23 Negotiation Analysis: Between Decisions and Games[1]

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ABSTRACT

Conceptually located between decision analysis and game theory, the emergent field of "negotiation analysis" seeks to develop prescriptive theory and useful advice for negotiators and third parties. It generally emphasizes assessment of the parties' underlying interests, alternatives to negotiated agreement, approaches to productively manage the inherent tension between competitive actions to "claim" value individually and cooperative ones to "create" value jointly, as well as efforts to change perceptions of the negotiation itself. Since advice to one side does not necessarily presume the full (game-theoretic) rationality of the other side(s), negotiation analysts often draw on the findings of behavioral scientists and experimental economists. Further, this approach does not generally assume that all the elements of the negotiation or "game" are common knowledge. It tends to de-emphasize the application of game-theoretic solution concepts or efforts to find unique equilibrium outcomes. Instead, to evaluate possible strategies and tactics, negotiation analysts generally focus on changes in perceptions of the "zone of possible agreement" and the (subjective) distribution of possible negotiated outcomes conditional on various actions. It has been used to develop prescriptive advice for the simplest bilateral negotiations between monolithic parties, for negotiations through agents or with linked "internal" and "external" aspects, for negotiations in hierarchies and networks, for more complex coalitional interactions, as well as moves "away from the table" to change the perceived negotiation itself, including the challenge of "negotiation design" to enhance the likelihood of desirable outcomes.

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Beyond the popular bargaining manuals that populate airport bookshelves, to what bodies of theory and empirical work might one turn for informed negotiation advice to sell a car, acquire a business, or forge a global warming treaty?[2] Decades of psychological studies of people

negotiating offer many powerful insights, but generally lack a prescriptive theory of action.[3] Instead, this behavioral approach has largely sought accurate descriptions and analytic explanations of how negotiators do act. What they should do often remains an implicit or *ad hoc* implication of this careful work.

Decision analysis, the practically oriented cousin of decision theory, would seem a logical candidate to fill this prescriptive void. It suggests a systematic decomposition of the problem: structuring and sequencing the parties' choices and chance events, then separating and subjectively assessing probabilities, values, risk and time preferences. A von Neumann-Morgenstern expected utility criterion typically aggregates these elements in ranking possible actions to determine the optimal choice. This approach is well-suited to decisions "against nature," in which the uncertainties—such as the probability that an earthquake will strike San Francisco in August—are not affected by the choices of other involved parties that themselves anticipate one's own actions.

Yet when decision-making is *interactive*—as is true in negotiation, where each party's anticipated choices affects the other's and *vice versa*—assessment of what the other side will do qualitatively differs from assessment of "natural" uncertainties. Of course, the theory of games was developed to provide a logically consistent framework for analyzing such interdependent decision-making. Full descriptions of the courses of action open to each involved party are encapsulated into "strategies." Rigorous analysis of the interaction of strategies leads to a search for "equilibria," or plans of action such that each party, given the choices of the other parties, has no incentive to change its plans. A great deal of analysis by game theorists seeks conditions for unique equilibria among such strategies.[4]

Game theory has been especially useful for understanding repeated negotiations in well-structured financial situations. It has offered useful guidance for the design of auction and

bidding mechanisms, has uncovered powerful competitive dynamics, has usefully analyzed many "fairness" principles, and now flourishes both on its own and in applications such as microeconomic theory and the economics of business strategy and industrial organization. Despite signal successes, however, the dominant game-theoretic quest to predict equilibrium outcomes resulting from the strategic interactions of fully rational players often lacks prescriptive power in negotiations.

Three major aspects of mainstream game theory, discussed at length in Sebenius (1992, 2002), contribute to this "prescriptive gap." First, on standard assumptions, there are often numerous plausible equilibrium concepts, each with many associated equilibria--and no *a priori* compelling way to choose among them. Second, even where one party wishes to act rationally, the other side may not behave as a strategically sophisticated, expected utility-maximizer--thus rendering conventional equilibrium analyses less applicable. A large and growing body of evidence—especially in "behavioral game theory" and experimental economics--suggests that people systematically and significantly violate the canons of rationality. Third, the elements, structures, and "rules" of many negotiating situations are not completely known to all the players, and even the character of what is known by one player may not be known by another. The frequent lack of such "common knowledge" limits--from a prescriptive standpoint--much equilibrium-oriented game analysis.[5] Even where it is possible to shoehorn such a situation into the form of a well-posed game, and gain insights from it, the result may lose considerable prescriptive relevance.

The Negotiation Analytic Approach

If descriptive psychological approaches to negotiation lack a prescriptive framework; if decision analysis isn't directly suited to interactive problems; and if traditional game theory generally

presupposes too stringent a form of rationality and strict common knowledge, then "negotiation analysis" represents a response that yokes the prescriptive and descriptive research traditions under less exacting assumptions. Using Howard Raiffa's (1982) terms, unlike the "symmetrically prescriptive" approach of game theory--wherein fully rational players are analyzed in terms of what each should optimally do given the other's optimal choices--the "asymmetrically prescriptive/descriptive" approach typically seeks to generate prescriptive advice to one party conditional on a (probabilistic) description of how others will behave. This need not mean tactical naiveté; as appropriate, the assessments can incorporate none, a few, or many rounds of "interactive reasoning."

