art form.

The Answer Reflex

Why is it that framing conversations in terms of questions is so difficult to master? One reason we have found is that Western society and the educational system seem to have rather thoroughly trained us to always know and say the right answer, and to avoid the vague and weak position of simply asking an open-ended question in a discussion. In other words, the result of years of practice is that most people have a very effective "Answer Reflex," which is the source of the commonly heard discussions of the "Yes, it is!" - "No, it isn't!" variety.

In a discussion, the original question is quickly overwhelmed by a flurry of countermanding ideas -- proposals, answers, or solutions of some kind -- and tightly bound to those ideas are their justifications. Each justification in turn gives rise to new ideas, each of which has its own justification (see Figure 1). A well-functioning Answer Reflex assures that no one asks, "What is the question here?"

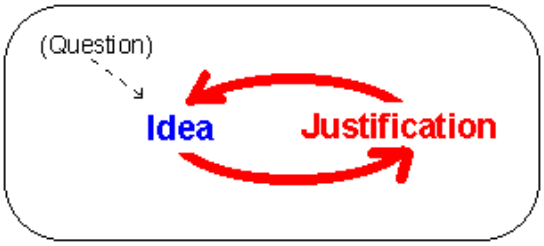

Figure 1: *The Answer Reflex*

This is not to say that people don't frequently ask questions. Indeed, to be a skillful politician or rhetoritician is to make effective use of the interrogative form. However, "rhetorical" questions (e.g. "Do we want another four years of inflation in this country?" or "Are you always this dense?") do not open the dialogue or foster a mood of inquiry – they are simply a kind of position or assertion with a question mark on the end, and are very much a part of the Answer Reflex.

Buckminster Fuller described the Answer Reflex as the "Mistake Mystique": the tendency to avoid both the risk of being wrong and the vulnerability of not knowing by always "knowing the right answer." He pointed out that while this may have been a good strategy for success in our educational system, it has done enormous damage to our ability as a nation to think powerfully and creatively about the complex problems that now face us.

The Power of IBIS

The power of IBIS is that it moves the asking of questions into a central role in the dialogue process (see Figure 2). In IBIS, ideas are always defined in relation to some question. This makes it somewhat more difficult for discussions to devolve to the "Yes, it is!" - "No, it isn't!" cycle, and it creates a discipline of care and rigor about being relevant.

Since comments are more naturally addressed to the explicit content of the question, it becomes more obvious when a discussion has the character of a "Yes, A!" - "No, not B!" cycle, in which two people are vociferously stating non-opposing propositions. (Here, "A" represents a statement like "The product must have quality" and "not B" represents a statement like "The product must not cost a lot.")

While IBIS has the same elements as the Answer Reflex, it puts a different priority on them. All discussions start with a question. Possible answers (called "Ideas") are clearly stated in response. Justifications (called "Arguments") are added to the ideas and can be either supporting or objecting to the idea (see Figure 3). As the arrows pointing back toward "Question" suggest, both Ideas and Arguments can easily give rise to new, deeper Questions.

It has been our experience that "knowing about the IBIS method" is very different from "practicing IBIS naturally". The old habits die hard, particularly in the heat of meetings and conversations in which critical decisions are being made. Having a high quality dialogue sometimes seems less important than having the "right answer" be accepted by the group. But most of us would acknowledge that the habits of dialogue (based on the Answer Reflex) that we bring to these meetings are perhaps at the very source of the pervasive frustration about the amount of time spent in meetings and the lack of real effectiveness in them.

