

***Negotiation Analysis: The Science and Art of Collaborative Decision Making*, by Howard Raiffa (with contributions by David Metcalfe and John Richardson), Harvard University Press, 2002.**

Summary

Part I: Decision-Making Perspectives

Part I comprising chapters one to five is an extended introduction to the book which develops analysis for (not of) negotiation drawing extensively on:

- Decision Analysis -- individual prescriptive decision making
- Behavioral Decision Theory
- Game Theory -- interactive decision making.

Chapter one contrasts three perspectives of individual decision making:

- Normative analysis -- how ideally decisions *should* be made (by super rational individuals);
- Descriptive analysis -- how real people actually *do* behave (very often at variance with the normative abstraction);
- Prescriptive Analysis -- how real people *could* behave more advantageously with some systematic reflection.

In group decision making this threefold breakdown becomes more complicated. Much of the book gives partisan (prescriptive) advice to one decision maker in a group assuming the other individuals are not privy to that advice and they behave in a more descriptive fashion. In contrast to this orientation, the theory of games takes a jointly normative approach.

Chapter 2 is a tutorial that develops enough of decision analysis to be of use in the rest of the book, but it leaves for later just-in-time development of additional topics.

Chapter 3 examines real behavior and indicates that many individuals some of the time do not act in conformity with rational behavior -- especially when uncertainties loom large. We call such examples of "deviant" behavior *anomalies*, *biases*, *errors*, or *traps* and we try to rationalize why and how they might occur.

Chapter 4 develops many of the concepts of the non-cooperative theory of games in a tutorial, self-discovery, pedagogical style; but as in chapter 2 it leaves special topics in the theory for just-in-time later development where needed.

Chapter 5 provides an outline of the rest of the book. It introduces the concept of idealized, joint behavior in which all protagonists in a negotiation agree to negotiate in a truly collaborative manner agreeing to tell the truth and all of the truth. We call this joint

FOTE analysis -- Full, Open, Truthful Exchange. We claim that often in actual *deal* making in contrast to *dispute* settling that this ideal is often approximated and the FOTE examination sets up an ideal against which other approaches can be compared. In the sequel, we back away from FOTE analyses to consider POTE-like behavior in which some protagonists tell the truth but not the whole truth -- Partial, Open Truthful Exchange -- leaving their bottom lines hidden from view of others.

There is a tension in negotiations between *creating* actions designed to build a bigger pie and *claiming* actions designed to get a large share of the pie so created. The main concern of this book is involved in the creating function but the claiming function cannot be ignored. Part II of the book (chapters 6 -10) is mostly about claiming behavior for two-party negotiations; Part III (chapters 11- 17) mostly about *creating* joint gains; Part IV (chapters 18-20) about external interventions -- how facilitators, mediators, and arbitrators could help; and Part V (chapters 21-27) complicates all by introducing more parties into the fray.

PART II: Two-Party Distributive Negotiations (Chapters 6-10)

Chapter six presents a case study (Elmtree House) of the prototypical negotiation problem of this part of the book. A seller (in this case an institution that owns a halfway house) wishes to sell an asset (its residence, the house) to a buyer (a developer). The seller wants more; the buyer less; and they haggle. It's all a matter of claiming a larger part of a fixed size pie. There are two parties that negotiate over one issue: money – but it could be time or any other single commodity.

In the next chapter the problem is abstracted and the discussion addresses such questions as: How to prepare? Who should declare first? Why? How extreme a first offer? What's a reasonable counter-offer? What is the pattern of concessions? And so forth. The chapter discusses a related double-auction game in which the seller and buyer simultaneously offer sealed bids and a transaction takes place if and only if the bids are compatible. This game is analyzed normatively, descriptively and prescriptively and we conclude that good old-fashioned haggling might be better.

Chapter eight complicates the picture by introducing uncertainty, like the uncertainty of a trial outcome. We analyze the case of negotiating an out-of-court settlement in a liability case. The dominating uncertainties are who would win the court battle and the size of the jury award if the plaintiff prevails. We examine the problem as an individual decision problem under uncertainty and illustrate and extend the methodology introduced in Chapter two.

