Beyond Win-Win in Cyberspace

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I. INTRODUCTION

Cyberspace and sophisticated computer technology are presenting new opportunities for overcoming the challenges of conventional negotiation with mutual gains bargaining. This Article briefly introduces the theory used in solving negotiation problems with web-based negotiation support systems and then describes a new product and negotiation process called "One Accord" that uses optimization to take negotiators "beyond win-win." The new concepts introduced in this Article are illustrated in the context of a hypothetical environmental negotiation.

II. CHALLENGES AND OPPORTUNITIES

Following are some current challenges of conventional negotiation that often prevent participants from achieving better outcomes.

A. *Challenges to Effective and Efficient Negotiations*

1. *Adversarial Tactics*

Our society places a high value on an individual's or entity's power and rights, encouraging them to work hard and compete in order to succeed.[1] Although competition can encourage high individual goals, competition in negotiation often results in harmful adversarial tactics and inefficient results.[2]

2. *Piecemeal Thinking*

Without sophisticated tools to deal with the inherent complexity of most real-world negotiations, decisionmakers are forced to deal with them

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[1] *See* Kenneth Ehrenberg, *Social Structure and Responsibility*, 5 LOY. POVERTY L.J. 1, 1–2 (1999).

[2] *See* Carrie Menkel-Meadow, *Toward Another View of Legal Negotiation: The Structure of Problem Solving*, 31 UCLA L. REV. 754, 756–57 (1984) (suggesting that results often are limited when negotiators take an individualistic approach to negotiations).

piecemeal, that is, one issue at a time. Moreover, a piecemeal approach to negotiation encourages positional rather than mutual gains bargaining.

3. *Tedium*

Giving adequate attention to important decisions tends to be very time consuming, especially in multiparty negotiations. Because of the demands of other important management and business tasks, negotiators often are unprepared and have too little time or resources for the decisions required.[3]

4. *High Cost*

Drawn out negotiations involving professionals can be very expensive, both in time and negotiation energy.[4]

5. *Irrational Decisions*

Reasonable outcomes are compromised when decisionmakers make logic errors, take short-cuts, or permit emotions to get the upper hand when under the stress of intensive negotiations.[5] Without properly assessing the risks, parties are often unrealistically confident of a favorable outcome should the matter be taken to court.

6. *Complexity*

Multiple issues and numerous possible outcomes can overwhelm negotiators, causing them to make decisions based on heuristics and emotion rather than reason. These problems are even greater in cases involving many parties.

7. *Win-Lose Outcomes*

Negotiation based on low disclosure levels results in vague ideas about reservation and aspiration levels of other parties and often misinterpretation

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[3] *See* Charles B. Craver, *Mediation: A Trial Lawyer's Guide*, TRIAL, June 1999, at 37, 40 (discussing the benefits of mediation in generating pretrial settlements).

[4] *See* Bradford C. Mank, *The Two-Headed Dragon of Siting and Cleaning Up Hazardous Waste Dumps: Can Economic Incentives or Mediation Slay the Monster?*, 19 B.C. ENVTL. AFF. L. REV. 239, 280 (1991) (discussing inefficiencies in hazardous waste mediations).

[5] *See* William F. Coyne, Jr., *The Case for Settlement Counsel*, 14 OHIO ST. J. ON DISP. RESOL. 367, 395 (1999) (addressing the benefits of a cooling off period).

of the parties' real interests and needs.[6] Tackling issues individually, as in a one-dimensional, win-lose tug of war, inevitably leaves value on the table unclaimed by any party. Parties either agree to a suboptimal[7] conclusion or miss finding a mutually satisfactory outcome, even when it was actually achievable.

B. *Opportunities with Negotiation Support Systems*

New negotiation support systems built with powerful optimization algorithms and enhanced by a maturing cyberspace are now providing a real alternative to conventional negotiation in business arrangements as well as the settlement of litigation. These new systems reduce negotiating time and cost for decisionmakers in simple or complex cases by putting them in control of a process that quickly clarifies tradeoffs, recognizes party satisfaction on all types of negotiation issues, and generates optimal solutions.

Internet connectivity now makes communication possible at a distance by facilitating the exchange of offers and counteroffers while simultaneously managing confidential information at a neutral site. When effectively used with a trained neutral, this process eliminates or minimizes some of the challenges of conventional negotiation and can provide much improved negotiated outcomes. As such, the parties' decisions are based on more complete and more thoroughly evaluated information. The parties not only achieve the win-win goals of cooperation but also are able to go beyond win-win with optimization.

