

■ PETER T. ITTIG, Feature Editor, College of Management, University of Massachusetts, Boston

DECISIONS MADE THROUGH NEGOTIATIONS ARE AN IMPORTANT ASPECT OF DECISION SCIENCES. Some business schools offer courses on this subject. In the following guest article, Jeffrey Keisler reviews a significant new book in the field and reports on an interview with the author.

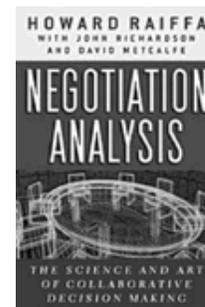
## Collaborative Decision Sciences

by Jeffrey M. Keisler, University of Massachusetts, Boston

Over the past 50+ years, Howard Raiffa has laid foundations for game theory (*Games and Decisions*, Luce & Raiffa, 1957), decision theory (*Introduction to Statistical Decision Theory*, Pratt, Raiffa & Schlaifer, finally published in 1995, 30+ years after it was written), decision analysis (*Decision Analysis*, Raiffa, 1968), multi-attribute decision analysis (*Decisions with Multiple Objectives*, Keeney & Raiffa, 1976), and negotiation analysis (*The Art and Science of Negotiation*, Raiffa, 1982). Behind the scenes, he was establishing centers for research in these areas, consulting on matters of national importance, and advancing research in related fields. During the late 1980s and 1990s, he enriched these areas with new books on decision theory, negotiation and decision making (*Smart Choices*, 1999).

I completed my Ph.D. under Prof. Raiffa in 1992, and eagerly awaited the new book, *Negotiation Analysis*. I was not disappointed—this deep work will be another landmark in the decision sciences. It is a sequel of sorts to Raiffa's 1982 book. That book had far less theory, and covered more simple negotiations with more prose. Now, Raiffa combines in one consistent map almost all of the areas and directions he has explored during his career. The result is a single theoretical approach that starts from the problem of a single decision maker with a simple decision and works toward the general problem of multiple participants in complex relationships making complex decisions. Much of the material in this book is adapted from previous published material. The adaptations are major, however, and with additional new material and explanations of the connections between the different parts of the book, this is an entirely new and coherent experience.

Prof. Raiffa graciously agreed to an interview in conjunction with this book review, and his comments explain the motivation, some of the theoretical context, and the intended impact of the book. The remainder of the review is meant to provide more specific information about the material covered, and to explain its relevance to readers of *Decision Line*.



***Negotiation Analysis: The Art and Science of Collaborative Decision Making***  
by Howard Raiffa,  
with John  
Richardson and  
David Metcalfe

Belknap Press, 2003,  
576 pages, \$49.95.  
[www.hup.harvard.edu/  
contents/  
RAINEG\\_toc.html](http://www.hup.harvard.edu/contents/RAINEG_toc.html)

THE FIRST FIVE CHAPTERS OF THE BOOK PROVIDE necessary background material on decision analysis, behavioral decision theory, game theory, and negotiations, and for some readers, this will be mostly (but not entirely) review. The next 22 chapters develop through four sections increasingly complex problems in interactive decision making: win-lose negotiations, win-win negotiations, intervention in negotiations, and decision making with many parties; the latter draws creatively on related areas including auctions, voting, and principal-agent theory. The ideas are developed with intertwined cases (including a lot of first-hand observation and comment on Panama Canal, Camp David, as well as business deal-



### Jeffrey M. Keisler

is an assistant professor of management sciences and information systems at the University of Massachusetts Boston. He received his Ph.D. in decision sciences from Harvard University and his MBA from the University of

Chicago. Prior to entering academia, he spent a decade as a decision analyst for Strategic Decisions Group, Argonne National Laboratory, General Motors, and as an independent consultant. His current research interests include R&D portfolio management, language in interactive decision making, decision analysis software tools, and applications of value of information techniques.

[jeff.keisler@umb.edu](mailto:jeff.keisler@umb.edu)

ings), experimental results, discussion, and mathematics. The book appears at first glance to have a lot of mathematics throughout. It does and the book is not a quick read, but the mathematics are at a basic level and should really be accessible to any reader of *Decision Line*.

There are no new proofs, but many important new, elegant, and worthwhile concepts, each of which could give birth to many potential research problems (as did Raiffa's earlier books). These ideas are laid out and illustrated with rich examples, but not developed as theory, leaving a wide-open frontier for researchers.