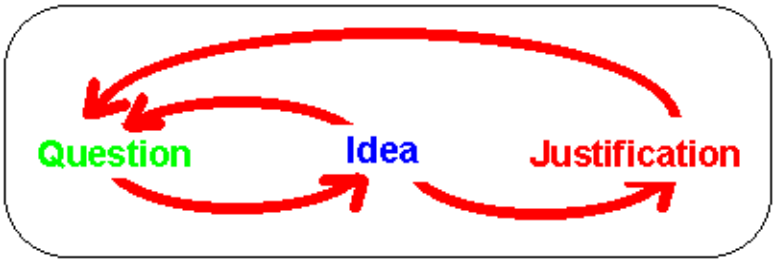

Figure 2: *The Answer Reflex is broken by interposing Questions*

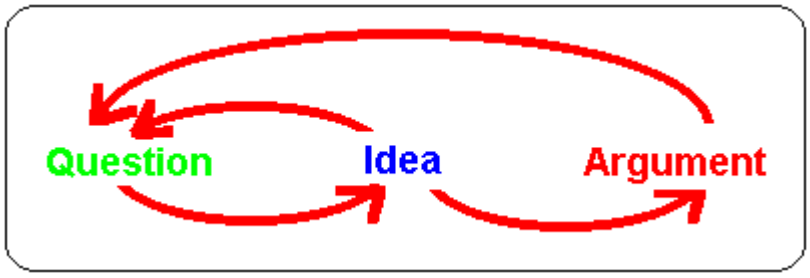

Figure 3: *The IBIS Model.*

Sometimes you have to work slower in order to work faster. It is common in sports and the arts to slow down the performance of an activity in order to observe and improve it. Effective team dialogue is such an activity. The intent of this manual is in part to encourage the reader toward a lifelong pursuit of excellence in communication and teamwork, and in part a first lesson in the "language" of issue-based dialogue, which, like any language, can only be mastered through practice. Fortunately, you have in Compendium an environment for the discipline of dialogue, and a virtual "land" where everyone can speak the IBIS language.

The Heart of IBIS: Questions, Ideas, and Arguments

The heart of IBIS is the matrix of Questions, Ideas, and Arguments that combine together to create a conversation.

- Question -- states a question;
- Idea -- proposes a possible answer or partial answer for the question; and
- Argument -- states an opinion or judgment. An Argument either supports (Pro) or objects to (Con) an Idea

The basic elements of IBIS (Question, Idea, Argument – of which there are two flavors: Pro and Con) are the elementary pieces of an Issue Map. In Compendium these basic elements of IBIS are called nodes, and look like this:

Figure 4: *Basic IBIS Elements*

All conversations in IBIS start with a root Question. This will generally be something like "What should be our strategic plan for the next 5 years?" or "How can we increase customer 'delight' in our products and services?"

The response to a Question is one or more Ideas that provide a brief, neutral proposal for answering the Question.

An Argument is a statement or opinion which either supports (Pro) or objects to (Con) an Idea. Arguments are the place – indeed, the only place – in the IBIS method for opinion, clever rhetoric, and hand waving. Of course, it is preferable to have Arguments that provide factual assertions bearing on the advantages or disadvantages of an Idea.

Connecting IBIS Elements

The IBIS elements (Question, Idea, Pro, Con) are connected in Compendium through links (these are the lines between the nodes in Figure 5, below.) There are certain "legal" ways to connect the elementary elements in IBIS. Fortunately, the rules governing connections are very simple:

1. A Question is the starting point. It may be a root Question, or be connected to (raised by) another Question, and Idea or Argument (Pro or Con).
2. An Idea connects only to a single Question.
3. A Pro or Con connects only to a single Idea.

IBIS Maps

A collection of IBIS elements or nodes, linked together, forms an IBIS map or Issue Map. Here's a very simple Issue Map in Compendium:

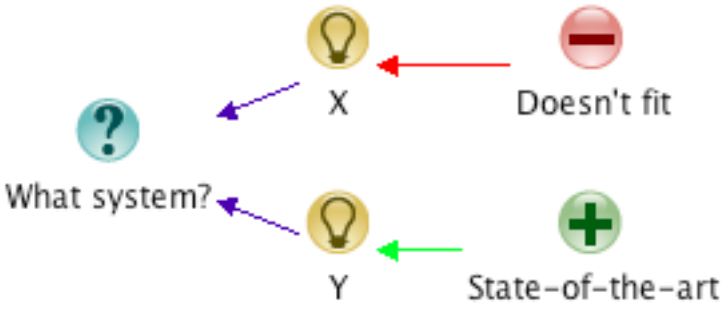

Figure 5: *A simple IBIS map with a pro and a con*

The question in Figure 5 deals with the choice of a new computer system. Two possible solutions have been offered so far, X and Y. X has the objection that it doesn't fit with existing tools, and Y is supported by the claim that it is state-of-the-art technology.