The sophistication of systems such as those described above is best employed by a qualified neutral facilitator whose role it is to provide orientation and guidance through the process. The combination of a neutral facilitator and an Internet site serves several purposes, as follows: (1) all negotiating parties and the facilitator are automatically networked with one another, no matter where they are located; (2) parties can exchange offers and counteroffers easily via the Internet at their own convenience; (3) all the power that is needed to "number crunch" a huge problem does not need to reside on each party's desktop; and (4) private and confidential data is kept safe and secure.

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[6] *See* HOWARD RAIFFA, THE ART AND SCIENCE OF NEGOTIATION 142 (1982).

[7] Economists sometimes use the term "Pareto optimal" to describe an outcome that cannot be made better for any party without making some other party worse off. *See id.* at 139.

III. EFFICIENCY FRONTIER

The basic theory underlying the optimization algorithms of negotiation support systems can be illustrated effectively using the efficiency frontier concept. As illustrated for a hypothetical case in Figure 1, the efficiency frontier represents the best possible outcomes for all parties in a negotiation case.[8]

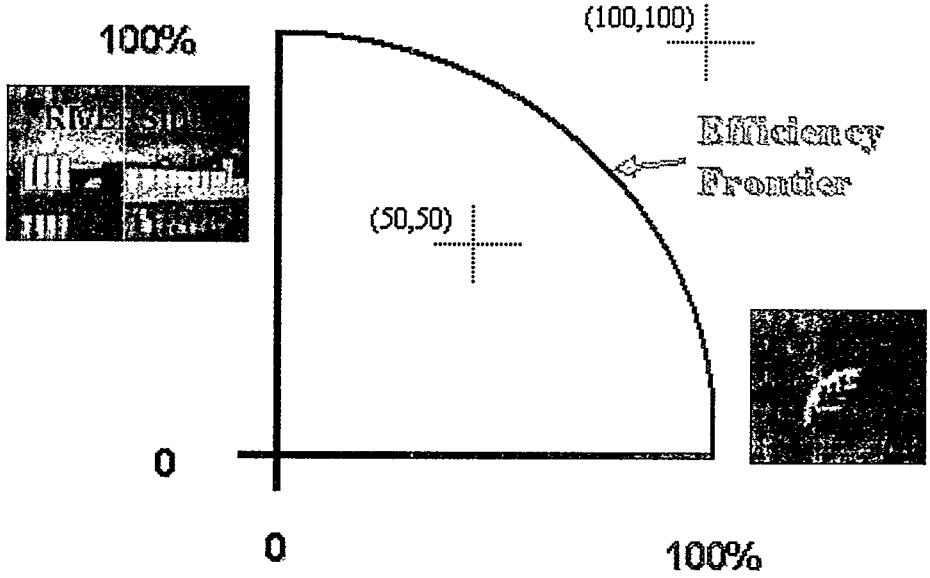

Figure 1: Efficiency Frontier

Every potential resolution in a negotiation problem is associated with an expected satisfaction level for each negotiating party. This Figure illustrates a plot of the expected relative satisfaction of one party, Riverside Pulp and Paper, against the expected relative satisfaction of another party, DEC. These parties are engaged in a hypothetical negotiation called DEC v. Riverside, *which is used for illustration later in this paper.*[9] *Very rarely can two negotiating parties both obtain 100% of what they want (top right corner as (100, 100)). However, parties almost always can achieve more than fifty-fifty (center of graph). The efficiency frontier is a line defining the greatest level of joint satisfaction that parties can get in a particular negotiation.*[10]

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[8] *See id.*

[9] *See* discussion *infra* Part V.

[10] In dynamic real-world cases, the location of the efficiency frontier is actually a function of an evolving problem description and constantly changing party preferences. This makes it a moving target, in contrast to the static representation in the example of this Article.

IV. THE ONE ACCORD PROCESS

One Accord[11] is a new negotiation support system that networks multiple parties located anywhere in the world and manages their confidential information with a neutral Internet site. This Part describes a multiphased process in which One Accord uses optimization quickly to transform conflicting objectives into fair and efficient solutions. Of course, it is expected that during the process parties continually will compare options for a negotiated agreement with trial risks or other alternatives to settlement. The parties will continue with the process as long as they rationally can see the advantages of settlement. With the aid of a facilitator, the parties proceed through the various phases in the following sequence.

A. *Qualify Interests*

The focus in this phase is on quality rather than quantity. The parties engage in a creative and cooperative process that describes the problem and identifies all issues that must be resolved. Recognizing that a well-defined problem is already half-solved, this task requires adequate attention to allow success in subsequent phases. This initial phase is best conducted in joint sessions with all parties and the facilitator present.