Chapter nine introduces the complication of time. It starts off by a seller dynamically searching for buyers. When to quit searching is another one of those decision problems under uncertainty. The central case of this chapter is the discussion of a hypothetical strike game and this is analyzed from the perspective of the individual decision maker and of game theory. Empirical laboratory observations demonstrate the potential for dysfunctional escalatory, vindictive behavior. Strike mechanisms have their problems but sometimes negotiating parties may wish there were a strike mechanism. Well that's an opportunity for negotiation.

Chapter ten considers the case where there are many buyers and just one seller. The seller could negotiate sequentially with each potential buyer or engage in a competitive bidding or auction procedure. The chapter compares several different types of auction procedures and we use individual decision analysis to give partisan prescriptive advice to one of the players. The chapter considers such problems as bidding for the rights for a commodity whose worth is very uncertain – like bidding for rights to drill for oil. We end the chapter by considering the all-too-common case when two partners want to dissolve their partnership by having one partner buy out the other.

Part III: Two-Party Integrative Negotiations (Chapters 11-16)

This part of the book, comprising chapters 11 to 16, deals with Two-Party *Integrative* Negotiations. By "integrative negotiations" we mean: negotiations having the potential of resulting in joint gains. Part II dealt with Two-Party *Distributive* Negotiations which involved partitioning a fixed-sized pie. Whereas Part II was mostly about *claiming* tactics, Part III will be mostly about *creating* tactics -- how to create a bigger pie. But there is a tension between tactics used to create a larger pie and tactics used to claim a large portion of the pie created. How to balance this tension is part of the art and science of negotiation.

Much of negotiation involves the settlement of *disputes*. The bulk of our attention in Part III, however, will be with examining *deals* as presenting opportunities for joint gains (accompanied, of course, by some distributional strains) in contrast to disputes or problems that have to be resolved. Behaviorally speaking, negotiations involved in deal-making tend to be more collaborative than those involving the settlement of festering disputes. But still, much of the advice given for deals are relevant also for disputes. Part of this advice is to try to convert a dispute into a deal and to prevent a deal from becoming a dispute.

Chapters 11 and 12 concentrate on preparing for negotiations after the potential for such deal-making has already been flagged. We don't examine how we might find promising potential deals. We propose three phases in preparing for negotiations. In Phase 1, the parties deliberate separately and alone and consider their interests, objectives, visions; their alternatives to the present negotiation under review; their options; and gather information about the other side about their interests, alternatives and about their negotiation veracity and style. In Phase 2, the parties engage in an informal dialogue in which they feel each other out; they selectively and adaptively share information; they brainstorm together; they try to establish an appropriate relationship; and they decide whether they should proceed further. If they see a green light ahead, we suggest that they jointly decide just what must be decided. We strongly suggest that they construct a *template* to guide their further negotiations. The template specifies the issues that have to be decided and possible resolutions for each issue. In Phase 3 of their preparation, they individually and confidentially evaluate the template by clarifying their preferences for different contract outcomes and by exploring their Best Alternative To a Negotiating Agreement (BATNA). Some analytically-minded party might go so far as quantitatively scoring the template and establishing a numerical Reservation Value (RV) which specifies the minimum value that would be acceptable in its negotiations. Chapter 11 deals with *Template Construction*, 12 with *Template Evaluation*, and Chapters 13 and 14 with *Template Analysis*. Chapters 11 to 14 have a jointly normative flavor; 15 is mostly jointly descriptive, 16 mostly asymmetric prescriptive/ descriptive -- i.e., we give partisan prescriptive advice to Party A based on a descriptive analysis of the behavior of Party B.