There are other ways that we could capture this same information. For example, a text document version of Figure 5 would look like this:

What system should we buy?

X

- Doesn't fit w/ existing tools

Y

+ State-of-the-art Technology

In this case, text ending in "?" indicates a Question. The characters + and - are used to indicate Pro and Con respectively. Text with no "?" at the end, and no + or - at the beginning is Idea. In a text document, indentation used to show connections: if something is indented under something else, then it is linked or connected to the thing above.

The text document form of IBIS can be useful in some situations, however when the amount of IBIS material grows, which is almost certain with complex or wicked problems, Compendium can be much more useful. The graphical view of Compendium, along with functions such as sub-mapping, allows large amounts of information to be more easily read.

Formatting IBIS Node Labels

When you are getting started you may want to just write whatever comes to mind in a node label in the quickest way possible. However, as with any kind of writing, there are preferred ways of formatting the text in node Labels. Briefly, here are three "best practices" for creating node Labels:

1. The Labels for Questions, Ideas and Pros/Cons should be succinct but complete, i.e. the text label of the node should make sense by itself.
2. Questions (and only Questions) should end in with a question mark (?).
3. Every Question, Idea and ProCon should start with a capital letter. By using sentence case, the map will be easier to read. This will eliminate the need to go through and correct this in the exported outline text.

Subtleties of IBIS Use

The IBIS method is deceptively simple. It would seem that with 5 minutes of study one could jump into a complex problem and start framing Questions, Ideas, and Arguments. After all, it's really just questions and answers, pros and cons, right? What can be so hard about that? The only hard thing, really, is that IBIS is a "conversational model" which differs somewhat from the conversational model in which we are all already lifelong "experts" – the Answer Reflex described above – so one must unlearn this comfortable and familiar model in order to be fluent in IBIS.

In particular, there are two mistakes that most IBIS beginners make:

1. **Putting more than one point into a node.** The value of IBIS diminishes quickly if there is more than one question in a Question node (e.g. "How should complaints be handled, and who should handle them?"), or more than one proposal in an Idea node (e.g. "Get a new advertising firm and downsize the marketing department.") If there are several questions within a Question, which one is any given Idea addressing? If an Idea has multiple proposals, an Argument might object to one and support the other at the same time – what kind of node would you use for that?
2. **Putting a point into the wrong kind of node.** For example, putting a Question in an Idea node, or using a Question node for a general announcement. Again, the problem here is that a few such mistakes can literally grind an IBIS discussion to a halt.

3 **Link direction.** Links are a kind of graphical "punctuation" that tell other users how to interpret the statements contained in the IBIS nodes. Conversations unfold from left to right, just as English writing goes from left to right and scientific diagrams show time increasing to the right. Thus maps start with a Question on the left,

then one or more Ideas on the right of it, followed further to the right by the Arguments. However, the links in IBIS maps always point to the left (see Figure 7).

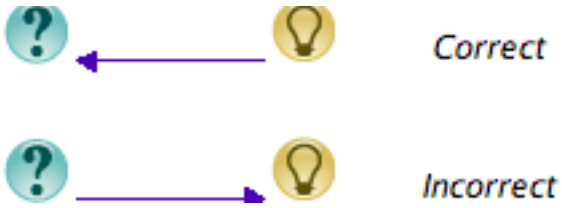

Figure 7: *Link Direction*

Such methodological rule violations sometimes seem insignificant to users in the thick of a discussion ("Everyone can see what I wrote – what the heck difference does it make what kind of node it's in?!?"). But the rules of IBIS are not arbitrary. They provide a framework in which all of the players can keep contributing their ideas, examining their own assumptions, and seeking together to find the real issues.