Works that embody the spirit of this approach can be found as early as the late 1950s. While Luce and Raiffa's (1957) *Games and Decisions* was primarily an incisive synthesis and exposition of game theory's development since von Neumann and Morgenstern's (1944) classic work, Luce and Raiffa began to raise serious questions about the inherent limits of this approach in analyzing actual interactive situations. Perhaps the first work that could be said to be in the spirit of "negotiation analysis" was *The Strategy of Conflict* by Thomas Schelling (1960). Its point of departure was explicitly game-theoretic but it proceeded with less formal argument and the analysis had far broader direct scope. Though nominally in the behavioral realm, Walton and Mckersie's *Behavioral Theory of Labor Negotiation* (1965) drew on Schelling's work as well as rudimentary decision and game theories.

The first overall synthesis of this emerging field appeared with Raiffa's (1982) *The Art and Science of Negotiation*, elaborated in Raiffa (1997), and greatly extended in Raiffa, Metcalfe, and Richardson's (2002) *Negotiation Analysis: The Science and Art of Collaborative Decision Making*. Building on Sebenius (1984), this approach was systematized into an overall method in Lax and Sebenius' *The Manager as Negotiator* (1986), extended in their (forthcoming) *3-D*

Negotiation: Setup, Deal Design, and Tactics. *Negotiation Analysis* (1991), edited by H. Peyton Young, furthered this evolving tradition, which was characterized, summarized, and reviewed in Sebenius (1992, 2001, 2002). Further contributions in the same rationalist vein were included Zeckhauser, Keeney, and Sebenius (1996), Arrow, Wilson, Ross, Tversky, and Mnookin (1995), and, adding insights from organizational and information economics, in Mnookin, Peppet, and Tulumello (2000).

Meanwhile, another group of researchers was coming to a negotiation analytic view from a behavioral point of departure. With roots in the cognitive studies of behavioral decision theorists, e.g., Bell, Raiffa and Tversky (1988), behavioral scholars began in the early 1990s to explicitly link their work to that of Raiffa and his colleagues. In particular, Neale and Bazerman's *Cognition and Rationality in Negotiation* (1991), Bazerman and Neale (1992), and Thompson (2001) pulled together and developed great deal of psychological work on negotiation in an asymmetrically prescriptive/descriptive framework. These efforts began to systematically build up more structure on what had been, in the works of Raiffa *et al.*, a largely *ad hoc* descriptive side of the ledger.

Elements of a Negotiation Analytic Approach.[6]

Full negotiation analytic accounts (e.g., Sebenius, 1992, 2000) generally consider the following basic elements: the actual and potential parties, their perceived interests, alternatives to negotiated agreement, the linked processes of "creating" and "claiming" value, and the potential to "change the game" itself.

Parties

In the simplest negotiation, two principals negotiate with each other and enumerating the parties is a trivial exercise. Yet potentially complicating parties such as lawyers, bankers, and other agents may be present as may multiple internal factions with very different interests. Potentially influential parties, who themselves may not be principals or even involved at all in the nominal negotiation, may be able to block or enable a deal. Multiple parties, some of whom may not be immediately obvious. The crucial first step for an effective negotiation analysis is to map the full set of potentially relevant parties and their relationships in the context of the decision processes. Lax and Sebenius (2003) offer a framework for assessing the full set of parties that are and should (not) be involved.

Interests

The next step is to probe deeply for each relevant party or faction's underlying interests and to carefully assess its tradeoffs among interests. In principle, this assessment is radically subjective in the sense that less tangible concerns for self-image, fairness, process, precedents, or relationships can have the same analytic standing as the "harder" or "objective" interests such as cost, time, and quality that are common to traditional economic approaches.

It is often useful to distinguish the full set of parties' underlying interests from the issues under negotiation, on which positions or stands are taken.[7] To illustrate, suppose you're negotiating a job offer; the base salary will usually be an *issue*. Perhaps your *position* on that issue is that you need to earn $100,000. The *interests* underlying that position certainly include your need for a good income but may also include status, security, new opportunities, and needs that can be met in ways other than salary. Rather than a $15,000 higher base at the start of a new job, your real interests may be better served by a more direct reporting relationship, a wider set of responsibilities, and an expedited compensation review—as well as a later start date that

permits you to take that long-postponed vacation with your family. And, of course, an assessment of the full set of the *other* sides' interests is a complementary necessity to assessing vital complement to assessing one's own. (Raiffa (1997) and Lax and Sebenius (1986) illustrate this kind of assessment in the context of employment negotiations.)

In conflict situations, emphasizing positions can drive the parties even further from advancing their real interests; in other cases, emphasizing interests will only generate hopeless conflict when mutually beneficial agreement on certain overt positions could be reached. To take the more common case in which an interest-based focus is preferable to a positional one, consider a dispute over a dam project. Environmentalists and farmers opposed a power company's plans to build a dam in the Midwestern United States. On the surface, the parties had deeply felt, irreconcilable positions: "absolutely yes" versus "no way." Yet, as in many bargaining situations, these incompatible positions masked compatible interests. In reality, the farmers were worried about reduced water flow below the dam, the environmentalists were focused on the downstream habitat of the endangered whooping crane, and the power company needed new capacity and a greener image. After a costly legal stalemate, the three groups devised an interest-driven agreement that all of them considered preferable to continued court warfare. The agreement included a smaller dam built on a fast track, water flow guarantees, downstream habitat protection, and a trust fund to enhance whooping crane habitats elsewhere. Rather than a convergence of *positions*, this agreement entailed efforts to reconcile each side's deeper *interests*.