Chapter 13 examines an idealization: both parties negotiate agreements using Full, Open, Truthful Exchange (FOTE) -- they tell each other the truth and the whole

truth. [It was a surprise to me to find that in real-world, deal-making negotiations, this ideal is often the reality.] The chapter discusses efficient and equitable contract outcomes for the special case in which two parties have to share a set of indivisible items, the so-called Fair Division Problem. The problem is special in two ways: (1) the i th issue of the template involves what should be done with the i th item and there are just two possible resolutions (give it to A or to B -- no sharing allowed); and (2) there is no alternative to no agreement -- they must agree. This problem, interesting enough in its own right, sets up the analytical agenda of the next chapter on efficiency and equity of the scored template when some issues have more than two resolutions and where BATNAs and RVs play an important role. Chapter 13 deals with Template Analysis for the special template of the Fair Division problem and Chapter 14 generalizes this analysis to the general template and where there are alternatives to negotiations present. In Chapter 13 we learn that the source of joint gains stem mainly from the differences between the player's evaluations of the template and this insight carries over into 14. The flavor of 14 is still FOTE.

Chapter 15 deals with behavioral realities. We completely disengage from FOTE and comment on laboratory behavior with student-subjects. What happens when subjects without any training act as agents for principals who have provided them with a scored template and precise reservation values stating the minimum acceptable contract values? It took me by surprise when I first performed such simulations how very varied were the final contracts. It's important to examine what seems to work and what doesn't.

Still in chapter 15, we next consider anomalies, biases and errors of behavior in real-world negotiation settings. In an interactive setting misinterpretations beget misinterpretations and a dynamic may ensue where the parties spiral downwards in their pursuit of joint harms rather than joint gains. Cultural differences make it harder to establish a constructive negotiation style even though cross-cultural differences in interests are often the source for potential joint gains.

Chapter 16 takes a prescriptive/descriptive orientation. It offers partisan coaching advice to an analytically inclined collaborator suggesting how he might negotiate with a negotiator, who is less analytically inclined, who falls short of the FOTE ideal -- perhaps falls in the POTE camp -- who claims prematurely and excessively. We suggest how to negotiate in a hostile dispute with a disputatious adversary who needs to emote about your client's past despicable behavior. Part of the strategy is to try to foster more collaboration by effectively changing the others negotiation style.

PART IV: Interventions In Two-Party Disputes

Our first chapter in this part starts out by considering conventional facilitation and mediation reserving the next chapter for conventional arbitration. Rather than getting involved in disputes about nomenclature, we adopt the neutral language of “external helper” or simply “helper” or “3rd party intervenor”. In our abstraction, we talk about the {A, B; H} dynamic where A and B are the negotiating parties and H the helper. We start by drawing up lists of conventional roles that H might perform, saving those that have a more analytical flavor for later development. . What role H plays depends on how H gets involved (as invitee or invitor or a mixture of these), on the context of the problem, on tradition, on the particular temperaments of the three actors involved, and on what is to be negotiated.

We talk about the interests of H as another player -- but a different type of player. We review the many reasons why external helpers are not used when perhaps they should.

The chapter then considers more active roles for the mediator by involving H more in generating proposals (e.g., in the form of Single Negotiation Texts) for the consideration of A and B. We discuss President Carter's role at Camp David as a proactive mediator with clout in the negotiations between Sadat of Egypt and Begin of Israel. We also consider, as a second case study of proactive mediation, my intervention in helping divide an art collection between two brothers who knew ahead of time that they could not do it alone without jeopardizing their relationship.

We comment on the rapid growth of FMA (facilitation, mediation, and arbitration) interventions and on the surge of interest in Alternate Dispute Resolution. ADR constitutes a spectrum of interventions ranging from weak facilitation to strong mediation and arbitration. In practice, a negotiated impasse often triggers mandatory arbitration where H, in an evaluative mode, is expected to impose a "solution" that is binding on the parties. There are all sorts of variations: arbitration may not be mandatory but a voluntary option on the part of the negotiators; the proposal of H may not be binding but suggestive; and in some circumstance H may be expected not only to be neutral initially but to be non-evaluative throughout.

In the standard distributive bargain where A wants a higher value and B a lower value, the conventional arbiter, after fact finding, proposes a final solution. In contrast, in final-offer arbitration, A and B are required to submit sealed final offers and then the arbiter, H, is required to select one of these offers. H has no other choice! We examine a game-theoretic treatment of this type of final-offer arbitration and surprisingly find it somewhat flawed from a normative perspective even though it seems to work in practice.