## Key ideas

**Raiffa's overall taxonomy of decision making approaches:** Individual decision making can be analyzed descriptively, prescriptively, or normatively. Plural decision making (where decisions of one party affect other parties) may involve parties acting separately (the realm of game theory) or jointly. If jointly, the situation may be asymmetric prescriptive-descriptive (figuring out what your side should do, but predicting what your partner will do—one version of negotiation analysis), symmetrically descriptive (predicting outcomes of negotiations), or symmetrically normative (cooperative game theory).

One area where this leads to interesting analysis is individual decisions about how to interact with other decision makers—when to negotiate, accept an offer, seek mediation, etc. The integration of game theory into more practical negotiation situations is welcome. Advice on how to work in real situations—largely on balancing claiming and creating value. A motif in the book is that the more the other side lies, the more it pays to be honest.

**Different types of negotiators:** There are cooperators, claimers, adversaries—and ways to negotiate against each (from a practical and an analytical perspective).

**Different types of negotiations:** FOTE (full open truthful exchange)/POTE (partial open truthful exchange) are two approaches that negotiators may agree to abide by. Also considered are standalone vs. interconnected negotiations, repetitive and parallel negotiations, etc. Good pre-negotiation preparation is to know what

type of situation it is. Again we get practical and analytical guidance on how to prepare and manage the different types of negotiations.

**Different types of sets of negotiators:** There are many parties, pluralistic parties, advisors and experts, principals and agents, and coalitions.

**Different types of interventions:** There are several types of arbitration, as well as mediation, and neutral joint analysis (NJA), explicit consideration of intervenor as a party in the negotiations (from a descriptive, prescriptive or normative view), and development of role and analytics for NJA.

**Analytic techniques:** Beyond the synthesis of previous theory, Raiffa introduces several new tools. Negotiation templates serve as a tool for preparation. These templates can incorporate multi-attribute utility theory or similar scoring approaches, and structure choices to be made in the negotiation as well as using something like decision tables. They can be used with multiple parties.

A big revelation is the use of spreadsheet optimization to identify desirable deals as solutions. This approach permeates much of the book, and its concreteness makes it likely to have significant impact on practice.

POP analysis (percent of potential) considers fairness of outcomes from different viewpoints. A related analytical and theoretical discussion of fairness includes a thought-provoking section on how a rich man and a poor man should split a sum of money.

## An Interview with the Author, Howard Raiffa (Frank Plumpton Ramsey Professor Emeritus of Managerial Economics at the Harvard Business School and the Kennedy School of Government)

**Q: Why did you write this book? What has changed since your other books?**

**A:** I spend a lot of time interacting with the negotiation community, and coming from a different background than most of the others, I think differently about a whole host of topics than they. For example, there may be a general seminar discussion about

some interesting topic arising in a multiple-party negotiation. My background in mathematics leads me to think in the following ways: "Hmmm, that's interesting. Would that same phenomenon show up also in a two-player negotiation? What would be the counterpart in a formal two-player game? Is the essence of the problem one of individual decision making—either descriptive, normative, or prescriptive?" For some problems it may be hard to tell which world we are in: is it decision analysis, behavioral decision theory, game theory, or negotiation? It is important to integrate these four strands or fields. The walls between them should be porous. We should have a way

---

**I'm hoping that decision sciences, broadly interpreted to include the design of organizations, should be in the catalog of most universities in 20 years.**

---

of thinking that transcends all these seemingly separate strands of thought. It is this realization that has motivated me to write this book.

**Q: How did the book take shape?**

**A:** It was time for a second edition of *The Art and Science of Negotiation*, but if I was going to do it, I wanted to integrate the companion subjects of decision analysis, behavioral decision theory, and game theory. The enterprise grew rapidly and threatened to become too voluminous, over 700 pages, so, very reluctantly, I began to eliminate some special topics. I was unhappy. Then I came on the idea of putting the extra (eliminated) material, mostly already written but not fully polished, on a Web site and, with that mind set, these adjustments became easier to swallow. Granted, this book is focused primarily on negotiations, but included are the basics of individual decision making—under certainty and uncertainty and game theory.

The original title for the book had been "Collaborative Decision Making." But the editor preferred "Negotiation Analysis," so we changed the title. I'm a little sorry we did. I have a pet project (which this book supports) which is to have decision sciences join economics, psychology, as a bona fide department in universities. Not just a Ph.D.

program, but to bolster it at the undergraduate level, with electives and a research center. It would be “loverly” if Harvard University could introduce such an integrated program for other universities to follow. Places like Carnegie Mellon and Duke have a jump start on us. I’m hoping that decision sciences, broadly interpreted to include the design of organizations, should be in the catalog of most universities in 20 years. Currently, where there are programs on decision making, the *prescriptive* view is often missing—there are specialists only interested in the descriptive psychology of decisions without a prescriptive bone in their bodies. This exclusive diet is wrong. There is a need for synthesis.