Once you have become adept at the IBIS method you will find that most conversations can be seen to consist mostly of Questions, Ideas, and Arguments. Usually the Questions are implicit, and the Ideas and Arguments are bundled pretty tightly together, but there is little else being said besides the core IBIS trilogy. This is actually a remarkable statement! We are saying that even the most sophisticated planning, analysis, and design conversations, no matter how complex the subject, are conducted by an exchange of Questions, Ideas, and Arguments (Pros and Cons). For this reason we sometimes refer to these three conversational items as the "Bohr model of the rhetorical atom."

In the first part of this century Niels Bohr proposed that all matter was composed of atoms, and that atoms had a fine structure consisting of three fundamental particles: electrons, protons, and neutrons. All of the elements in the newly emerging atomic table could be accounted for in terms of their subatomic configuration of these three particles. Similarly, we have found that the "elements" of planning, design, and analytical discussions are made up of the three "particles" of the IBIS method. This is why there is no limit to the problems that can be tackled using IBIS .

Creating Good Questions

In "real world" conversations, Questions are often not asked explicitly. A huge benefit of using IBIS is that everyone can address the same Question! However, because the Question is often implicit, it leaves the wording of the Question up to the person creating the IBIS map. This section explores some simple "rules" for stating Questions effectively, even powerfully. The rules are not absolute, but they reflect years of observing the kinds of questions that lead to high quality dialogues and, conversely, the kinds of questions that can derail or stop a conversation.

Rule 1: The Simplicity Rule

The statement of a Question should be simple and concise. It should not contain possible answers. It should avoid the words "and", "or", or "not".

Using IBIS makes a conversation more precise, but to gain this benefit one must be careful not to lump several ideas or concepts into one node, even if they seem very similar. In practice, this means that what at first seems like a single Question sometimes ends up being two or three related Questions. Don't hesitate to create several Questions as a way of understanding a problem. They can always be folded together later on, and in a shared conversation space this is much easier to do than breaking an overloaded Question apart after people have started responding to it.

Example 1:

Instead of:
What should we do about X and who should do it?
[Contains 2 questions.]

Use:
What should we do about X?
Who should do it?

Rule 2: The Open Question Rule

The statement of a Question should be open, so that any number of possible solutions can be offered as Ideas. In particular, avoid "Yes/No" Questions, and Questions that follow the pattern "Should we do X or Y?" One of the benefits of IBIS is to expose unconsidered possibilities, but this benefit is eliminated if the Question is not asked in an open-ended way. Our experience has been that Yes/No and multiple choice questions nearly always close a conversation down.

Example 2a:

Instead of:
Isn't X too expensive?
[Implies the answer]

Use:
Is X too expensive? [OK] or
What is the cost of X? [Best]

Yes/No questions are a special case of multiple choice questions in which there is only one choice and it must either be confirmed or denied. In general Yes/No questions begin with either "should" or some form of "be" or "does". Here are some examples of Yes/No type questions:

- Should we do X? (or ... have X?, ... be X?)
- Does X happen?
- Do we want to do X?
- Can X be done?
- Do we know X?

Now, it would be an overstatement to say that Yes/No questions should never be posed. There are infrequent cases where this is a valid form. The point of this rule is that the occasions when this form is needed are far fewer that the

occasions when it naturally springs to mind. Recall that one function of the Answer Reflex is control. What better way for someone to control a dialogue than to restrict the range of options to those that suits him or her?

Example 2b:

Instead of:
Should we do X to solve problem Y?

Use:
How should we solve problem Y?

For those cases where a Yes/No question is appropriate, avoid the use of "maybe" and "don't know" kinds of Ideas, since these are not real answers to the question and will invite further IBIS problems.

