

How Do Reviewers Really Evaluate Your Proposal?

What the Cognitive Science of Heuristics Tells Us About Making Decisions

By Jayme A. Sokolow, Ph.D.

We make dozens of judgments each day quickly and with minimal amounts of information. Can I trust this person? Should I buy this product? Should I cancel or attend the afternoon meeting? Since the 1950s, psychologists and social scientists have been studying how people make day-to-day judgments in an uncertain world. Their findings have important implications about how reviewers evaluate proposals.



Baseball and Heuristics

Throughout a major league baseball game, probably no player has to make more rapid decisions than the catcher. Before the delivery of each pitch, he has to flash a hand signal to the pitcher about the best pitch to throw. Should the pitcher throw a hard outside fastball, a slow curve, a screwball, or some other pitch?

According to former major league catcher Tim McCarver, the catcher must make these decisions extremely rapidly, normally within a few seconds. “You have to put down a sign quickly. The first one is going to be the right one,” according to Carver.

Gerd Gigerenzer, the Director of the Center for Adaptive Behavior and Cognition, Max Planck Institute for Human Development in Berlin, agrees with Carver about the need to make intelligent decisions rapidly in baseball and other endeavors. “Isn’t more information always better?” he rhetorically asks. “Why else would bestsellers on how to make good decisions tell us to consider all pieces of information, weigh them carefully, and compute the optimal choice, preferably with the aid of a fancy statistical software package?”

“But how do real people make good decisions under the usual conditions of little time and scarce information? Consider how players catch a ball – in baseball, cricket, or soccer. It may seem that they would have to solve complex differential equations in their heads to predict the trajectory of the ball. In fact, players use a simple heuristic. When a ball comes in high, the player fixates the ball and starts running. The heuristic is to adjust the running speed so that the angle of gaze remains constant – that is, the angle between the eye and the ball. The player can ignore all the information necessary to compute the trajectory, such as the ball’s initial velocity, distance, and angle, and just focus on one piece of information, the angle of gaze.”

Proposal reviewers use a limited set of decision-making strategies and techniques, on average taking a little over six minutes, to make a decision.

Gigerenzer and his Adaptive Behavior and Cognition Group have been examining smart heuristics, the mental frameworks or adaptive cognitive toolboxes ordinary people use to solve problems and make good decisions with limited information and time. Gigerenzer is not alone in his focus. Since the 1950s, psychologists and social scientists have been studying how people in the Western world make day-to-day judgments in an uncertain world. Although these studies have been applied to business, economics, jurisprudence, and other fields, to

H e u r i s t i c s



Baseball is a clear example of people committing to rapid decision making.

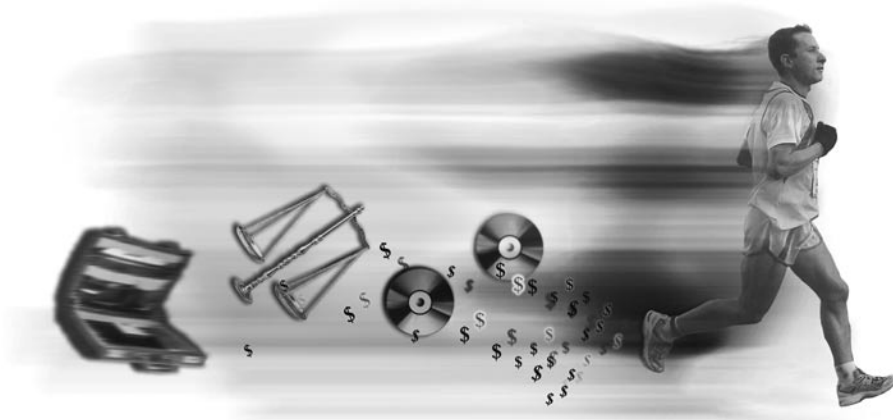
my knowledge only one proposal professional has argued that the cognitive science of heuristics has something to teach us about proposals – Dr. Tom Sant, the founder and Chief Executive Officer of The Sant Corporation, Inc.

Fast and frugal heuristics yield fairly accurate judgments and predictable errors or biases.

In Sant’s *Persuasive Business Proposals: Writing to Win More Customers, Clients, and Contracts* (2nd Edition, 2004), he uses evidence from Gigerenzer’s *Simple Heuristics That Make Us Smart* (1999) to argue that proposal reviewers use a limited set of decision-making strategies and techniques, on average taking a little over six minutes, to make a decision.

After reading an excerpt from Sant’s *Persuasive Business Proposals* in the Fall/Winter 2003 issue of *Proposal Management*, I read Gigerenzer’s *Simple Heuristics That Make Us Smart*. His stimulating book led me to other books and articles on heuristics, and I became convinced that proposal professionals could learn a great deal about improving their proposals from studying the cognitive science of heuristics.

The core idea of the heuristics approach is that most people use fast and frugal heuristics rather than formal and extensive reasoning to make everyday decisions and solve problems. These heuristics usually yield fairly accurate judgments and predictable errors or biases. This argument may appear rather obvious to those of us who do not teach in colleges, universities, and research institutes, but it actually represents a major cognitive advance in our understanding of human reasoning and thus heuristics needs to be integrated into our concept of proposal development.



Most people use fast and frugal heuristics rather than formal and extensive reasoning to make everyday decisions and solve problems.

A Short History of Heuristics

The study of heuristics began with the traditional recognition that cognitive processes can be divided into two major systems – intuition and reflection. As Table 1 below illustrates, intuitive judgments are fast, automatic, and seemingly effortless. This form of cognition is skilled, unproblematic, and so successful that individuals usually are unaware of the myriad rapid, intuitive judgments they make on a daily basis.

Under ordinary circumstances, intuition controls our judgments and preferences unless it is overridden by deliberate mental operations that are slower and governed by formal rules. In comparison to intuitive thinking, reflective judgments tend to be more deliberate, more deductive, and require more effort, and they are positively correlated with intelligence, the necessity to solve complex problems, and exposure to statistics.

To illustrate how dependent we are on our intuitive system of judgment for most problems and tasks, try solving this puzzle, which has been used in research on heuristics. A bat and a ball cost \$1.10 in total. The bat costs \$1 more than the ball. How much does the ball cost?

Most people answer “10 cents” because \$1.10 easily divides itself into \$1 and 10 cents, and 10 cents seems like the right order of magnitude. One researcher found that 47 of 93 students (50 percent) from Princeton University and 164 of 293 students (56 percent) from the University of Michigan answered incorrectly. The researcher concluded that the students who gave the wrong answer had not bothered to check their calculations and were content to give a seemingly plausible answer that quickly and intuitively came to mind.

By the way, are you still scratching your head over this problem? The answer, which took me a few moments to figure out because I had to use my reflective rather than intuitive judgment, is that the ball cost 5 cents.