**Q:** *Besides the integration of descriptive and prescriptive decision and game theory, what else is new, distinctive, and memorable—what are you especially proud of?*

**A:** Three innovations:

- The emphasis on negotiations in which each party tells the whole truth to the others. It was surprising to me how often this polar extreme prevails in the real world—especially in cases of deal-making rather than dispute-resolving. I then systematically back down from this extreme: the protagonists tell each other the truth, but not the whole truth—they truthfully disclose their preference evaluations but do not disclose their reservation values; and so on down the ladder to the cases where the parties delight in dissembling like good poker players.
- The importance of jointly designing a template for negotiations where the parties decide just what has to be decided and options for joint choice.
- The book examines in great detail the roles of intervenors—the facilitator, mediator, and arbitrator—and introduces a new character into the mix, dubbed by me as a neutral joint analyst, an NJA if you will. The NJA can be an individual or a team somewhat like the intervening team from the U.S. led by President Carter at Camp David in the Egyptian/Israeli dispute. The NJA works with all the parties and leads the negotiators to an efficient and equitable outcome. Confidentiality and fairness—both actual and perceived—is imperative for the NJA. In some cases of long-festered, intractable disputes, the NJA must shuttle back and forth among

the disputants interrogating each in turn. This type of NJA is acting as a decision analyst whose objectives are to help all his clients. This of course, involves making horrendous tradeoffs across people but the aim of the NJA is to be non-evaluative, which is not the case of standard arbitration.

The NJA can be an invitee of the disputing parties or an inviter or initiator getting reluctant parties to start a negotiation. Providing NJA services might entail a team of intervenors and could be a function of a research center that provides a permanent table for analyzing and resolving the world’s most intractable problems.

**Q:** *How do you see this book in relation to potential future research in the Decision Sciences?*

**A:** I don’t think of this as a stimulus to researchers. There are researchable topics, however, and I would push analytical doctoral students in that direction. These topics include techniques for developing, evaluating, and analyzing negotiation templates in various cases. Where utility attributes aren’t independent, things are more complex. Evaluation then is related to combinatorial bidding. I am pleased that a lot of the abstract problems that arise are mathematical programming problems and these come up naturally. If a neutral joint analyst receives template evaluations, then the neutral joint analyst has to analyze the problem and the nature of the problem is mathematical programming.

**Q:** *What would readers of this book learn that would help them improve as negotiators?*

**A:** One, the importance of preparation.

Two, that there is a lot to gain from a collaborative atmosphere with honesty prevailing.

Three, the deleterious effects of premature claiming of value. When someone makes a demand, I recommend the reply, “That’s interesting. Let’s put it down as a possible solution, but let’s not take the time now to examine that suggestion as part of an equitable compromise . . . . After all, we have suggestions of our own for consideration when the time is appropriate. If you claim, then I will be forced to claim, and we shall spiral downwards.”

Four, that the potential for joint gains is higher when value structures differ! Difference help generate joint gains.

**Q:** *What is to be learned from the quantitative approach in this book, as opposed to Fisher and Ury’s (Getting to Yes) type books?*

**A:** Fisher and Ury have done a great service with their book. Their book is not competitive with this one, and I would be happy if this was read along with Fisher and Ury and similar books on negotiation, as well as Bazerman’s on behavioral decision theory.

Suppose in a heated dispute, you are the intervenor. There are two aspects you have to deal with. On the one hand, the people problems and the emotional issues, and on the other hand, the analytical problems of the decision maker. You have to deal with the people problems first before getting to analytical details. My book will help prepare negotiators and intervenors deal with the analytical side of the ledger but be sensitive to the softer aspects as well.

**Q:** *Do you have any thoughts about how to incorporate this book in a class?*

**A:** I am working on an undergraduate course, of one or two semesters, for students who are comfortable with elementary math. The course is called *Decisions, Games and Negotiations* (DGN). I am currently teaching a version of this course with a mathematics professor, Daniel Goroff, as part of the quantitative reasoning requirement at Harvard. I have created about 35 PowerPoint presentations for this course, which will eventually be available in some form—maybe a Web site, maybe on a CD-ROM. The slides need a voice accompaniment, much like the audio-graphics materials I created in the 1980’s.