The latter part of the chapter deals with cases of complex integrative negotiations in which H, acting as a neutral joint analyst (NJA), helps the parties achieve an ideal collaborative compromise solution described at length in chapters 11 to 14. Such an NJA acts as a special kind of non-evaluative arbiter. The possible reluctance of the parties to truthfully reveal their reservation values (RVs) complicates the analysis and a double auction bidding system is introduced to help resolve this complication.

After the completion of an unassisted negotiation, the parties realizing that there may be still joint gains to be had, might choose to invite in an NJA to try to *embellish* their agreement in a so-called *post-settlement settlement*. In this case the parties do not

have to reveal their RVs to the NJA -- the previously negotiated compromise acts as a pseudo joint reservation value.

There remains the nagging question for the NJA: which point on the efficient frontier should be selected as the most equitable. What is fair? The next chapter discusses this question in some detail. In Chapter 13 and 14 we already introduced some candidate rationales for "fairness" such as Nash's solution that maximizes the product of excesses over RVs and the one that maximizes the minimum of the two proportions of potentials (POPs).

The last chapter in this part examines the common nature of intractable disputes (mainly between feuding contiguous countries or national entities or cultural groupings), identifies a set of barriers that prevents constructive negotiations from taking place, and suggests how parallel negotiations (track II) could help.

The chapter documents a successful intervention in the Peru/Ecuador conflict. Influential, non-official surrogates from the belligerent countries were brought to Cambridge, Massachusetts by the not-for-profit Conflict Management Group to engage in a week-long activity called Facilitated Joint Brainstorming (FJB). The facilitator, Roger Fisher, (backed by a team of helpers including myself) engaged the group in generating creative options for the controversy, ruling out all claiming tactics. The surrogates were evidently inspired enough at week's end to return to their countries and to become change agents back at home. This is the way it was supposed to work and in interviews with the subjects it seemed to have worked that way. Fisher was publicly commended by the President of Ecuador and Foreign Minister of Peru for his contributions to peace in the region.

This FJB exercise involved a logistical feat: getting 11 distinguished surrogates (e.g., former foreign minister, or retired military chiefs of staff) around a table in a neutral spot. The chapter also discusses a variant of the FJB. An academically-minded researcher (perhaps a dissertation writer) can shuttle back and forth interviewing key subjects on their perceptions of the controversy, on their interests, trying to elicit creative options , obtaining their value tradeoffs and so forth, and preparing a pre-mediation briefing report (a PMBR) addressed to a later facilitator / mediator) but read by key representatives of both sides of the controversy. The hope is that the PMBR may trigger a reconsideration of the merits of trying to negotiate a solution to the festering dispute.

PART V: MANY PARTIES (Chapters 21-27)

In this part we extend all fronts into many-party lands. By “many parties”, as in some primitive tribes, we mean *more than two*.

Everyone knows that reaching a decision becomes harder the more people are involved. Negotiations among multiple parties – or even decisions, which must be jointly taken by a group which is ostensibly on the same side – are often long and unhappy affairs.

Up to now we have been talking about relatively simple bilateral negotiations (with the addition of a third party helper, who is not also a party at interest in the negotiation). Once we move out of that setting, there are many different geometries we could consider:

- A Group of Separate, Individual Negotiators
- Bilateral Negotiations with Multiple Participants on Each Side
- A Group of Advisors Preparing One Side for Negotiations
- A Permanent Decision-Making or Advisory Group
- An Ad Hoc Decision-Making or Advisory Group.

Each of these groups pose particular challenges. But there is also a core of similar difficulties that will have to be managed in all of those contexts.