Until the late 1950s in economics and other social science disciplines, most research was based on the assumption that humans acted with perfect rationality to optimize their choices. This assumption was forcefully challenged and overturned by Herbert A. Simon (1916-2001), a prolific scholar who began his career as an economist and ended it by studying artificial intelligence at Carnegie Mellon University in Pittsburgh. As a result of studying decision-making in business organizations, Simon argued that people frequently departed from formal decision models because of time pressure, incomplete information, the inability to calculate consequences, and other constraints.



Herbert A. Simon

He called this cognitive process bounded rationality, which focused on the search process needed to make choices and the desire for a satisfactory rather than an optimal solution to everyday problems. Simon was awarded the Nobel Prize in Economics in 1978.

Table 1: Two Cognitive Systems.

	Intuitive Judgment	Reflective Judgment
Process	Automatic Fast Effortless Skilled	Controlled Slow Effortful Rule Application
Content	Perceptions Concrete and Specific Current Causal	Conceptual Abstract Past, Present, and Future Statistics

Source: Adapted from Kahneman and Frederick, “Representativeness Revisited,” p. 51, and Kahneman, “Maps of Bounded Rationality, p. 451.

Gradually, psychologists began applying Simon's economic research on bounded rationality to their own discipline. In 1969, two Israeli psychologists, Amos Twersky (1937-1996) and Daniel Kahneman, surveyed 84 participants at the 1969 meetings of the Mathematical Psychology Society and the American Psychological Association about the accuracy of statistical estimates and the replicability of research results by asking them to solve simple mathematical problems. The results were revealing.

People frequently depart from formal decision models because of time pressure, incomplete information, the inability to calculate consequences, and other constraints.

Although participants in the survey easily could have solved the problems on a piece of paper, they placed far too much confidence in the results of small samples, their statistical judgments showed little or no sensitivity to sample size, and the mathematicians and psychologists gave answers that were often inaccurate. For Twersky and Kahneman, the results of the survey confirmed that the 84 respondents often used intuitive rather than reflective judgments to answer the survey's statistical questions. Thus was born the research program that today is called the heuristics and biases approach.

Twersky and Kahneman built on their survey by studying how people make judgments under uncertain conditions. Their now classic 1974 article, "Judgment under Uncertainty: Heuristics and Biases," established the research agenda for the study of heuristics. Afterwards, they began mapping the cognitive domain of heuristic judgments, demonstrating that reflective decision-making depended on how problems were framed or described, which results in predictable cognitive patterns and errors in judgment.

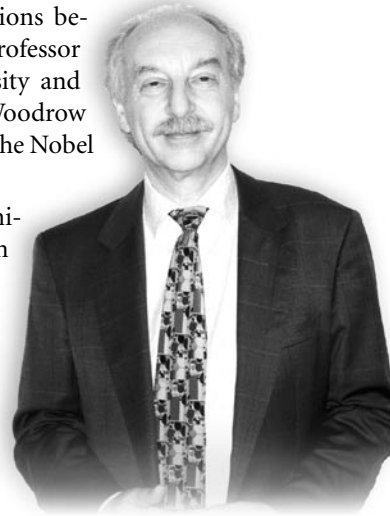
Daniel Kahneman



Eventually, Twersky moved from Israel to the United States and taught in the Department of Psychology at Stanford University. Kahneman taught at The Hebrew University in Jerusalem and a number

of American and Canadian institutions before becoming the Eugene Higgins Professor of Psychology at Princeton University and Professor of Public Affairs at the Woodrow Wilson School. In 2002, he received the Nobel Prize in Economic Sciences.

Today, perhaps the most prominent contemporary researcher on heuristics is Gerd Gigerenzer and his colleagues at the Center for Adaptive Behavior and Cognition. Over the last decade, they have written about fast and frugal decision-making, which Gigerenzer believes is how most people actually make reasonable decisions.



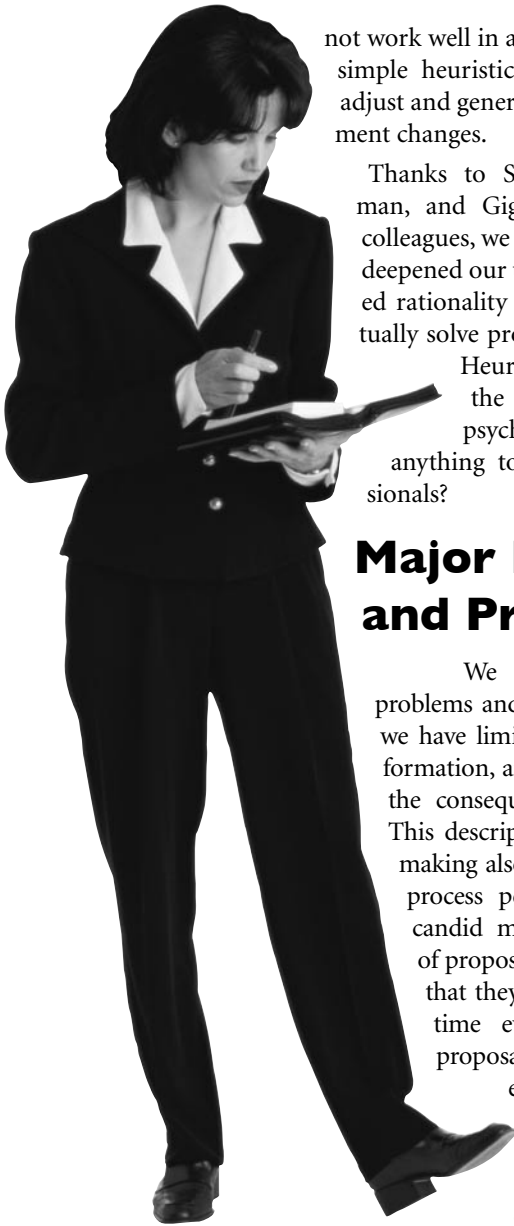
Gerd Gigerenzer

As Gigerenzer says, "My work will, I hope, change the way people think about human rationality. Human rationality cannot be understood, I argue, by the ideals of omniscience and optimization. In an uncertain world, there is no optimal solution known for most interesting and urgent problems." According to Gigerenzer, there are three important and interconnected aspects of rationality:

- **Bounded rationality.** When people make decisions, they must arrive at their conclusions using realistic amounts of time, information, and computational resources. Heuristic building blocks include principles for guiding the search for information and solutions, when to stop the search, and when to make decisions.
- **Ecological rationality.** When people make decisions, they exploit the structure of information in their environment. Simple heuristics tap the environment to be fast, frugal, adaptive, and accurate at the same time.
- **Social rationality.** When people make decisions, they exploit the structure of information in the social environment to arrive at adaptive outcomes, usually by interacting with other people. For example, parents must figure out how to help their children and couples who have had a long relationship must decide whether or not to marry.

Gigerenzer and the Center for Adaptive Behavior and Cognition have stressed the importance of ecological rationality in their articles and books. What works in one environment to make fast, accurate decisions may

Simple heuristics allow most people to adjust and generalize when their environment changes.



not work well in another environment, but simple heuristics allow most people to adjust and generalize when their environment changes.