The main task in this phase is to build a Single Negotiating Form (SNF), which is an outline of the desired agreement that contains blanks for the unresolved issues. The emphasis of the SNF is on those *unquantified* blanks. When parties have built the SNF they should be able to refer to the blanks to identify a comprehensive and nonredundant list of all the unresolved issues of the conflict (whether qualitative or quantitative).

While building the SNF, the facilitator also should help the parties identify preliminary bargaining ranges for the issues represented by the SNF. The facilitator should emphasize that this is not an opportunity to claim value, but rather an exercise in collaboration. Establishing some common ground early in the process will help parties establish confidence that possible resolutions exist within their collective view of reasonability.

B. *Quantify Satisfaction*

After identifying the issues and possible ranges of resolution, the facilitator assists parties individually to analyze their own priorities among their interests and possible outcomes. Each party's task now is to input into

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[11] *See Beyond Win-Win with One Accord* (visited Apr. 9, 2000) <http://www.oneaccordinc.com>.

the One Accord software how that party can become satisfied on each of the issues and thereby with any potential outcome. Intuitive preference elicitation simplifies complex tradeoffs by having parties deal with comparable issues in pairs. The private preferences quantified in this phase are not shared with other parties. Rather, a patented neutral site on the Internet keeps that information confidential and secure.

C. *Establish Equity*

Having worked individually to assess and define their own preferences, parties now concentrate on determining how they should divide the benefits of their collaboration. This usually is accomplished by agreeing on a tentative solution. Parties expect the first tentative solution to be inefficient and therefore agree that it will serve as a reference point from which to search for improvements in the next phase.

D. *Maximize Benefits*

The tentative resolution found in the previous phase becomes a reference point from which improvements can be generated. When requested, One Accord generates a single package that proportions benefits according to previously agreed upon influence.[12]

E. *Secure Commitment*

The goal of all negotiations is to secure a commitment from parties to implement the decisions agreed upon. The parties' ability to secure commitment, usually represented by a well-written final agreement, determines the degree to which they will realize the benefits of the entire process.

V. *DEC v. RIVERSIDE PULP AND PAPER*

In the remainder of this Article the One Accord process is illustrated in the context of a hypothetical negotiation problem between the state Department of Environmental Conservation (DEC) and Riverside Pulp and Paper (Riverside).[13] The conflict can be described briefly as follows.

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[12] By default, One Accord treats all parties equally. However, parties may agree ahead of time to change the default by setting levels of relative influence for each party.

[13] This case is used here with permission from the Program on Negotiation (PON) at Harvard Law School. *See* Harvard Law Sch., *Program on Negotiation at Harvard Law School* (visited Apr. 8, 2000) <www.pon.harvard.edu>. It is an adaptation of *DEC v.*

Riverside is located beside the Deep River, which happens to be a convenient place to discharge the effluent from its operation. The Deep River's water quality has deteriorated over the years and an administrative order has been issued by DEC requiring Riverside to improve the situation. Because a demonstration project would be of great value, DEC is quite keen on having Riverside install a new technology called the Technoclean Scrubber. DEC is so motivated toward the Technoclean Scrubber that it seems willing to include a guarantee, subsidy, insurance, and other incentives. However, DEC also claims the authority to require Riverside to shut down for as long as it takes to comply properly and to go through a testing period. Not surprisingly, Riverside is unwilling to cooperate with DEC's ideas for resolution of the conflict.

In the dynamic of real-world negotiations, one phase is seldom completed before the next one begins, and an iterative process may bring a party back to an earlier phase any number of times as the problem evolves and is understood more thoroughly. However, for the sake of brevity, this illustration assumes static party preferences and follows a simple sequential progression through each phase.

VI. QUALIFY INTERESTS

Suppose that parties to this hypothetical case begin negotiating without One Accord. DEC says that it should require Riverside to shut down for several months while a scrubber is installed. However, if Riverside agrees to install the new Technoclean scrubber, that requirement probably could be waived. In this vein, DEC declares that the following proposal is generous in order to encourage Riverside's use of the Technoclean:

Riverside Lumber, written by David Lax, James Sebenius, Lawrence Susskind, and Thomas Weeks. For the purposes of this Article, and to conserve the uniqueness of the PON case, details of the case have been changed substantially. Copyright is held by the Program on Negotiation, from which *DEC v. Riverside Lumber* and other teaching materials may be purchased for a nominal fee.