In virtually all cases, however, an important first analytic step is to probe deeply for interests, distinguish them from issues and positions, and to carefully assess tradeoffs. Raiffa *et al.* (2002) offers an extended discussion of assessing tradeoffs in negotiation, building on extensive work by Keeny and Raiffa (1976) (See also Keeney (1988), Keeney and Raiffa (1991), and Hammond,

Keeney, and Raiffa (1998)). Lax and Sebenius (1986) offer a simplified discussion of the principles behind such tradeoffs, while Wierzbicki (1983) critically surveys the methodologies of multiobjective analysis.

When individuals or groups with different concerns constitute a negotiating “side," it is no longer in general possible to specify overall tradeoffs; however, carefully tracing which set of interests is ascendant according to the internal bargaining process of given factions may continue to provide insights. (Wilson's (1968) work on “syndicates" suggests formal conditions under which a “group utility function" exists.) One result of such analysis of interests may be the disaggregation of a side into factions whose interests are shared enough to justify treating the faction as another distinct party. For cases in which such disaggregation is not sensible, Keeney, Renn and von Winterfeldt (1983) discuss “value tree" analysis, whereby effective preferences of larger groups can be assessed for decision-making purposes, including international and broader policy negotiations.

Alternatives to Negotiated Agreement

People negotiate in order to satisfy the totality of their interests better through some jointly decided action than they could otherwise. Thus, for each side the basic test of a proposed joint agreement is whether it offers higher subjective worth than that side’s best course of action absent agreement. In examining a negotiation, therefore, one should analyze each party’s perceptions of its own--and the others’--valuations of their alternatives to negotiated agreement.

Alternatives to agreement may be certain, with a single attribute: an ironclad competing price quote for an identical new car. They may be contingent and multi-attributed: going to court rather than accepting a negotiated settlement can involve uncertainties, trial anxieties, costs, time, and precedents that contrast with the certain, solely monetary nature of a pretrial accord.

No-agreement alternatives may also involve potentially competing coalitions, threats and counter-threats, or the necessity to keep negotiating indefinitely.

Evidently, decision analysis (including multi-attribute value and utility theory) can often help assess alternatives to agreement. When there are many possible alternatives--or example, many potential purchasers, each with associated uncertainties and costs of discovery for the seller--optimal search theory can provide strategies for searching efficiently and valuing the expected findings from the search (Lax, 1985). When the parties' alternatives to agreement are interdependent, concepts from game theory--including the dynamics of threats and counter-threats as well as the many variants of coalitional analysis--can help bargainers understand and assess their no-agreement alternatives (Luce and Raiffa, 1957; Raiffa, 1982).

While this evaluation provides a strict lower bound for the minimum worth (the “reservation price”) required of any acceptable settlement, alternatives to agreement also play tactical roles. The more favorably that negotiators portray their best alternative course of action and willingness to “walk away,” the smaller is the ostensible need for the negotiation and the higher the standard of value that any proposed accord must reach. Moves “away from the table” that shape the parties’ alternatives to agreement can strongly affect negotiated outcomes.

For example, faced with a two-party negotiation, the importance of moves to enhance competition--and thereby improve their no-agreement alternatives in the initial negotiation--is virtually an article of faith among top negotiators. A senior AOL executive remarked about the importance of such moves to favorably change the setup: “You would never do a deal without talking to anyone else. Never.”[8] Martin Lipton, virtual dean of the New York takeover bar, compared the effects of adding another interested party “at the front end” of corporate acquisition negotiations with simply negotiating more effectively with your initial counterpart “at the back end” of the process. Lipton even roughly quantified the added value of adding

competing negotiator with greater negotiating skill in the initial two-party deal: "The ability to bring somebody into a situation is far more important than the extra dollar a share at the back end. At the front end, you're probably talking about 50%. At the back end you're talking about one or two percent."[9] Indeed, as Bulow and Klemperer (1996) analytically demonstrate, moves to transform a two-party negotiation into an active auction with many bidders vying for your deal can be a potent strategy in general.[10]

Converting a two-party setup into more of an auction can change the psychology of a negotiation as well as the competitive pressures. After leading a string of alliances and acquisition negotiations that vaulted Millennium Pharmaceuticals from a 1993 startup to a multibillion-dollar firm less than a decade later, then-chief business officer Steve Holtzman explained the rationale for adding parties:

> Whenever we feel there's a possibility of a deal with someone, we immediately call six other people. It drives you nuts, trying to juggle them all, but it will change the perception on the other side of the table, number one. Number two, it will change your self-perception. If you believe that there are other people who are interested, your bluff is no longer a bluff, it's real. It will come across with a whole other level of conviction.[11]

Representing the Structure

Imagine that two negotiators have thought hard about their underlying interests in different possible settlements of the apparent issues. Further, suppose that they have a relatively clear, if possibly changing, assessment of their tradeoffs and have compared them to the value of their best no-agreement alternatives. Each has a sense of any "rules of engagement" that structure their interaction. From the viewpoint of each party a set of possible agreements has been

envisioned. Assume that an analyst were privy to the results of these evaluations by each side, along with the (likely asymmetric) distribution of information about interests, beliefs, no-agreement options, and possible actions; these evaluations need not be common knowledge of the parties. The situation might be familiarly represented as in Figure 23.1.