Thanks to Simon, Twersky, Kahneman, and Gigerenzer and his Berlin colleagues, we now have broadened and deepened our understanding of bounded rationality and how individuals actually solve problems in the real world.

Heuristics have revolutionized the fields of economics and psychology. But do they have anything to teach proposal professionals?

Major Heuristics and Proposals

We use heuristics to solve problems and make decisions because we have limited time, incomplete information, and often cannot calculate the consequences of our decisions. This description of typical decision-making also fits the proposal review process perfectly. In their more candid moments, some reviewers of proposals probably would admit that they do not spend too much time evaluating an individual proposal, that they may not have enough information to evaluate it thoroughly, and that they are unsure of the long-term consequences for their government agency or business of choosing one proposal over another.

Because all heuristics rely on fast and frugal decision-making, without even identifying specific heuristics we can make three important general recommendations about enhancing the structure and content of our proposals to help proposal reviewers gather and process information as effortlessly as possible. First, develop a comprehensive proposal compliance matrix. Second, use the principles of information design to organize your proposal. And third, depict quantitative evidence, processes, and cause and effect with clear and compelling visual explanations.

Provide your reviewers with a clear, logical, and easy-to-follow roadmap.

Develop a Comprehensive Proposal Compliance Matrix

At a minimum, your proposal should be responsive to and compliant with the Request for Proposals (RFP). By developing a detailed tabular proposal compliance matrix that matches the RFP requirements to your proposal sections, you provide reviewers with a clear, logical, and easy-to-understand roadmap to demonstrate your compliance with the RFP and to find information easily. As David H. Herndon has argued, a compliance matrix helps evaluators in six important ways:

- It lists all the relevant RFP sections and then maps where these sections are found in the proposal.
- It demonstrates that the RFP sections are addressed in the order in which they occur in the RFP.
- It helps the reviewers evaluate the content of the proposal.
- It provides reviewers with a handy checklist to verify the inclusion of all required sections.
- It demonstrates that you have addressed all the required sections and thus enables reviewers to more easily make comparative judgments to the detriment of your competitors.
- It helps ensure that you have addressed all the relevant RFP sections.

For more information about how to develop a proposal compliance matrix, see Herndon's "RFP Response Mapping and Compliance Identification" in the Fall 2001 issue of *Proposal Management*.

Reviewers neither know nor care about your proposal development process.

Use the Principles of Information Design to Organize Your Proposal

Information design has two meanings among proposal professionals. It refers to the overall process of developing your proposal and to the ways in which information is presented in your proposal. Reviewers neither know nor care about your proposal development process, but they are very interested in the design of your proposal because it greatly affects their ability to gather and process the information they need to evaluate it.

According to Dr. Roger Munger, proposals should adhere to the following principles of information design to "make it easy for evaluators to quickly find and understand the information that interests them":

- **Create interest** by breaking the expected rectangular design of the proposal page by using a ragged right justification, lists and graphics, tables, headings that stand out, visuals, and informative headers and footers.

- **Meet expectations** by organizing your proposal to reflect the RFP requirements or the evaluation criteria and by using the vocabulary of the RFP to label the sections and headings in your proposal.
- **Reveal structure** by including an Executive Summary, a detailed table of contents, a compliance matrix, frequent headings, and topic sentences at the beginning of your paragraphs.
- **Facilitate navigation** with an Executive Summary, a table of contents, page and section numbers and letters, headers and footers, chapter and section titles, dividers and tabs, cross-reference tables, a glossary, and a compliance matrix.
- **Create manageable chunks of information** by breaking the proposal narrative into small units and by grouping related information together.
- **Prioritize information** by using different type sizes, type weights, indentation, and numbering systems.
- **Differentiate information types** with themes, section summaries, lists, captions sidebars, and visuals.

Depict Quantitative Evidence, Processes, and Cause and Effect with Effective Visual Explanations

According to Edward Tufte, our national expert on the visual display of information, on paper all communications take place in a static and staid two-dimensional environment he derisively calls flatland. But the world is complex, dynamic, and multidimensional. Tufte's solution is to use visuals to present large amounts of information that are compact, accurate, adequate for the purpose, and easy to understand. Visual displays of information should show cause and effect, ensure that proper comparisons are made, and emphasize the themes and goals of the narrative text.

Give people clear, stimulating high-density data so [evaluators] can exercise their full mental powers.

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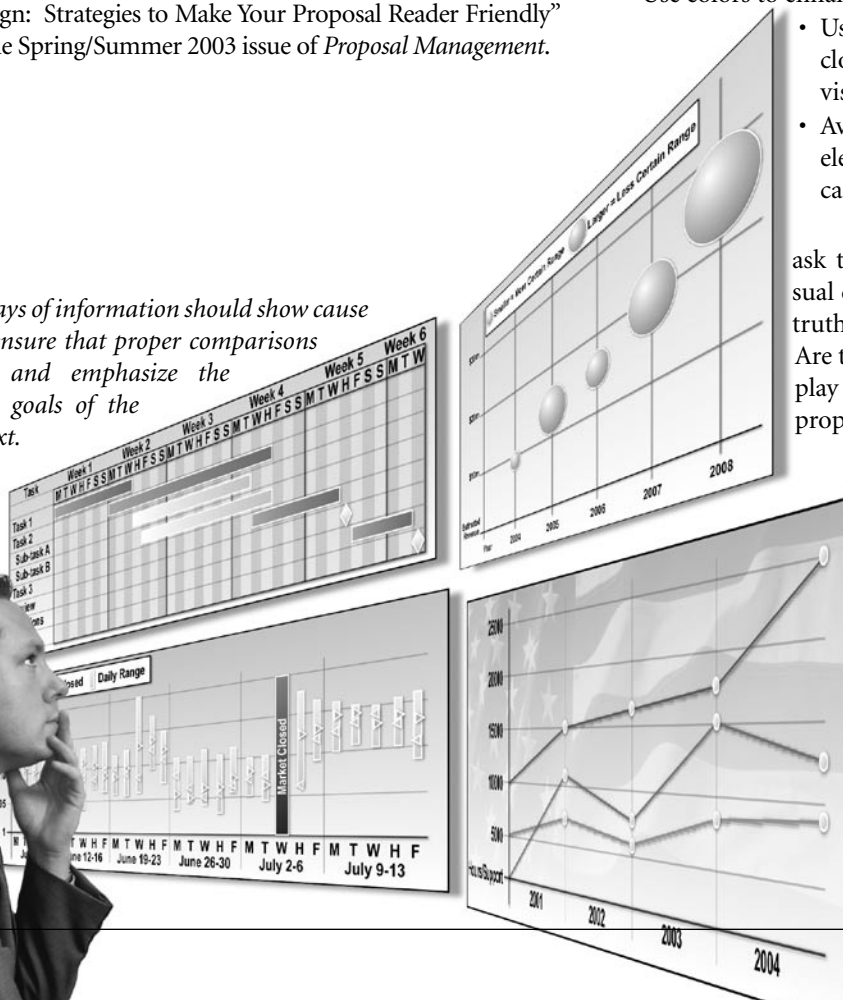
For more information about using the principles of information design in proposals, see Munger's "Information Design: Strategies to Make Your Proposal Reader Friendly" in the Spring/Summer 2003 issue of *Proposal Management*.