DEC'S PROPOSAL

DEC and Riverside agree to the following conditions for disposal of Riverside's effluent:

- Riverside will install a *Technoclean scrubber.*
- DEC will *guarantee* the scrubber and *subsidize $10,000.*
- DEC will provide *$100,000 liability insurance.*
- Riverside will *not be required to shut down* the paper and pulp operations.
- DEC will spend *$50,000 on a positive public relations* campaign.
- DEC will give Riverside a *compliance incentive of $100,000.*

—to be signed and dated—

Riverside does not have confidence in the Technoclean Scrubber technology and responds with a proposal based on the tried and proven Rotoblue Scrubber. Because DEC wants Riverside to close down for several months while a scrubber is installed, Riverside offers a compromise of a two-month closure to appease DEC's constituency. Riverside bluffs about the great burden of that concession, but in private in-house discussions has decided that it actually could make good use of the down time.

RIVERSIDE'S PROPOSAL

DEC and Riverside agree to the following conditions for disposal of Riverside's effluent:

- Riverside will install a *Rotoblue scrubber.*
- Because the Rotoblue is proven technology, DEC need *not guarantee* the scrubber *or subsidize* it.
- DEC will provide *$200,000 liability insurance.*
- Riverside *will close down for two months.*
- DEC will spend *$100,000 on a positive public relations* campaign.
- DEC will give Riverside a *compliance incentive of $150,000.*

—to be signed and dated—

A. *Building a Single Negotiating Form*

Compare the two proposals above, and especially notice the differences in italicized typeface. DEC and Riverside have been concentrating on the quantitative aspects of their negotiation. With One Accord, the parties are encouraged by the facilitator to build an SNF like the following:

SINGLE NEGOTIATING FORM

DEC and Riverside agree to the following conditions for disposal of Riverside's effluent:

- Riverside will install _____ *(a Technoclean, a Rotoblue, no)* scrubber
- DEC _____ *(will/will not)* guarantee the scrubber and subsidize $_____.
- DEC will provide $_____ liability insurance.
- Riverside will close down for _____ *months.*
- DEC will spend $_____ on public relations.
- DEC will give Riverside a compliance incentive of $_____.

—to be signed and dated—

The difference between this SNF and the proposals previously illustrated is that there are blanks representing the unresolved issues. It is relatively easy to agree to the use of this form. Each party can readily say, "That's fine with me. Just fill in the blanks with what I want."

The process of qualifying interests is far from trivial, and the complexity of the process depends on many factors, including the following: type of case (e.g., commercial, environmental, personal injury); number of issues; interrelationships among issues; number of parties; number of party representatives; types of parties (e.g., corporations, individuals, institutions, or governmental); whether third-party or constituency ratification is required; customs, bargaining styles, and experience of the parties; degree of cooperation among the parties; value of outcome to parties; risk tolerance of the parties; degree of litigation uncertainty; and resource limitations (e.g., time, money, deadlines, and quality of technical and legal support).

Fortunately, there is much good literature on the above listed subjects. Not surprisingly, every author presents his process steps somewhat differently, depending on his assumptions about the character of the negotiation. The following list of steps for a typical complex case is

compiled and adapted from several sources including Raiffa,[14] Hansen,[15] and Brin,[16] as well as the experience of the authors of this Article.

1. Identify Interest Groups[17]
2. Structure Participation (Contracting)[18]
   a. Appoint facilitator
   b. Discuss process guidelines and goals
   c. Arrange financing for the process
   d. Select party representatives
   e. Reach agreement on the process to be used
3. Conduct Training[19]
   a. Establish proficiency in support tools
   b. Convey physical and legal reality of the context
4. Share Information, Interests, and Visions[20]
5. Create Value Without Claiming in a Search for all Possible Resolutions[21]
   a. Paraphrase the issues
   b. Brainstorm resolutions
   c. Find new associations and arrangements
   d. Look at the issues and resolutions from the broadest possible perspective
6. Develop Single Negotiating Form[22]

Among the references listed, only Raiffa includes the final step of developing the SNF.[23] However, developing this form is a critical component required for compatibility with the rest of the One Accord process. Referring back to the SNF developed for the *DEC v. Riverside Pulp & Paper* case, the following issues must be resolved: (1) type of scrubber; (2) guarantee provided by DEC; (3) subsidy provided by DEC; (4) liability insurance provided by DEC; (5) plant closure; (6) DEC-funded publicity; and (7) compliance incentive provided by DEC.

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[14] *See generally* HOWARD RAIFFA, LECTURES ON NEGOTIATION ANALYSIS (1996).

[15] *See generally* JUERGEN HANSEN, TABLE MANNERS FOR ROUND TABLES: A PRACTICAL GUIDE TO CONSENSUS (1995).

[16] *See generally* David Brin, *Disputation Arenas: Harnessing Conflict and Competitiveness for Society's Benefit*, 15 OHIO ST. J. ON DISP. RESOL. 597 (1999).

[17] *See id.* at 611–12; *see also* HANSEN, *supra* note 15, at 10.