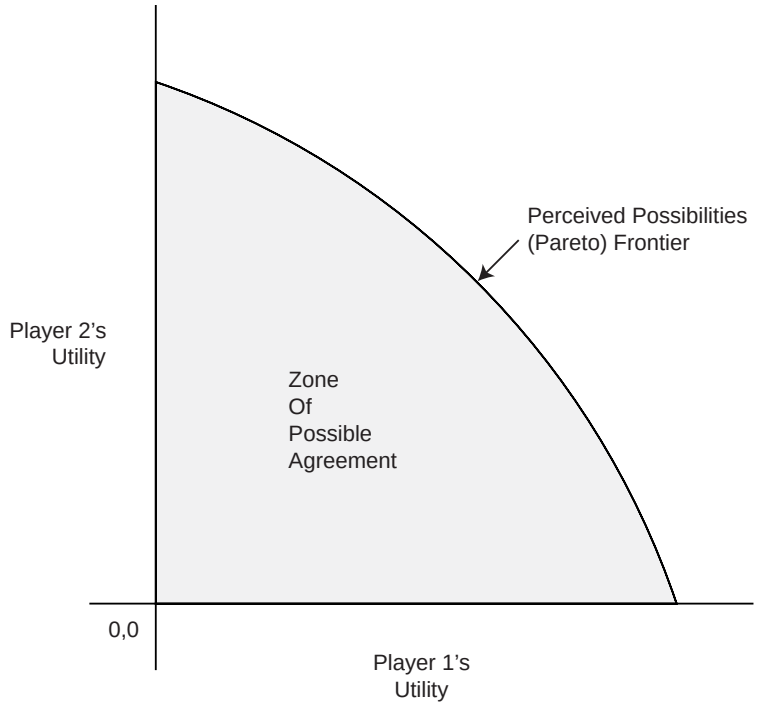

Figure 23.1 Pareto Frontier for Two Players

The origin represents the value of failing to reach agreement; each side's best alternative to agreement implies the location of this point. The "Pareto frontier" in the northeast part of the graph represents the evaluations of the set of those possible agreements on the issues that could not be improved on from the standpoint of either party without harming the other. In general, neither side knows the location of the frontier, only theoretically that it is there. The entire shaded region--bounded by the two axes and the frontier--is the "zone of possible agreement." In general, each party has its own perceptions of it. (In a purely distributive bargain, with no room for joint gains beyond the fact of agreement, the shaded region would collapse to a diagonal

frontier.) Since this representation is quite general, it can in principle encompass the whole range of possible interests, alternatives, and agreements.

From Structure to Outcome: Favorable Changes in the Perceived Zone of Possible Agreement

This is the point at which game-theoretic and negotiation-analytic approaches tend to diverge. A game theorist would typically tighten the above specification of the situation, presume common knowledge of the situation and strategic rationality of the parties, and, by invoking a rigorous concept of equilibrium (such as a Nash or Bayesian Nash equilibrium), investigate the predicted outcome(s) of the interaction. Indeed, as Rubenstein's (1991) insightful commentary noted, "For forty years, game theory has searched for the grand solution" that would achieve a "prediction regarding the outcome of interaction among human beings using only data on the order of events, combined with a description of the players' preferences over the feasible outcomes of the situation" (p. 923).

Even with as powerful and ubiquitous a concept as that of the Nash equilibrium in noncooperative games, however, it is often impossible, even with the imposition of increasingly stringent requirements or refinements to limit a game's equilibrium outcomes to a unique or even small number of points. Often there is an infinitude of such outcomes. As Tirole (1988) noted when explaining why "we are now endowed with nearly a dozen refinements of perfect Bayesian equilibrium," the "leeway in specifying off-the-equilibrium-path beliefs usually creates some leeway in the choices of equilibrium actions; by ruling out some potential equilibrium actions, one transforms other actions into equilibrium actions" (p. 446). Frequently this implies an infinite number of perfect Bayesian equilibria.

Despite insights into how rational players might select from among multiple Nash equilibria (Harsanyi and Selten, 1988), the rationale for a particular choice may ultimately seem arbitrary. As Kadane and Larkey (1982) incisively remark, “we do not understand the search for solution concepts that do not depend on the beliefs of each player about the others’ likely actions, and yet are so compelling that they become the obvious standard of play for all those who encounter them.” This seems especially apt in light of their observation that “solution concepts are a basis for particular prior distributions” and hence “the difficulty in non-zero sum, N-person game theory of finding an adequate solution concept: no single prior distribution is likely to be adequate to all players and all situations in such games” (pp. 115-116).