According to Tufte, proposals should adhere to the following principles of visual design to engage evaluators and help them better understand the document:

- Show the data. Visuals, according to Tufte, are "intelligence made visible."
- Give people clear, stimulating high-density data so that they can exercise their full mental powers.
- Use colors to enhance data comprehension.
- Use words, numbers, and visuals in close proximity, and integrate the visuals with the text.
- Avoid "chartjunk," decorative visual elements that provide no data and cause confusion.

Above all, Tufte wants us to ask the right questions about our visual displays. Does the display tell the truth? Is the representation accurate? Are the data documented? Do the display methods tell the truth? Are appropriate comparisons, contrasts, and contexts shown? For more information about how to use visuals effectively in proposals, see Tufte's stunningly illustrated **The Visual Display of Quantitative Information** (1983), **Envisioning Information** (1990), and **Visual Explanations: Images and Quantities, Evidence and Narrative** (1997).

Visual displays of information should show cause and effect, ensure that proper comparisons are made, and emphasize the themes and goals of the narrative text.



Heuristics: A Roadmap

Psychologists, economists, and other researchers differ about the kinds of heuristics people most frequently use in their everyday lives. They also have different names for the same heuristics, further confusing non-specialists. They do agree, however, that heuristics are rational methods of decision-making that are fast, frugal, and surprisingly accurate. Studies of bounded rationality demonstrate that most people use rather simple and straightforward procedures to solve most problems and make choices.

Nomenclature aside, the five most common heuristics are the recognition heuristic, one-reasoning heuristics (take the best, take the last, and the minimalist heuristic), and the affective heuristic. They are briefly described in Table 2.

The Recognition Heuristic

The simplest and most common heuristic that people use in their daily lives is the recognition heuristic, which divides the world into unrecognized objects, ideas, people, or other topics—and everything else. It works very quickly and with limited knowledge. In fact, it actually works best with a strong dash of ignorance.

Nothing is simpler and more direct than recognizing and recalling relevant cues, which seems perfectly tailored to the evaluation of proposals.

The building block that it uses for decision-making is extremely straightforward: recognition. Once an individual recognizes something from his or her memory, the search for information immediately stops. Because the

recognition heuristic is extremely simple, fast, and frugal, it is heavily dependent on recalled content and the experienced ease of recall.

The recognition heuristic even works under difficult medical conditions. In one experiment, a hospital decided to classify heart attack patients using only a maximum of three cues to determine whether they should be labeled as low or high risk. First, if the patient had a systolic blood pressure of less than 91, he or she was immediately classified as high risk. If not, the second cue was age. If patients were under 62.5 years of age, they were classified as low risk. If, however, they were older, then a third cue – the presence of sinus tachycardia – was used to classify them as low or high risk.

The Recognition Heuristic works best very quickly, with limited knowledge and a strong dash of ignorance.

This classification system requires a physician to answer a maximum of three yes/no questions to diagnose a heart attack patient. No complex computational measurements, computerized software programs, and complex cause and effect predictors are used. Despite its simplicity, however, it is actually more accurate in classifying heart attack patients according to risk status than more complex and statistical methods.

Other experiments have demonstrated similar results. People using the recognition heuristic can make accurate inferences and decisions that compare favorably with more sophisticated calculations. According to Gigerenzer and his colleagues, although it appears counterintuitive, an intermediate amount of recognition information usually yields the highest proportion of correct answers and good choices. In the case of recognition, too much knowledge can be a dangerous thing.

Table 2: Types of Heuristics.

Type	Approach
The Recognition Heuristic: judgments actually are made based on a lack of knowledge.	If a clue is recognized and it coincides with the evaluation criteria, it wins.
One-reasoning Heuristics: decisions are made with a single piece of information.	
Take the Best	Find clues, assign values, and take the best clue. It works best in environments where individuals know the signs for cues and which are considered more valid than others.
Take the Last	Use clues from the past, assign values, and pick the last clue. It works best in environments where individuals understand the cues but have trouble deciding which cues are more valid than others.
Minimalist	Search for random clues, repeat until one works, and assign values. It works best in environments where individuals do not know which cues are better predictors for making decisions than others.
The Affective Heuristic: the affect helps bestow meaning on judgments.	How do we feel about it? Moods and feelings influence heuristic judgments and mental processing strategies. In fact, they are indispensable in making sound judgments and reflective decisions.

The recognition heuristic in proposal evaluation is based on a deceptively simple approach. If you are given two or more options that you may or may not have encountered before and there is a positive relation between recognition and the evaluation criteria, you have to determine which of the options has the higher value. If one option is recognized and it coincides with the evaluation criteria, then you will select the recognized object. If you cannot recognize any of the options, you will conclude that none of them match the evaluation criteria.

Recognition is a powerful heuristic because a search that relies on recognizing cues makes less demands on memory and computational skills than a search for alternatives. This is especially true under time pressure, when individuals are apt to use simple strategies to solve problems and make decisions. Nothing is simpler and more direct than recognizing and recalling relevant cues, which seems perfectly tailored to the evaluation of proposals.

Because the recognition heuristic is so widely used, you should organize the structure and content of your proposals to help reviewers quickly recognize that you have fully responded to the evaluation criteria, assuming that you have actually addressed them. To accomplish this goal, undertake the following in your proposal:

Recognition may appear to be a very elementary approach to solving problems and making decisions, but it is widely used by everyone, including evaluators.

- Organize your information by: (1) structuring the proposal according to the RFP instructions; (2) discussing your points in decreasing order of importance; (3) summarizing your major points and benefits throughout the proposal; and (4) focusing on the needs and mission of the agency or business. By discussing your points in descending order, later you can more easily decide what to cut or keep as you edit your proposal.
- Develop no more than five major theme statements that are directly linked to the evaluation criteria and use them to organize the content of your proposal.
- Ensure that all your major theme statements have solutions, benefits, and proof.
- Write your Executive Summary for non-technical reviewers.
- Link your benefits and features clearly to the evaluation criteria.
- Write simply and clearly. Use short sentences and paragraphs. Use plenty of white space. Use the active voice. Begin paragraphs, whenever possible, with a thesis statement.
- Use plenty of bulleted lists and numbered lists to make important points.

- Use headings with the exact wording from the RFP.
- Use color visuals to emphasize your benefits, features, and major themes.