Multiple choice questions are also framed in a closed way, that is, they contain several "answers" but they look like a question (see also Rule 3 -- The Embedded Solution Rule). These are a little easier to spot, because they contain a whole list of solutions. Multiple-choice questions are also easier to reframe into open ended questions. In general, questions that begin with the "wh" words ("what", "where", "when", "who", and "why") create the opportunity for the most open type of response. Questions starting with "how" are also nearly always open.

Example 2c:

Instead of:
Should we do X or Y?

Use:
What should we do?

Indeed, there is often a pattern to IBIS Questions in design or planning conversations. The root Question asks, in some way, "What is the overall problem?" (or "goal" or "desired result", etc.) and the Ideas that respond to the Question offer possible formulations of the problem. For each of these Ideas, it is appropriate to ask, in some way, "How can this problem be solved?" The Ideas that respond to this second Question offer solutions, and of course there will be arguments for and against these solutions. Each of these solutions can be regarded as a new problem, to be explored with "wh" questions such as "What is needed for X?", "What capabilities should X have?", "What should X do?", etc.

Thus there is a natural alternation between questions which ask "What should be done?" and those which ask "How should it be done?" Chains of these Questions can be used to explore and analyze a problem at any depth. (Of course, as the IBIS network becomes large it becomes increasingly necessary to have a tool like Compendium to manage all of these Questions and their interconnections.)

Rule 3: The Embedded Solution Rule

The statement of a Question should not contain elements of any potential solution or answer. This rule formalizes several guidelines mentioned above. If "S" is an element of the Solution of a problem, avoid Questions such as "Should we do S?" or "Is S needed?" which have solution or action S built into them. Instead, abstract out the Problem to be solved (e.g. "P") and ask "How to solve P?" or "How to improve P?" Then, create a responding Idea containing the proposed solution S.

Example 3a:

Instead of:

Is there a need for a Public Relations effort?

-> Yes

-> No

Use:

How can we improve client relations? (or public relations?)

-> Public Relations Effort

-> Client Advocate Team

-> Use surveys

This approach has two benefits. First, Arguments for and against the "solution" can be easily provided when it is an Idea. More importantly, if there are other possibilities (such as a Client Advocate Team, or the use of surveys) they can be other responses to the Question, instead of having to be suggested someplace else in the discussion.

The next example (Example 3b) illustrates that questions which begin with "should" (e.g. "Should we do X?", "Should X be done?", "Should we have an X?", etc.) nearly always contain the solution (the "X") and ask, in essence, "Given X, what should we do?" When you already have an idea or solution in mind (as one often does), it is best to ask a question that allows you to propose your idea as one solution. Thus it is usually preferable to ask a simpler, more open-ended question, such as "What should we do?"

Example 3b:

Instead of:

Should we do an X project? [Contains an answer, the "X project".]

-> Yes

-> No

Use:

What project should we do?

-> X project

The next example (Example 3c) builds on the previous one to make an additional point. Recall that the Answer Reflex consists of an idea and its justification (see Figure 1). Often the justification (e.g. "because it is cheaper") masks a hidden understanding of the problem (e.g. "costs must be minimized"). It is very good IBIS form to raise a question about what the problem is, thus allowing you to make your understanding of the problem explicit. As Example 3c shows, the innocent phrase "to assess client needs" in the first part has been repaired in the second part to make an explicit Question about the problem. In other words, if part of the reason for doing an "X project" is that it helps "assess client needs," then there may be other aspects of client relations that need to be explored.

Example 3c:

Instead of:

Should we do an X project to assess client needs?

[Contains an answer and some description and support for that answer.]

Use:

What client satisfaction problems do we have?

-> Unknown Client Needs

How can we assess client needs?
-> X project

Rule 4: The "Other" Rule

The statement of a Question should not contain the word "other", as in "What other ...?" A Question asking "What other solution is there?" is usually redundant – the "other" means that some solutions have already been offered to some other question. Perhaps the "other" Question was added because a previous one contained its solution, violating Rule 3 (The Embedded Solution Rule), and forcing other users to "re-open" the Question with a restatement of the same basic question.