Since each party should accept any settlement in the zone of possible agreement rather than no agreement, Schelling (1960) made the potent observation that the outcome of such a situation could only be unraveled by a “logic of indeterminate situations.” Yet without an explicit model or formal theory (equilibrium-based or other) adequate to confidently map structure and tactics onto bargaining outcomes, how can an individual negotiator or interested third party decide what to do? In the (often implicit) view of many negotiation analysts, the negotiator’s subjective distribution of beliefs about the negotiated outcome conditional on using the proposed tactics must be compared with his subjective distribution of beliefs about the outcome conditional on not using them. The tactic is attractive if the former distribution gives him higher expected utility than the latter.

Such “improvement” has a subjective basis analogous to the Rothschild-Stiglitz (1970) characterization of a subjectively perceived “increase” in risk. Specifying these distributions may require an internalized and subjective model of the bargaining process since no such general model exists; where there is a well-developed and applicable game-theoretic model, of course, it

should be used. Of course, the “better” the empirical and theoretical basis for the assessment, the “better” the subjective distributions of outcomes.

Much negotiation analytic work consists in improving the basis for assessing such outcome distributions. To do this, analysts pay attention to the special structure and dynamics that derive from the joint decision-making among parties, some of whom may be “boundedly” rational.

Improving the Basis for Assessing Outcome Distributions I: Fundamental Processes of Negotiation.

At bottom, negotiation processes involve both 1) actions to enhance what is jointly possible through agreement (“creating value”), and 2) actions to allocate the value of agreement (“claiming value”).

Creating Value. In most negotiations, the potential value of joint action is not fully obvious at the outset. “Creating value”--that is, reaching mutually beneficial agreements, improving them jointly, and preventing conflict escalation--requires an approach often associated with “win-win,” “integrative,” or “variable sum” encounters: to share information, communicate clearly, be creative, and productively channel hostilities. Yet regardless of whether one adopts a cooperative style or not, it is useful to have an analytic guide as to the underlying substantive bases for joint gains and how to realize them by effective dealcrafting.

First, apart from pure shared interests, negotiators may simply want the same settlement on some issues. Furthering their relationship, or acting in accord with an identical interest, such as a shared vision, ideology or norm of equity, may create value in an agreement. Interests, such as “good relationships," are analogous to the economist's “public goods" in that all sides can simultaneously “consume" them without diminution.

Second, where economies of scale, collective goods, alliances, or requirements for a minimum number of parties exist, agreement among similar bargainers can create value.

Third—and most interestingly--though many people instinctively seek “common ground” and believe that “differences divide us,” it is often precisely the differences among negotiators that constitute the raw material for creating value. Each class of difference has a characteristic type of agreement that makes possible its conversion into mutual benefit. For example, differences in relative valuation suggest joint gain from trades or from “unbundling” differently valued attributes. Differences in tax status, liquidity, or market access suggest arbitrage. Complementary technical capacities can be profitably combined. Probability and risk aversion differences suggest contingent agreements or bets. Differences in time preference suggest altering schedules of payments and other actions. Sebenius (1984) formally characterizes such optimal betting, risk sharing, and temporal reallocations; a general discussion of differences in probabilities and attitudes toward risk can be found in Pratt and Zeckhauser (1989). These observations point up value of a “differences orientation" with knowledge of the characteristic “technologies" for converting differences into mutual benefit. More broadly, much work on optimal contracting (e.g., Hart (1995)) as well as classical economic study of gains from trade and comparative advantage directly bear on the kinds of agreements that create value on a sustainable basis.

Beyond creating value via pure shared interests, scale economies, and differences in multiple dimensions are other classes of situations which can give rise to mutually beneficial agreements. For instance, “insecure contracts” are potentially value-creating deals—such as digging a mine in a developing country under appropriate terms--in which one party has an inherent, structural incentive to defect from the original terms once the agreement has been signed and the other party has made an irrevocable move. In the face of this structure, parties often do not contract,

even where substantial benefits are at stake for all. Classes of agreements and devices to "secure" such contracts in situations of considerable importance have been (unsystematically) explored (Lax and Sebenius, 1981; Raiffa, 1982, especially Chapter 13; Raiffa, Richardson and Metcalfe, 2002, pp. 374-375); beyond contractual flexibility, these approaches involve the equivalent of performance bonds, insurance, and linkages.

In a second class of examples that remains relatively undeveloped in a negotiation context, financial and "real" options have been extensively analyzed, especially in situations where action and information revelation are sequenced (with respect to financial options, see, e.g., Hull, 2002; with respect to "real" options, see, e.g., Mun, 2002). In related analysis, Sahlman (1987) has explored the character of staged arrangements between entrepreneurs and investors that generate appropriate incentives, share risk efficiently, and respond to updated information. Hall (1999; 2002) has explored this question more broadly in seeking the principles behind optimal design of multi-year option programs and other forms of executive compensation. In a narrower setting involving option design, different kinds of exit and termination agreements, from reciprocal buy-sell provisions (Raiffa, Richardson and Metcalfe, 2002, pp. 185-6) to "Texas shoot-outs" (Brandenburger and Nalebuff, 1996, pp. 52-55) can create value, or, if badly structured, destroy it.