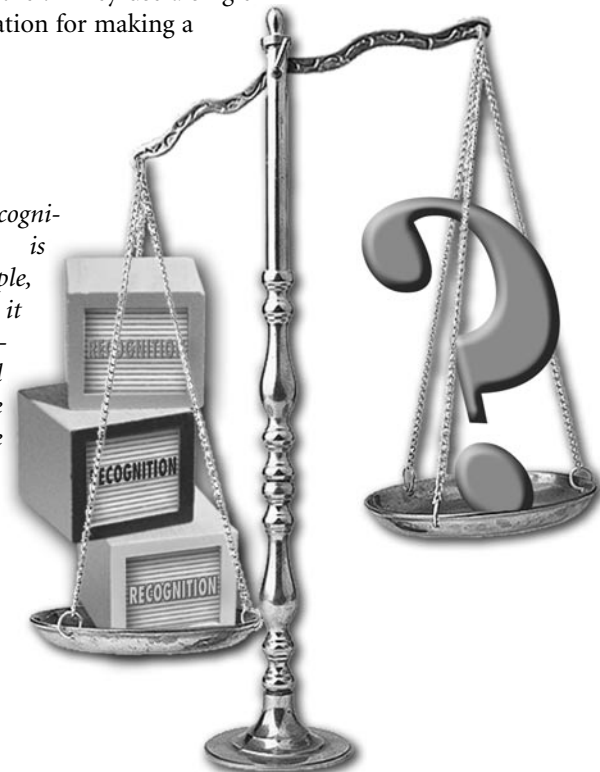
Recognition may appear to be a very elementary approach to solving problems and making decisions, but it is widely used by everyone, including evaluators. In proposals, as in life, cues and clarity foster recognition and recall.

Heuristics based on limited searches must employ clear and simple stopping rules that enable people to choose...they use a single piece of information for making a decision.

One-Reasoning Heuristics: Take the Best, Take the Last, and the Minimalist Heuristic

Many of our everyday decisions go beyond mere recognition. Often, we must determine which objects score higher on a scale of decision criteria by undertaking a fast and frugal limited search. We do not look up all the available information and we make a decision using only a fraction of the information we have studied. Heuristics based on limited searches must employ clear and simple stopping rules that enable people to choose between options based on the first identified cue that favors one option over another. They use a single piece of information for making a decision.

Because the recognition heuristic is extremely simple, fast, and frugal, it is heavily dependent on recalled content and the experienced ease of recall.



As in the recognition heuristic, the goal is to determine which object has the higher value based on the decision criteria. One-reasoning heuristics always use a basic four-step process. First, you select the cue criterion or criteria. Second, you look for the corresponding cue values for each object. Third, you stop and choose the object with the greater value according to the criteria. And last, if you cannot distinguish among the cue values of the objects, you return to the beginning of the process and look for other cue criteria to make a decision.

Find the object with the higher value – “Take the best, ignore the rest.”

For example, let us assume that you are interested in mountain hiking. You have identified proposals from several trekking organizations. Your task is to choose between two outdoor adventure treks in Nepal – one to the Annapurna Base Camp and the other to the Everest Base Camp. Your most important criterion is the potential for active outdoor adventure. Because you recognize both destinations, you look for the cues that you believe are most important – whether the trip involves strenuous climbing and great views of the Himalayas. You determine that the trek to the Everest Base Camp involves climbing from 8,000 to about 16,000 feet above sea level, that the sky is often cloudy throughout the year, and that from the Base Camp it is difficult to see the summit of Mount Everest.

You determine that the trek to the Annapurna Base Camp involves an ascent from 3,000 to about 13,000 feet above sea level, that the sky is usually very clear throughout the year, and that you should have great views of the entire Annapurna Range from the first day of the trek. You conclude that the trek to the Annapurna Base Camp will be your destination.

The three major one-reasoning heuristics are take the best, take the last, and the minimalist heuristic. All three lend themselves to the evaluation of proposals and therefore should be of great interest to us.

Take the Best Heuristic

The take the best heuristic works best in environments where individuals know the signs for cues and which cues are considered better than others, such as clearly delineated proposal evaluation criteria with different numerical values in an RFP.

In step one, you attempt to use the recognition heuristic, which states that if one object is recognized according to the cue criterion or criteria, it is the object with the higher value. If no objects are recognized, you must guess which object has the higher value. In step two, if you recognize some or all of the objects, then you choose the cue with the highest criterion or criteria and you initiate a search and look up the cue values of all the objects. In step three, you determine which object has the higher cue value. If you cannot, then you return to step one and search for another cue. Finally, in step four you predict that the object with the positive cue value has the higher value according to the criterion or criteria.

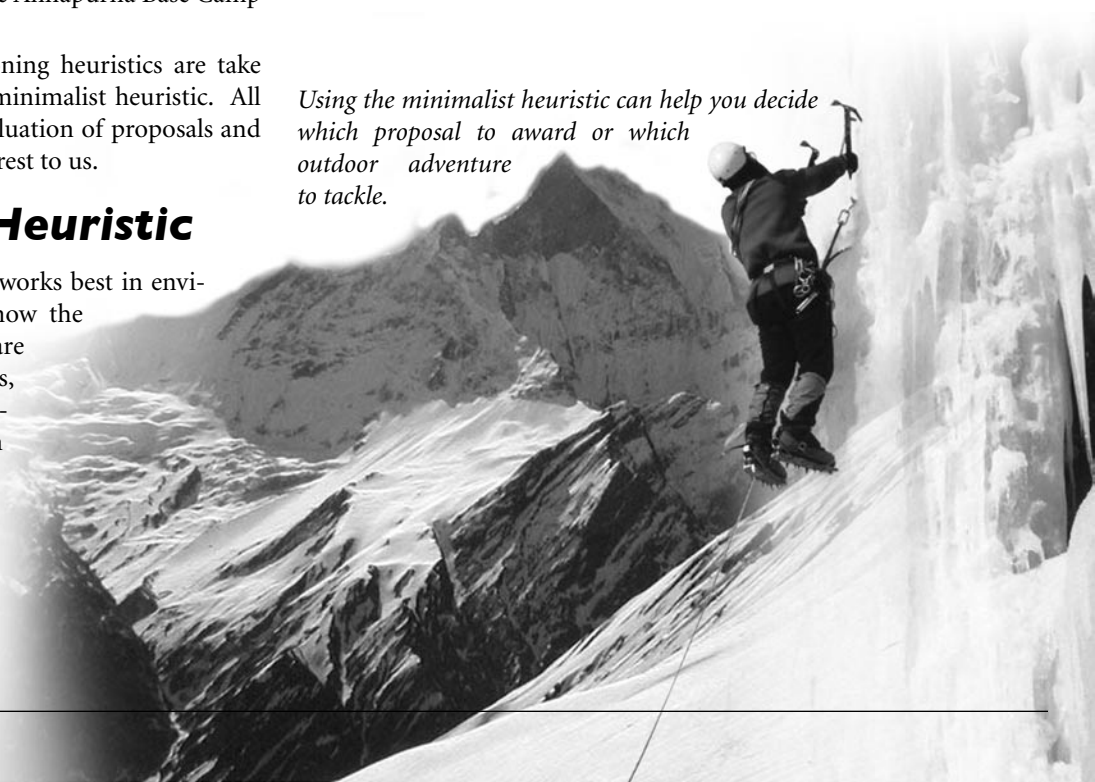
The take the best heuristic orders cues according to their perceived validity. Its goal is to find the object with the higher value, and its motto is “take the best, ignore the rest.” The take the best heuristic was the one used to determine that the Annapurna Base Camp outdoor adventure was preferable to the Everest Base Camp trek.