Example 4:

Instead of:
What systems are available?
-> X
-> Y
What other systems are available?

Use:
What systems are available?
-> X
-> Y

If additional options are needed, you can communicate with those involved in the decision, for example by sending a message saying "I would like for the group to offer some additional alternatives to this issue by 5 PM Thursday. We will be making our decision at the staff meeting on Friday."

A second situation in which we see "other" questions is when the original Question was open, but someone is dissatisfied with the number or quality of the proposed solutions. In this case, that person should send a message to all of the stakeholders of the Question (with the Question and its existing Ideas as "context"), asking for more discussion, and placing a time limit on the conversation (e.g. "Please contribute to this conversation this week. We will be closing the discussion of this question on Thursday at 12 PM, and making a decision at the 1 PM staff meeting.").

Rule 5: The No Benefits Rule

The statement of a Question should not ask for the benefits or disadvantages of a situation or solution. IBIS provides a specific place for pros and cons -- in Arguments. If the Question asks for pros and cons then they will be stated as Ideas, which will confuse and distort the conversation.

Example 5:

Instead of:
What are the benefits of switching to X?
-> Cheaper
-> Faster

Use:
What should we switch to?
-> X

+ Cheaper
+ Faster

Creating Good Ideas

The concept of Ideas may present a challenge to new users because of the great tendency, described above as the Answer Reflex, to bundle the justification for the Idea into the proposed answer. For example, "We should provide a toll free Customer Support Number because it is more inviting for customers to use." Although this is a normal way of speaking, this package of information contains a critical error in IBIS, because the justification (the part of the statement following the word "because") has a natural and important place in the IBIS structure as a separate element. Combining the Argument into the Idea makes it difficult to thoroughly explore the pros and cons of the idea.

The IBIS method considerably raises the quality of dialogue within a group or project team simply by concentrating opinions into Argument nodes. For example, the old trick of "truth by repetition" – saying one's point over and over until everyone else accedes – is disarmed because once an Argument has been posted it becomes silly and obvious to repeat its contents.

Another 'real-world' situation occurs when Ideas are presented in a questioning tone of voice – often to soften the impact of the Idea to the listeners. Do not get confused by this move; "What about doing X?" is really "X" as the answer to the Question "What should we do?"

Resolution

The original work on the IBIS method did not address the process of resolving questions -- making and implementing decisions. Horst Rittel considered issue resolution to be a very organization-specific process, and felt that IBIS should stay focused on helping organizations to fully explore and communicate about the complex problems they faced.

In our own research, we have found that the process of resolution, of "making decisions," is one of the most complex and interesting phenomena in organizational life. There is an ideal of decisions as being made based on gathering and assessing all of the challenging data. Also, "good" decisions are regarded as final. Often, however, decisions are (implicitly or explicitly) tentative: they are subject to being "undecided" or re-decided if new information comes in or conditions change. Of course, it is widely recognized that the rationale for decisions is quite commonly forgotten, thus causing an organization to put significant resources into remembering why something was done, or even reinventing the solution.

Thus it is more useful to consider resolution to be an on-going process, and to consider the conversations and information that lead to the decision – the rationale – to be as important to remember as the decision itself.

How to Tell if a Problem is Wicked

A common concern for users of IBIS and Compendium is knowing when to take the trouble to use them. The short answer is: Use IBIS and Compendium when the problem is wicked! The list below will help you get a better idea if you are working on a wicked problem:

- The problem definition seems vague or keeps changing.
- The proposed solution creates a new, related problem.
- There are lots of meetings on the project but not much progress.
- There are a lot of "cooks" in the kitchen.
- The number of stakeholders keeps increasing.
- Your career is at stake.
- You can't easily see the solution at the outset.
- There are multiple solutions, but no consensus and no convergence.
- The constraints on the solution keep changing.
- There are lots of political or "organizational" issues.
- The decision was already made, but it's not being followed (i.e. it's not a real decision).