[18] *See* HANSEN, *supra* note 15, at 10–11, 15.

[19] *See id.* at 10.

[20] *See* Brin, *supra* note 16, at 612–14; *see also* HANSEN, *supra* note 15, at 11–12.

[21] *See* HANSEN, *supra* note 15, at 17, 45–46.

[22] *See* RAIFFA, *supra* note 14, at 50.

[23] *See id.*

The facilitator will play a key role in assisting the parties in the process of building the SNF and in ensuring that parties both assert their settlement needs and listen to the needs of the other parties.

B. *Entering Shared Information into One Accord*

Having completed an initial draft of the SNF, the parties or facilitator can enter the information from the SNF into One Accord's shared information window, as illustrated in Figure 2.[24] The shared information window organizes the following three aspects of a negotiation case: parties, issues, and versions. The most important thing is missing—the goal; the final resolution. A final resolution is achieved by all parties (in this case, two parties) agreeing on a decision to be implemented on each of the issues. Each combination of the possible outcomes is called a "package."[25] Any party may form a package that can become an offer or counteroffer from that party.

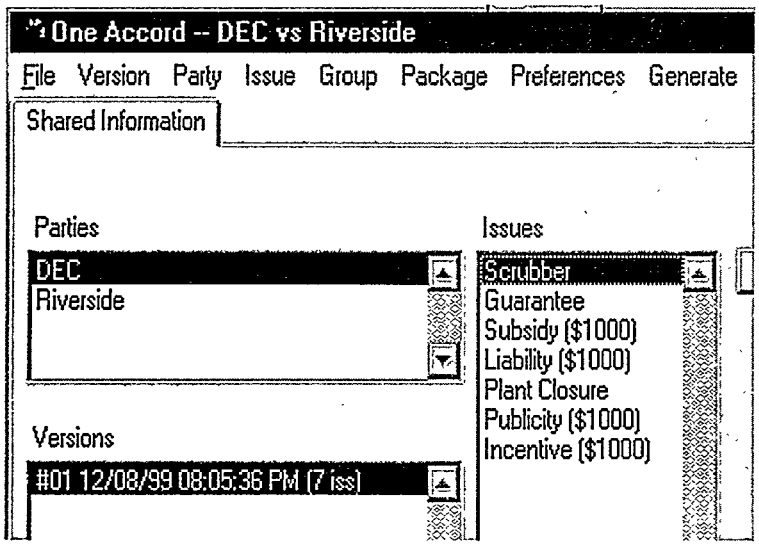

Figure 2: Shared Information

One Accord's shared information window has three panes, as follows: one for listing parties, one for issues or case variables, and one for versions. There is no theoretical limit to the number of parties or issues that can be added to a negotiation case.

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[24] Normally, only one party or the facilitator will enter the shared information, and then it will give the access codes to other parties. Thereafter, linked by the One Accord neutral site on the Internet, the shared information is available to all parties.

[25] *See INTERNEG Glossary* (visited Feb. 10, 1999) <http://interneg.org/interneg/reference/glossary.html>.

C. *How the One Accord Process Uses "Packages"*

In cases such as the one illustrated in this Article, with many issues and many possible options for each issue, thousands or even millions of significantly different packages are possible. In fact, research shows that there are often so many combinations that parties rarely find an optimal one.[26] The ultimate goal of One Accord is not to merely find a good package, but rather to find an optimal one—fair, efficient, and acceptable to the parties. Because the package concept is key to understanding how One Accord works, the use of packages in the One Accord process is summarized below, highlighting (in regular roman typeface) each reference to a package.

After the entry of the shared information, the negotiating parties work privately with One Accord to better understand their negotiation problem, enter their confidential preferences, and create packages *for use in the negotiation process. Through analysis of private and confidential preferences for* outcome, *the One Accord software learns how a party becomes satisfied on issues. With that information, One Accord can calculate a rating for each* package.

A party initially might create private packages *to compare with other* packages *in order to form and refine ideas about its confidential negotiation* aspirations *or its* minimum acceptable levels *of resolution. Various types of* published packages *also are created during the process. When a* package *is "published," it is sent to every other negotiating party and displayed on each party's screen so that each party can see the issue values that compose it. A party may publish a* package *for discussion purposes only and optionally declare a confidential acceptance. If two parties accept the same* package *they have a* deal.

If a party openly declares a package *as acceptable for implementation it is called a* proposal. *Using the Internet to exchange* proposals *and* counter-proposals, *the parties can make and seek* concessions. *If parties reach an* impasse, *One Accord might be able to solve the impasse by generating an* equivalent *for each party. The goal of this part of the One Accord process is to reach a* tentative *agreement and then to look for* improvements *in search of an* optimal solution *that will become the final* agreement.