Take the Last Heuristic

The take the last heuristic works best in environments where individuals understand the cues but have trouble deciding which cues are more valid than others. This might occur if a proposal reviewer had criteria of equal value, for example four evaluation criteria worth 25 points apiece for a total score of 100. The take the last heuristic is based on a proven psychological principle: when people work on a series of problems, such as evaluating proposals, they usually begin with the same cognitive strategy they used to solve the previous problem when faced with a new, but similar-looking problem, such as evaluating another proposal.

This heuristic uses a four-step process to make a decision or judgment. First, you attempt to use the recognition heuristic, which states that if one object is recognized

Using the minimalist heuristic can help you decide which proposal to award or which outdoor adventure to tackle.



according to the cue criterion or criteria, it is the object with the higher value. If no objects are recognized, you must guess which object has the higher value. If you can recall which cues stopped the search on a previous problem, choose the cue that stopped the search on the most recent problem. Look up the cue values of the objects. Otherwise, try a random cue and build up new cue criteria. These comprise steps one and two.

The next two steps follow the take the best heuristic. In step three, you determine which object has the higher cue value. If you cannot, then you return to step one and search for another cue. If no objects are recognized, you will guess which object has the higher value. In step four you predict that the object with the positive cue value has the higher value according to the criterion or criteria.

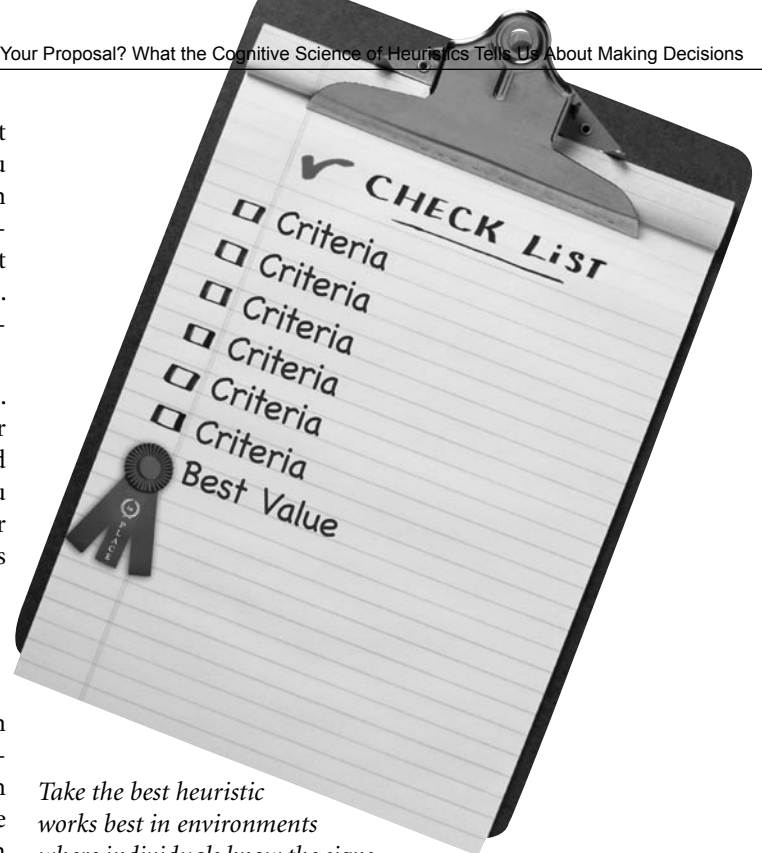
The take the last heuristic's motto is "take the last, ignore the rest." To illustrate how it works, we will apply it to picking another outdoor adventure trek. This year, you must choose between trekking in the Norwegian fiords or trekking through the Swiss Alps, both destinations that you recognize. You perform a memory search and recall that last year the two most important cues were strenuous climbing and great mountain views. You then use these cues to decide this year's outdoor adventure trek. You discover that temperature inversions often obscure the summits of the Alps during the summer, but the Norwegian fiords are clear. Both treks make similar physical demands on trekkers. Based on these cues, you choose Norway.

The minimalist heuristic's motto is "take a random cue until it works."

Minimalist Heuristic

The minimalist heuristic occurs in environments where individuals do not know which cues are better predictors for making decisions than others. This would occur, for example, if an evaluator had: (1) neither read the RFP nor consulted an evaluation form before studying a proposal; or (2) either not read the RFP or not consulted an evaluation form before studying a proposal.

This heuristic uses a four-step process to make a decision or judgment. First, you attempt to use the recognition heuristic, which states that if one object is recognized according to the cue criterion or criteria, it is the object with the higher value. In step two, if no objects are recognized, you must guess which object has the higher value. If you recognize some or all of the objects, then you draw a cue randomly and determine the cue values of the objects. In step three, you determine which object has the higher cue value. If you cannot, then you return to step



Take the best heuristic works best in environments where individuals know the signs for cues and which cues are considered better than others.

one and search for another random cue. If no objects are recognized, you will guess which object has the higher value. Finally, in step four you predict that the object with the positive cue value has the higher value according to the criterion or criteria.

The minimalist heuristic's motto is "take a random cue until it works." To illustrate its cognitive framework, we will apply it to yet a third outdoor adventure trek. This year, you must choose between trekking through the Uplands of Latvia or the Black Forest in Germany, both destinations that you recognize. Your two major criteria continue to be strenuous climbing and great mountain views. You next select any cue at random that you think relates to the criteria, such as the height of the mountains. Because the Black Forest has much higher mountains than the Latvian Uplands, you select the outdoor trekking adventure to Germany.

Hindsight bias is common among people in all walks of life, and experts are certainly not immune to it.

Reviewers are likely to make systematic errors in their evaluations because they appear to be built into the way we all use heuristics. Sometimes:

- The manner in which objects, processes, and events are represented leads individuals to misconceive outcomes.
- The manner in which objects, processes, and events are represented makes individuals insensitive to the fact that small samples are less representative than large samples.
- Objects, processes, and events that easily come to mind might be judged more likely than they actually are.
- Certain information might be considered biased, incorrect, or irrelevant because individuals have had limited exposure to similar events, or because they attract more attention, or because individuals have remembered and recalled them in a particular fashion.
- Individuals hold fast to particular pieces of information and ignore the consequences of additional information.
- Individuals remain wedded to an initial problem-solving method when a change in method would be helpful to them.
- Many individuals are adverse to taking risks.
- Many individuals would rather take a risk than suffer a loss, and thus different problems and solutions trigger different responses depending on whether the problem is framed in terms of gains or losses.