In short, negotiated agreements may systematically improve on the alternatives by: l) cultivating shared interests, 2) exploiting scale economies, 3) dovetailing differences, Other avenues to value creation include such as agreements designed to secure potentially insecure contracts and to exploit options. A number of studies have taken situations and analyzed the joint gains latent in them. Barclay and Peterson (1976) carry out this analysis in the context of base rights negotiations; similarly, Brown, Peterson, and Ulvila (1975) analyze alternative Middle Eastern oil agreements. Ulvila and Snyder (1980) show how negotiation of international tanker

standards followed this methodology. Howard Raiffa (1982) explains this analysis in the context of the Panama Canal negotiations and the talks over Philippine bases. Sebenius (1984) unpacks the sophisticated joint gains embedded in a multiparty deep seabed mining agreement. Bueno de Mesquita and his colleagues (1985) carry out an elaborate analysis of the British negotiations with the Chinese over the fate of Hong Kong. Chen and Underwood (1988) describe and apply a closely related methodology. Lax and Sebenius (2002) offer extensive illustrations of these "deal design" principles in practice.

Claiming Value. Crucial aspects of most negotiations, however, are primarily "distributive," "win-lose," or constant-sum; that is, at some points in the process, increased value claimed by one party implies less for others. Several broad classes of tactics used for "claiming value" in these kinds of bargains have been explored. (See, e.g., Schelling (1960), Walton and McKersie (1965), Raiffa (1982), Thompson (2001) and Lax and Sebenius (1986).) Such tactics include: shaping perceptions of alternatives to agreement, making commitments, influencing aspirations, taking strong positions, manipulating patterns of concessions, holding valued issues "hostage," linking issues and interests for leverage, misleading other parties, as well as exploiting cultural and other expectations. By means of these tactics, one party seeks advantage by influencing another's perceptions of the zone of possible agreement.

Managing the Tension between Creating and Claiming Value: The Negotiators' Dilemma. In general, the potential benefits of cooperation are not fully known at the outset of a negotiation. Colloquially, the parties often do not know how large a value pie they can create. The way in which they attempt to expand the pie often affects its final division, while each side's efforts to get a larger share of the pie often prevents its expansion in the first place--and may lead to no pie at all, or even to a fight. Conclusion: creating and claiming value are not in general <u>separable</u> processes in negotiation. This fact undermines much otherwise useful advice (that, for

example, presumes "win-win" situations to have no "win-lose" aspects, or "integrative" bargains to be unrelated to "distributive" ones).

Each negotiating party tends to reason as follows: if the other parties are open and forthcoming, I can take advantage of them and claim a great deal of value; thus I should adopt a value-claiming stance. By contrast, if the other parties are tough and adopt value-claiming stances, I must also adopt such a stance in order to protect myself. Either way, a strong tendency operating on all parties drives them toward hardball. Since mutual hardball generally impedes value creation, c*ompetitive moves to claim value individually often drive out cooperative moves to create it jointly*. Outcomes of this dynamic include poor agreements, deadlocks, and conflict spirals. This tendency, closely related in structure to the famous prisoner's dilemma, was dubbed the "Negotiator's Dilemma." Much negotiation advice is aimed at productively managing the inherent tension between creating and claiming value, especially to do so on a sustainable basis.[12]

Improving the Basis for Assessing Outcome Distributions II: Behavioral Insight

A fully rational "baseline" analysis helps to understand the possible responses of a rational other side. Urging consistent, if not fully rational, behavior on the subject of one's advice is often wise. After all, well-structured, repeated negotiations may penalize departures from rational behavior. Yet many negotiating situations are neither well-structured, repeated, nor embedded in a market context. And while negotiators normally exhibit intelligent, purposive behavior, there are important departures from the "imaginary, idealized, super-rational people without psyches" (Bell, Raiffa, and Tversky, 1988, p. 9) needed by many game-theoretic analyses.

Considerable empirical work—such as that cited above by Bazerman, Neale, Thompson, and their colleagues—offers considerable insight into how people actually behave in negotiations.

Excellent reviews of the psychological side of negotiation can be found in Bazerman, Curhan, and Moore (2000) and, focusing especially on developments on the social psychological side, in Bazerman, Curhan, Moore, and Valley (2000). Complementing this work is the burgeoning research in experimental economics (Kagel and Roth, 1995) and what Colin Camerer (1997) described as a "behavioral game theory." This work blends game-theoretic and psychological considerations in rigorous experimental settings. Two related levels are consistently important, the individual and the social:

Individual negotiating behavior: As negotiators, people have different histories, personalities, motivations, and styles. Systematic characteristics of individual cognitive processes can both help and hinder the process of reaching agreement. For example, negotiators may be anchored by irrelevant information, subject to inconsistencies in the way they deal with uncertainty, hampered by selective perception, obsessed by sunk costs and past actions, prone to stereotyping and labeling, susceptible to influence tactics and manipulation by the way in which equivalent situations are framed, liable to see incompatible interests when joint gains are possible, and use a variety of potentially misleading heuristics to deal with complexity, ambiguity, and conflict.

Social behavior in negotiation: In groups of two or more, especially where there is some perceived conflict, a variety of social psychological dynamics come into play that may enable or block negotiated outcomes. For example, a powerful norm toward reciprocity operates in most groups and cultures. Tentative cooperative actions by one side can engender positive reactions by the others in a cycle that builds trust over time. By contrast, social barriers can involve aspects of the interactive process that often lead to bad communication, misattribution, polarization, and escalation of conflict, as well as group dynamics that work against constructive agreements. Such dynamics may be especially pronounced when negotiations involve players of different genders, races, or cultures. Group dynamics can involve pressures for conformity, a

hardening of approach by a representative before an "audience" of constituents, bandwagon effects, and the individual taking cues from the behavior of others to decide on appropriate actions in the negotiation.