Chapter 21 starts by listing in what ways some groups do better than individuals and then why some groups do worse. We examine some anomalies of group behavior. It then attempts to understand the underlying reasons for this behavior – *why* do some groups behave so poorly. After examining losses due to cognitive overload, poor coordination, poor communication, and poor motivation, the chapter considers general prescriptive advice designed to partially ameliorate some of these causes. The advice considers such matters as : membership in the group; use of a facilitator or chair; need for an ongoing visual documentation of the deliberations; role of brainstorming and devising; focus on purpose and choice of a problem solving framework; decomposition of tasks and formation of sub-committees; and the allocation of time.

The next chapter (22) considers groups that strive for consensual agreement. Each of the members wish to act in unison but there are strains in the community. Still they don't resort to voting or coalition formation. To a large extent this discussion generalizes the two-party material in chapters 11-13 which has a strong FOTE flavor. As was the case for two parties, we once again examine the fair division problem – but now with more than two parties – before launching into our full analysis of feasible, efficient, and equitable contracts for the many-party problem.

Chapter 23 has a game-theoretic flavor. It starts out by discussing the dynamics of coalition building. We next consider the highly structured problem where every coalition is valued at some specific, fully known, total monetary worth (with common knowledge of this input data) and where players must then join coalitions and decide how to divide the resulting joint revenue. It's a wild game that defies prediction of outcome. Still some modest advice can be given. We examine principles that can be employed (a favorite one by Lloyd Shapley) to divide up the joint proceeds of the coalition of the whole in ways that reflect the power of various sub-committees. We end our consideration of coalitions

by giving partisan advice to one party engaged in two separate intertwining negotiations; each sets up a BATNA for the other.

Chapter 24 examines the use of voting procedures for group action. Such common schemes as majority rules are fundamentally flawed since it can lead to intransitivities of group preferences. We review Arrow's famous Impossibility Theorem that proves that there is no way for three or more (i.e., many) individuals to combine their individual, ordinal preferences to obtain a group ordinal preference without violating some appealing desiderata. Many party negotiations often result in the identification of a few viable contracts for adoption, and guess what? They vote. One way out of the dilemma is to demand a richer set of inputs from the voters. They are asked not only about their ordinal preferences but the intensities of their preferences. They are asked for cardinal orderings. However, easier said than done – especially with the realities of insincere voting. We introduce a case study that examines how a group of scientists selected a trajectory for the Voyager mission to outer space.

The next chapter examines cases where at least one side in a negotiation is non-monolithic. We imagine a two-party (external) negotiation across a table that is complicated by the existence of an intense internal negotiation on each side of the table. Contracts that are negotiated across the table may result in winners and losers on one side of the table and the losers may try to block the negotiations unless they are duly compensated by internal transfers. Some call it “bribes.” The challenge is to synchronize internal and external negotiations.

In the next chapter we extend the material in Part IV on interventions in two-party deals and disputes to many parties. We examine a hypothetical case of a community that has to negotiate with a family that wants to use part of their extensive land-holdings to erect a shopping mall and some high-rise office space. The quid pro quo is that the town will get money from a higher tax base and some needed land that can be used in many different ways. A facilitator/mediator is more active with the many-sided interests *within* the town than with the division *between* the town and the developer. We conclude with a case study of energy negotiations in the European Union. There were a series of facilitator/mediators who vainly sought a feasible solution (for all the participating countries), before the Luxemburgers stepped up to the plate, played the role of a Neutral Joint Analyst (NJA), and found the way toward mutual acceptance. We end our book on a philosophical note by going back to the two-person prisoner's dilemma game (or social trap) and introducing more players. The headings tell the story: the commons problem (from sheep grazing to over-population of our planet); on over-utilization of resources (like fishing and forests); on polluting the atmosphere and despoiling the seas; on free riders (both individual, non-charity givers, as well as countries that want everybody else to curtail their green-house emissions); on the Not-In-My-Back-Yard (NIMBY) syndrome; and finally, all this brought all down to the personal level: “How much are you willing to sacrifice for the good of the whole?”

[Material, written for this book but not included because of space restrictions, can be found on the WEB (address to be announced). Suggestions for simulation exercises to anticipate or reinforce the concepts of this book can also be found at this WEB site, thus making the book more suitable as a text. Also included is a personal memoir describing how my perceptions of the field of decision science evolved over time.].