VII. QUANTIFY SATISFACTION

Returning to the *DEC v. Riverside Pulp & Paper* case, we assume that the parties have established a mutually acceptable shared description of their

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[26] *See generally* Ernest M. Thiessen et al., *Computer-Assisted Negotiation of Water Resources Conflicts*, 7 GROUP DECISION & NEGOTIATION 109 (1998).

negotiation problem,[27] and each commences entering private information independently at their own location. The goal of this phase is for facilitators to help parties describe their preferences in a way that enables them to evaluate negotiation options easily.

Figure 3 is a screen shot of One Accord's "Package Editor," illustrating the bargaining ranges defined by Riverside. Displayed are two hypothetical packages, the worst on the left and the best on the right. This is how the negotiation problem would look like from Riverside's point of view.[28]

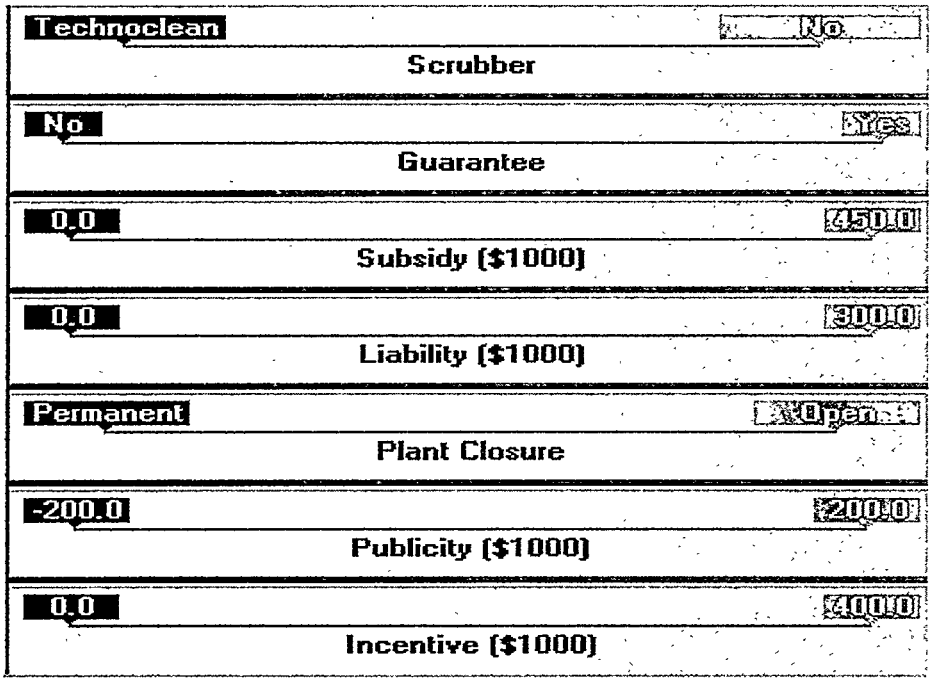

Figure 3: Bargaining Ranges Defined by Riverside

One Accord's Package Editor is used for displaying and editing packages within defined bargaining ranges. One Accord orients the ranges so that preferred values for each issue appear on the right-hand side.[29]

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[27] In an actual case, the parties may have further joint sessions or teleconferences from time to time to better define the problem and modify and improve the SNF.

[28] In the remainder of the illustration, the process is described from Riverside's perspective. All screen shots show how One Accord appears on Riverside's computer monitor.

[29] The reader might look at the values on the right-hand side and recognize that it would be impossible for DEC to guarantee a scrubber if the "no scrubber" option was chosen. Parties can program One Accord to deal with such infeasible conditions with constraints. Detailed discussion of constraints is beyond the scope of this Article.

The worst package possible within defined bargaining ranges is usually below a negotiating party's minimum acceptable level—lower than the value of what that party expects to achieve if no agreement is reached. Riverside expects to litigate with DEC if no satisfactory agreement can be found in this current negotiation with One Accord. Figure 4 shows a package with decision values that Riverside might expect in court. This assessment is Riverside's best alternative to a negotiated agreement (BATNA).[30] Consequently, Riverside believes that it must achieve a better result than its BATNA in negotiations with DEC.