**Q:** *Is there any advice one can give to the analytically inclined negotiator dealing with a non-analytic type?*

**A:** Yes, preparation, understanding desirability of outcomes, and conscious tradeoffs. But be careful not to intimidate the other party with analytics—they will be self-conscious because you are doing something they aren’t. I may have a template but may not disclose it, which violates the ideal of full, open, truthful exchange. In this respect, I may dissemble. If I have an idea I may wait until you say something close to it,

---

and then endorse it. This is an art, as well as a science.

**Q:** *So, what do you think of calling this your unified field theory, and what kind of practitioner do you envision?*

**A:** I like the notion of a unified theory but it may be too grandiose. I would like some practitioners trained in each of the four fields and comfortable going from one to another. Discourse in the field of negotiation should be broad. For example, the literature is so concerned about people problems that there is not much about joining analysis with psychology. Negotiation training is a growth industry, but not among mathematically inclined economists; more in social psychology, psychology, government departments, etc. The book is designed to attract more analytical people from economics, OR, engineering, etc.—there's a place for them in the Decision Sciences world.

**Q:** *What will it take for them to be well received by the negotiation community?*

**A:** Time . . . and success. The logic is clear enough. It's a battle that has to be won. A large group of undergraduates trained in it will put pressure on the field.

\* \* \*

**Who should read this book?**

Decision Sciences researchers should find this of great interest (much more than

Raiffa indicated)—it is full of potential research problems in decision sciences and a framework for analyzing them. Raiffa is proposing to make decision making more of a science, and lays out the framework for doing so. Researchers in decision analysis, negotiation analysis, or game theory will gain a deeper understanding of the theory they already know. Even researchers in other areas of the decision sciences may discover new applications for their own work, for example, in math programming—the rather simple problems Raiffa lays out constitute an area in which researchers can quickly reach the state of the art.

Others who will benefit include businesspeople and MBA students who either specialize in negotiation, or have a high comfort level with mathematics. This book will make them better negotiators, and will contain ideas that are not found anywhere else, that is, in other books on negotiation. It will be challenging, though, to apply all of the concepts. It would take multiple readings over the course of a career.

Also, this book could be the basis for a great introductory graduate course in decision sciences / operations research, one that gives much more understanding of the richness with which the tools may be applied. It could be used for a core course in economics (replacing introductory game theory). It could be used in an MBA elective

course for mathematically inclined students. It could be used in an advanced undergraduate course in decision sciences, possibly as a capstone. The supplementary material (spreadsheets, essays, Powerpoint slides) that will be on the Web site for this book should help a lot. Most instructors would want to include in-class exercises, of which there are many already in circulation (including in Raiffa's 1982 book).

In sum, synthesizing interactive decision sciences as a unified field was an ambitious idea and this book pretty much pulled it off. The book is important and useful, and decision scientists ought to read it. ■

**Peter T. Ittig, Feature Editor**

*College of Management*

*University of Massachusetts*

*Boston, MA 02125-3393*

*voice-mail: 617-287-7886*

*peter.ittig@umb.edu*

*[http://www.faculty.umb.edu/peter\\_ittig/](http://www.faculty.umb.edu/peter_ittig/)*

---

## Alpha Iota Delta Update

by David Barrett, Georgia State University

**W**ith spring here and all of the renewal we see around us, let me take a few minutes to talk about a new project that we've been working on. With the able help of our webmaster, Sameer Verma, our Web site ([www.alphaiotadelta.org](http://www.alphaiotadelta.org)) has been up and running for well over a year now. By the time you read this, we will have the framework for a new membership directory in place.

The membership directory will serve many purposes for the Alpha Iota Delta

community. First, it will provide members with the ability to network with colleagues scattered all over the world. Second, it will allow us to maintain current contact information for our members. And lastly, it will provide the foundation for other initiatives that we are planning, including an electronic newsletter.

In order for this new membership directory to reach its ultimate goals, it will require all of us to take a few minutes to fill out the information form on the Web site. Encourage all of the AID members you

know to participate. We will publish privacy information on the site, and will respect your wishes as to what information is publicly displayed.

We are excited about the opportunities that this will provide for us moving forward and hope that you will be as well. Contact information is available on the Web site and we welcome any feedback and suggestions that you may have. We look forward to hearing from you. ■

<http://www.alphaiotadelta.org>