Heuristics and Accuracy

Like the recognition heuristic, these three one-reason heuristics – take the best, take the last, and the minimalist – seem like rather simple psychological mechanisms for making decisions. But simplicity does equate with inaccuracy. In a wide variety of experiments, these three heuristics have been proven to be as accurate or more accurate than complex linear statistical strategies. The good news is that we do not have to choose between simplicity and accuracy. Our thinking can be fast, frugal, and accurate at the same time.

According to Kahneman and Twersky, the use of heuristics also leads to systematic errors and seeming lapses of reason, especially deviations from the laws of probability. This has been confirmed by subsequent research. While fast and frugal heuristics are superbly adapted to our mental and physical world, they are not infallible. When people make decisions based on heuristics, they also tend to make predictable errors. This does not mean that people are irrational, but it does imply that there are limits to the robustness of bounded rationality.

Individuals are apt to rely on their feelings more with increased task demands and decreased cognitive resources.

Because the recognition heuristic and one-decision heuristics are such important elements in decision-making, you should organize the structure and content of your proposals to encourage top-down heuristic thinking rather than a bottom-up systematic processing strategy, which signals to reviewers that there is a problem. To accomplish this goal, you should follow the proposal strategies listed in the section on the recognition heuristic. You should make it very fast and easy for reviewers to find all the essential information they need to conclude that you have been complete and compliant in your proposal.

At the same time, you should be aware that reviewers are likely to make systematic errors in their evaluations because they appear to be built into the way we all use heuristics.

On a lighter note, there is one pervasive bias among heuristic thinkers that deserves our bemused attention: hindsight bias, which is the tendency to believe falsely that you accurately predicted the outcome of an event. Hindsight bias is common among people in all walks of life, and experts are certainly not immune to it. In fact, as long as the records of our judgments and decisions are fortuitously unavailable, the benefits of presenting oneself as being unusually farsighted seem to far outweigh the potential

Rational thought is based on both intuitive and reflective judgment and reasoning depends on a continued ability to experience feelings.



Happy moods encourage individuals to rely on a top-down heuristic processing strategy that relies on preexisting general knowledge while sad moods lead to a more bottom-up, data-driven systematic processing strategy because negative feelings indicate a problematic situation.

liabilities. When the American humor writer S.J. Perelman was asked what he intended to call his autobiography, without a pause he answered, “The Hindsight Saga,” with a punning nod to the English novelist Ford Maddox Ford and our own pretensions to omniscience.

The Affect Heuristic

Until recently, affect – a feeling or emotion as distinguished from cognition – has not been considered an important component of human judgment. We now understand, however, that moods and feelings influence heuristic judgments and processing strategies. In fact, they may be indispensable in making any sound intuitive or reflective decisions.

Antonio Damasio, a neurologist, examined the research on patients with damage to their ventromedial frontal cortices of the brain, which impaired their ability to feel affectively but left their ability to think and remember intact. He found that the damage destroyed patients’ ability to make rational decisions even though their ability to reason analytically was unimpaired. From his research, Damasio concluded that rational thought is based both on intuitive and reflective judgment and that reasoning “depends, to a considerable extent, on a continued ability to experience feelings.”

Psychological research has buttressed Damasio’s arguments. Affective feelings guide our judgment and decision-making processes. Happy moods encourage individuals to rely on a top-down heuristic processing strategy that relies on preexisting general knowledge while sad moods lead to a more bottom-up, data-driven systematic processing strategy because negative feelings indicate a problematic situation.

Proposal reviewers are likely to use their feelings because of increased task demands.

In addition, individuals are apt to rely on their feelings more with increased task demands and decreased cognitive resources. When a judgment is difficult to make because the information or task is considered cumbersome, complex, and time-consuming, individuals may make a decision based on their answer to a simple question: How do I feel about it? These findings have important implications for the evaluation of proposals.

Bounded rationality and affect go hand-in-hand. We cannot separate feelings from judgments. If we could, we would be incapable of making rational judgments at all.

For example, in one study of the impact of the affect heuristic on making judgments, individuals were presented with information about the benefits and risks of

nuclear power and asked to evaluate them. As Table 3 below indicates, in examples A and B positive information coincided with a positive affective evaluation of nuclear power. In examples C and D, negative information coincided with a negative affective evaluation. In examples A and B, either the benefit was high or the risk was low, leading individuals to evaluate nuclear power positively. In examples C and D, either the benefit was low or the risk was high, leading individuals to evaluate nuclear power negatively.

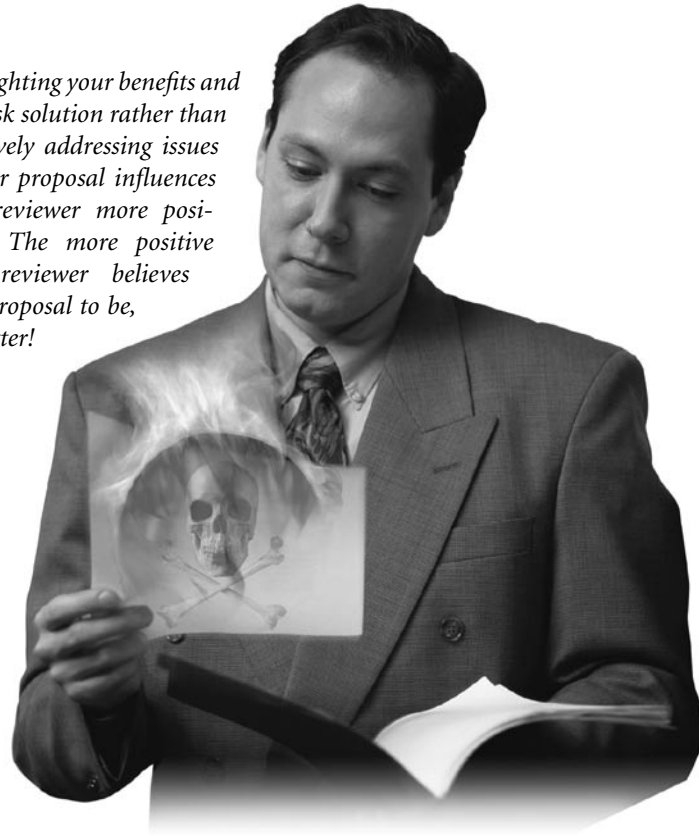
The more negative the affect associated with your proposal, the more likely that it will be judged negatively.

The information about risk changed individuals' feelings about the benefit while the information about the benefit changed individuals' feelings about risk. In this experiment, researchers tried to manipulate the affects by increasing or decreasing the perceived benefit and risk. It worked. When the information changed either the perceived benefit or risk, there was an inverse affective impact on individuals' judgments.