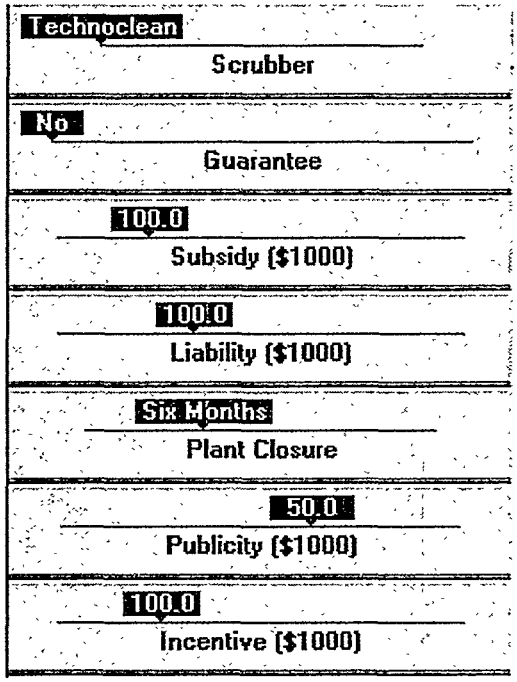

Figure 4: Walkaway to Court

Displayed here is a private package with the resolutions that Riverside expects from a resolution of the conflict in court. This package represents Riverside's BATNA and is a satisfaction level below which Riverside would walk away from negotiations.

The values displayed in Figure 4 do not represent a fixed bottom line for each issue. Rather, there are many packages that could represent a minimum acceptable level for Riverside. Riverside's objective is not to get better resolutions on each individual issue, but rather to agree upon a comprehensive settlement package that results in greater satisfaction and

[30] *See* ROGER FISHER ET AL., GETTING TO YES: NEGOTIATING AGREEMENT WITHOUT GIVING IN 97–106 (Bruce Patton ed., 2d ed. 1991).

value than some defined minimum acceptable level (such as Riverside's BATNA). Therein lies a key strength of the One Accord software—to permit a party to look at packages analytically and comprehensively.

Riverside will determine the acceptability of any particular package by assessing the tradeoffs between issues and between options for particular issues. The One Accord satisfaction graphs model a party's satisfaction on individual issues.[31] The One Accord depiction for a particular issue depends on whether the issue is qualitative or quantitative. Potential outcomes on qualitative issues are represented by different options, whereas quantitative issues are measured within quantitative ranges. Figure 5 illustrates Riverside's satisfaction graph for the Scrubber issue, which is an example of a qualitative issue with three options.

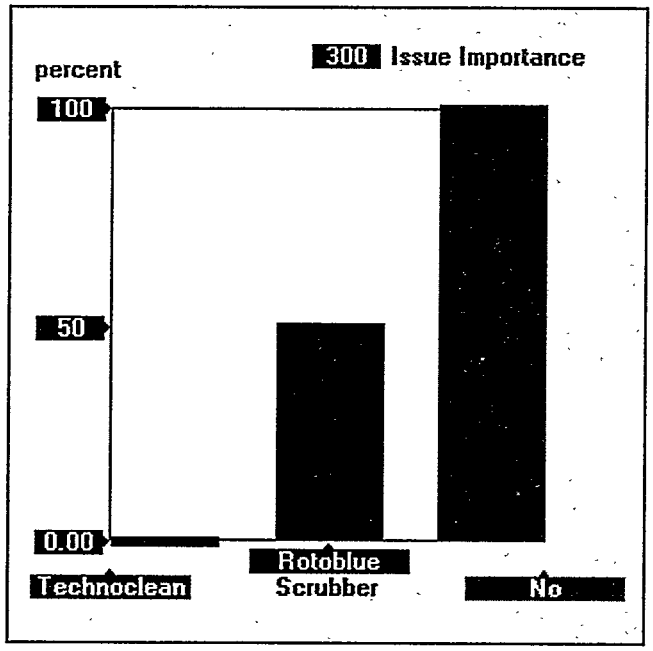

Figure 5: A Qualitative Issue Called "Scrubber"

The Scrubber issue is a qualitative issue with the following three defined options: Technoclean, Rotoblue, *or* no scrubber. *Issues with discrete options are represented in One Accord with bar graphs. The height of each bar represents its relative value, or importance, to a party as compared to the other options. In this case, Riverside's engineers have informed the Riverside negotiators that the difference between a Technoclean and no scrubber would be*

[31] How a party becomes satisfied on a particular issue often depends on outcomes for other issues. How One Accord deals with interdependencies is not addressed in this Article.

$300,000. Deciding to measure issue importance in terms of thousands of dollars, this issue is assigned an importance of 300.

Figure 6 illustrates the satisfaction graph for the quantitative subsidy issue. This issue resolves the question of whether and how much of a technology subsidy DEC would provide to Riverside in a settlement. The satisfaction graph, shown in Figure 6, is a simple, straight line. However, when using One Accord, a party has the option to define points along a curve to represent any complex, nonlinear shape.