This experimentally based work is developing an empirical grounding for the behavioral basis of much *a priori* theorizing in economics and game theory. For negotiation analysis, these experimental approaches to actual behavior help to remedy a key defect of prior game theoretic work. While for the most part not prescriptively framed, this body of work also provides rigorous evidence and theory on how people in fact are likely to behave—to inform assessments of outcome distributions and against which to optimize as appropriate.

Changing the game

Much existing theory proceeds from the assumption of a well-specified and fixed situation within which negotiation actions are taken. Yet purposive action on behalf of the parties can change the very structure of the situation and hence the outcomes. Often actions can be understood as a tacit or explicit negotiation over what the game itself will be.[13] This means that a perfectly legitimate and potentially valuable form of analysis may involve a search for ways to change the perceived game--even though the menu of possibilities may not be common knowledge.

Issues can be linked or separated from the negotiation to create joint gains or enhance leverage. Parties may be "added" to a negotiation to improve one side's no-agreement alternatives as well as to generate joint gains or to extract value from others. Though perhaps less commonly, parties can also be "subtracted"--meaning separated, ejected, or excluded--from larger potential coalitions. For example, the Soviets were excluded from an active Middle East negotiating role in the process leading up to the Camp David accords that only involved Israel,

Egypt, and the United States. The process of choosing, then approaching and persuading, others to go along may best be studied without the common assumption that the game is fully specified at the outset of analysis; Sebenius (1996) dissects and offers many examples of the process sequencing to build or break coalitions. Walton and McKersie (1965) focused on how negotiators seek to change perceptions of the game by what they called "attitudinal restructuring." In the context of competitive strategy and thinking, Brandenburger and Nalebuff (1996) develop a powerful, analogous logic for "changing the game" that provides an overall approach and many ingenious examples of this phenomenon.

Refer back to Figure 23.1: an improvement in Party One's no-agreement alternative shifts the vertical axis to the right, leaving the bargaining set generally more favorable to that side. If Party Two's no-agreement alternative worsens, the horizontal axis shifts down, worsening its prospects. A successful commitment to a bargaining position cuts off an undesired part of the zone of possible agreement for the party who makes it. A new, mutually beneficial option (e.g., suggestion of a contingent, rather than an unconditional, contract) causes the frontier to bulge upward and to the right, reducing the parties' "conflict of interest." When issues change or other basic aspects of the game vary, each side's perceptions of the basic picture in Figure 23.1, the zone of possible agreement, will be transformed. These possibilities add evolutionary elements to the analysis.

In line with this focus on the potential to change the negotiating game itself, there is often considerable scope for creative "negotiation design" to enhance the chances and value of agreement. Articulated case examples include Singapore's Tommy Koh and the Law of the Sea (Antrim and Sebenius, 1991), George Mitchell's efforts in Northern Ireland (Curran and Sebenius, 2003), and, in contrast, Richard Holbrooke's work leading to the Dayton Accords ending the war in Bosnia (Curran, Sebenius, and Watkins, 2004), and Charlene Barshefsky's

choices with respect to negotiating a U.S.-Chinese Intellectual Property Regime (Hulse and Sebenius, 2003).

Consider an example illustrating the broader problem of "negotiation design," or how best to (re-)structure ongoing or prospective negotiations. In the late 1980s and early 1990s, various governments sought to decide on how best to structure upcoming negotiations to deal with global warming. For example, would the negotiations best be carried out in separate bilateral encounters, in small groups of like-minded or geographically proximate countries, in large blocs, or on a global basis? Who should be included and excluded? Should a sequential process be constructed? And should the issues be limited to targets for carbon emissions, for example, or should chlorofluorocarbons, and acid rain be linked? Should the negotiations also concern debt, financial transfers, population policy, and the like? Should a comprehensive agreement be sought or should a "framework" be negotiated first with subsequent "protocols" hammered out on specific subjects? To sort out these questions, a variety of negotiation analyses proved useful. For example, for various possible configurations of the negotiations, which blocking coalitions were likely to arise and how might they best be dealt with? How could the negotiations be organized such that there are sufficient potential joint gains to attract the key players? Which rules of procedure should be avoided since they are most likely to keep the most painful conflicts salient and to impede effective joint problem-solving? Analyses of such negotiation design issues for the climate change talks, the diplomacy of chlorofluorocarbon control, and the Law of the Sea negotiations can be found in Sebenius (1991, 1995).

These questions exemplify the problem of negotiation design, or how best to configure a specific game in order to improve the chances of a desired outcome. In some cases, this may involve the choice of discrete processes such as optimally matching various alternative dispute resolution mechanisms to different classes of disputes: "matching the forum to the fuss" (Sander

and Goldberg, 1994). Closely related is the question of influencing a *stream* of negotiated outcomes to improve the odds of mutually beneficial agreements; examples include the design of organizational dispute resolution systems (Ury, Brett and Goldberg, 1988; Costantino and Merchant, 1996). Finally, the institutional and regulatory context may be consciously shaped to influence the frequency and quality of negotiations carried out within that setting. For example, Wheeler and his colleagues (Wheeler, 1994; Wheeler, Gilbert and Field, 1997) have evaluated the design characteristics chosen to stimulate productive negotiations in Massachusetts over hazardous waste treatment facilities as well as a New Jersey system designed to foster socially desirable intermunicipal trading of affordable housing obligations.