Proposal reviewers are likely to use their feelings because of increased task demands (they usually have full-time positions in addition to their work on evaluation panels) and the perception that the evaluation process is demanding and time-consuming, which undoubtedly is true. Because the impact of affect increases with time constraints, competing deadlines, and competing tasks, proposal reviewers would seem to be prime candidates for asking "How do I feel about it?" to make a decision.

Some proposal professionals might argue that the heavy demands placed on reviewers are actually beneficial to the evaluation of their proposals, for they encourage a detailed bottom-up systematic processing strategy rather than a fast and frugal top-down heuristic processing strategy. But a bottom-up systematic processing strategy may either result from a sad mood on the part of reviewers,

Highlighting your benefits and low-risk solution rather than negatively addressing issues in your proposal influences your reviewer more positively. The more positive your reviewer believes your proposal to be, the better!



or perhaps even worse, induce a sad mood in once happy reviewers, neither of which will benefit the evaluation of your proposal. The more negative the affect associated with your proposal, the more likely that it will be judged negatively.

Organize the structure of your proposals to encourage heuristic thinking.

Because affect is such an important element in decision-making, you should organize the structure and content of your proposals to encourage heuristic thinking rather than a systematic processing strategy, which signals to reviewers that there is a problem.

Table 3: Evaluating Nuclear Energy.

Affect	Benefit	Risk
Example A: Positive	Information states that the benefit is high.	Individuals infer that the risk is low.
Example B: Positive	Individuals infer that the benefit is high.	Information states that the risk is low.
Example C: Negative	Information states that the benefit is low.	Individuals infer that the risk is high.
Example D: Negative	Individuals infer that the benefit is low.	Information states that the risk is high.

Source: Adapted from Slovic, Finucane, Peters, and MacGregor, "Affect Heuristic," p. 411.

Affect helps bestow meaning on judgments. One of our challenges as proposal professionals is to overcome the almost inherently negative affect of evaluating proposals with documents that convey positive affective feelings to reviewers.

Taking Heuristics into Account when Developing Proposals

The major heuristics that evaluators use to make decisions about proposals – recognition, take the best, take the last, minimalist, and the affective heuristic – are adaptive mental strategies that have evolved because of the need to make judgments and decisions with bounded rationality, limited amounts of time, and under the stress of competing tasks. Like the rest of us, the cognitive resources of evaluators are limited, and thus they rely on a mental toolbox of fast and frugal techniques to decide which proposals to recommend. Evaluators use as little of the available information in proposals as is possible to make their judgments, which enables them to work in ways that are satisfactory both to themselves and their superiors.

Regardless of the heuristics they use, evaluators employ a simple stopping rule. They terminate their searches when the first good reason appears for one alternative as opposed to another. Evaluators use no other cues after this point. Good decisions do not always require amassing large amounts of information.

In the recognition heuristic, judgments are actually made based on a lack of knowledge. Heuristics involving one-reason decision making – take the best, take the last, minimalist – use a single piece of information for making a decision. The affective heuristic, in contrast, relies on making a decision based on the answer to a simple question: How do I feel about it?

One of the challenges as proposal professionals is to overcome the almost inherently negative affect of evaluating proposals with documents that convey positive affective feelings to reviewers.

Encourage heuristic thinking rather than a systematic processing strategy in your reviewers by:

- Conveying an upbeat feeling of confidence by emphasizing your company's strengths, accomplishments, and ability to perform work well, on-time, within budget, and to the complete satisfaction of your customers.
- Emphasizing positive ideas, words, and visuals. Be affirmative, not negative, because there is a strong association among imagery, affect, and decision-making.
- Demonstrating that there is a high probability that your solution will be successful. People associate high probabilities with positive affect and low probabilities with negative affect.
- Linking your benefits and features, with the benefits stated first.
- Emphasizing that your solution has high benefits and low risks.
- Emphasizing that other solutions and ghosted competitors have low benefits and high risks.
- Avoiding information that will arouse fear or anxiety in reviewers, unless you can clearly demonstrate how you will mitigate them.

To encourage reviewers to use simple heuristics, take the following steps:

- Develop a comprehensive proposal compliance matrix.
- Use the principles of information design to organize your proposal.
- Depict quantitative evidence, processes, and cause and effect with clear and compelling visual explanations.
- Promote the use of the recognition heuristic by: (1) structuring the proposal according to the RFP instructions; (2) discussing your points in decreasing order of importance; (3) summarizing your major points and benefits throughout the proposal; and (4) focusing on the needs and mission of the agency or business.
- Promote the use of one-reason decision heuristics by making clear linkages between: (1) benefits and features; and (2) solutions and evaluation criteria. Make them very easy to find and understand.
- Provide plenty of cues throughout the proposal, such as theme statements, differentiated headings, different fonts, bulleted lists, and numbers.
- Convey an upbeat and positive feeling of confidence throughout your proposal.
- Emphasize that your solution entails low risks and high benefits, which is the opposite of your competitors.

Although these heuristics may appear simple and even simple-minded, they work well. When compared to computationally complex methods such as multiple regression analysis, they perform quite robustly. In fact, ignorance-based and one-reason decisions are most appropriate for tasks where one of two options must be selected. Consequently, these heuristics are tailor-made for the evaluation of proposals. There are predictable biases and errors built into these heuristics, but they are adaptive for those who actually use them.

Heuristics may not provide optimal solutions, by they do provide satisfactory solutions, and for most of us, that is most important.

When analyzing proposals, evaluators take mental shortcuts by using heuristics. In this way, they conserve their cognitive resources and make judgments with limited time. Heuristics may not provide optimal solutions, but they do provide satisfactory solutions, and for most of us, that is most important.

Because reviewers use heuristics to evaluate proposals, proposal professionals should develop the proposal's structure and content so that reviewers can clearly understand it and extract the information they need quickly and effortlessly. If they cannot achieve these tasks, reviewers are likely to abandon heuristic reasoning and use a bottom-up processing strategy with a negative affect that does not bode well for a proposal.

Our challenge as proposal professionals is to create proposals that encourage reviewers to use simple heuristics. Although this appears straightforward, it may be hard to accomplish because our proposals tend to be very detailed and complex, probably needlessly so, and thus often difficult to understand.

Perhaps the most important conclusion that proposal professionals can draw from the study of heuristics is this: good proposals that are easy to evaluate are more likely to be scored higher than great proposals that are difficult to evaluate. Proposals should be designed so that reviewers can evaluate them fast, frugally, and with as little mental effort as possible. Sometimes, as heuristics demonstrate, less is more.

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With so many ideas, feelings, beliefs, immediate desires, and experiential cues affecting a reviewer's opinion of and ultimately the judgment on your proposal, it's a wonder any information is processed at all!

Jayme A. Sokolow, Ph.D., is founder and president of The Development Source, Inc., a proposal services company located in Silver Spring, MD, that works with businesses, government agencies, and nonprofit organizations. He is also Assistant Managing Editor and Chair of the Editorial Advisory Board of Proposal Management. He can be reached at JSoko12481@aol.com.