In short, conscious actions to change the scope and sequence of a negotiation—parties, interests, rules of engagement, etc.--can be used to create value in several distinct ways from complementing the existing players and issues, to reducing transactions costs, removing deal-breakers, invoking dispute resolution mechanisms, as well as broader concepts of negotiation design and systems.

The Approach as a Whole

Figure 23.1 can now be seen to visually summarize the extended negotiation analytic "model" of possible joint action. Parties determine the axes; interests provide the raw material and the measure; alternatives to agreement imply the limits; agreements hold out the potential; within this configuration, the process consists of creating and claiming value, which gives rise to characteristic dynamics; yet, the elements of the interaction may themselves evolve or be intentionally changed. In this sense, the elements of the approach form a logically consistent, complete whole oriented around perceptions of the zone of possible agreement.

In the skeptical view of Harsanyi (1982), this negotiation analytic approach might boil down to "the uninformative statement that every player should maximize expected utility in terms of his subjective probabilities without giving him the slightest hint of how to choose these subjective probabilities in a rational manner." Yet, as described above, distinct classes of factors have been isolated that appear to improve subjective distributions of negotiated outcomes. Understanding the dynamics of creating and claiming value can improve prescriptive confidence. Psychological considerations can help as can cultural observations, organizational constraints and patterns, historical similarity, knowledge of systematic decision-making biases, and contextual features. Less than full-blown game-theoretic reasoning can offer insight into strategic dynamics as can blends of psychological and game-theoretic analysis. When one relaxes the assumptions of strict, mutually expected, strategic sophistication in a fixed game, Raiffa's (1982, p. 359) conclusion is appealing: that some "analysis--mostly simple analysis--can help."

Conclusions and Further Directions

Naturally, there are many other related topics ranging from game-theoretic concepts of fairness for purposes of mediation and arbitration to various voting schemes. More elaborate structures are under study. For example, where negotiation takes place through agents, whether lawyers or diplomats, or where a result must survive legislative ratification, the underlying structure of a "two-level game" is present.[14] And negotiations also take place in more complex multilevel and coalitional structures.[15] Perhaps most importantly, scientific study will continue to strengthen the empirical bases for improving assessments of outcome distributions.

While game theorists and behavioral scientists will continue to make valuable progress in understanding negotiation from the standpoint of scientific explanation and prediction, a

complementary prescriptive approach has been developing that conditions its prescriptions on the likely behavior of the other side, fully "rational" or not, and regardless of whether the "game" is fixed and entirely common knowledge. In describing the logic of negotiation analysis and the concepts and tools that can facilitate it, this discussion has not stressed the many useful ideas that arise from focusing on interpersonal and cultural styles, on atmosphere and logistics, on psychoanalytic motivation, on communication, or on other aspects. Yet because the logic is general, it can profitably accommodate insights from other approaches as well as from experience. The basic elements of this logic--parties' perceptions of interests, alternatives, agreements, the processes of creating and claiming value, and changing the game—become the essential filters through which other factors must be interpreted for a meaningful assessment of the zone of possible agreement and its implications for the outcome.

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[1] This chapter owes a considerable debt to David Lax and Howard Raiffa, longtime colleagues in the development of the theory and practice of negotiation analysis. It represents an evolution of my earlier syntheses of the emerging field of negotiation analysis, including Sebenius (1991, 2001, 2002), and draws extensively on those works.

[2] For genuinely useful popular works on negotiation, see, e.g., Fisher, Ury, and Patton (1991), Ury (1991), and Freund (1992).

[3] See, e.g., Rubin and Brown (1975) or Pruitt (1981).

[4] See the classic discussions of Von Neumann and Morgenstern (1944) and Luce and Raiffa (1957); for a more recent, very insightful assessment, see Aumann (1989).

[5] Work by, e.g., Aumann and Brandenburger (1995), has begun to relax the widespread understanding that common knowledge of the situation was essential to game models.

[6] Much in the following sections is directly from Sebenius (1992).

[7] "Interest-based bargaining" is a centerpiece of Fisher, Ury, and Patton (1991).

[8] See (Rivlin, 2000).

[9] This quote and an extended discussion of related bargaining implications can be found in Subramanian (2003: 1).

[10] See Bulow and Klemperer (1996).

[11] See “Strategic Deal-making at Millennium Pharmaceuticals,” (Watkins, 1999: 12).

[12] See Lax and Sebenius (1986), especially Chapters Two and Seven, and Raiffa (1982).

[13] Sebenius (1984) began to investigate this phenomenon, dubbing it “negotiation arithmetic," or “adding" and “subtracting" issues and parties.

[14] These have been studied in a number of settings notably by Putnam (1988).

[15]For analyses, see Raiffa (1982), Lax and Sebenius (1986, 1991), and Sebenius (1996).