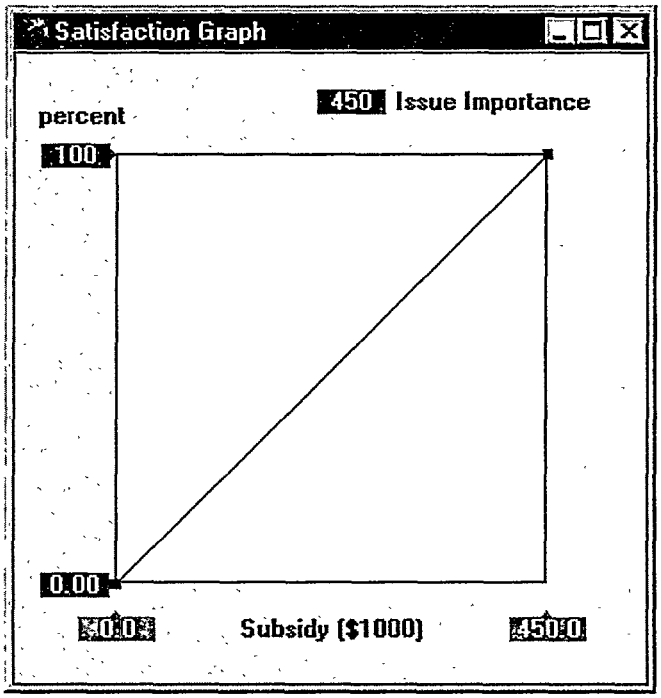

Figure 6: A Quantitative Issue Called "Subsidy"

The subsidy issue is a quantitative issue with a bargaining range defined between $0 and $450,000. With issue importance measured in thousands of dollars and the satisfaction graph being a simple, straight line, the importance for this issue is 450.

The importance assigned to each issue is a relative measure of the tradeoffs among issues. Direct specification of relative importance for the issues may, as described above, seem quite straightforward. However, many

decisionmakers have great difficulties accurately specifying the relative importance among issues merely by referring to a list of issues.[32]

Fortunately, there exists another solution that is rational and powerful yet so simple and elegant that it has withstood the test of time. More than two centuries ago, Benjamin Franklin outlined his approach to the challenge in a letter to his friend and noted scientist Joseph Priestly, who was trying to choose between two alternatives.[33] This charming letter is a must read for every decisionmaker.

Franklin's method compared the pros and cons of an issue, striking out combinations that were approximately equal in importance.[34] He continued to make such cancellations until one side, either pro or con, prevailed.[35] The obvious limitation of this method was the need for approximations when pros and cons were not exactly balanced.

Although many situations can accommodate this lack of precision and still produce good results, One Accord's preference elicitation methodology[36] overcomes that limitation. One Accord provides a mechanism, called "even swaps,"[37] that allows a decisionmaker to define the relative importance of issues by creating a hypothetical set of equivalent alternative packages. These equivalent packages then are used for comparison purposes and to adjust the relative importance assigned to each negotiation issue.

Parties' negotiation preferences are dynamic rather than static. As such, they may change radically over the course of negotiations as information is exchanged and the problem description evolves. Therefore, adjustments to preferences made during the One Accord process are as important as the initial estimations of preferences. In practice, therefore, a party may be satisfied with rough approximations of their preferences in the early stages of negotiation. That party later may fine-tune its preferences as the negotiation progresses.

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[32] *See* John S. Hammond et al., *Even Swaps: A Rational Method for Making Trade-offs*, HARV. BUS. REV., Mar.–Apr. 1998, at 137, 137 (stating that "[m]aking wise trade-offs is one of the most important . . . challenges in decision making").

[33] *See id.* at 148.

[34] *See id.*

[35] *See id.*

[36] *See* Ernest M. Thiessen & Daniel P. Loucks, *Computer-Assisted Negotiation of Multi-Objective Water Resources Conflicts*, 28 WATER RESOURCES BULL. 163, 165–66 (1992).

[37] "Even swaps" is a method of eliciting tradeoffs between two issues by identifying a change in one of the issues that exactly balances a change in the other issue in terms of satisfaction to the decisionmaker. *See id.*; *see also* Hammond et al., *supra* note 32, at 137 (using the term "even swaps" to describe a similar methodology for simplifying tradeoffs that can be employed without computer assistance).

VIII. ESTABLISH EQUITY

With jointly identified issues and ranges of possible outcomes but individually determined preferences, the next step is to establish equity, that is, to agree on how the benefits should be divided among the parties. An experienced facilitator will be helpful to parties as they choose among various available routines to exchange packages via One Accord's Internet connections.

A. *Opening Proposals*

The One Accord process encourages parties to make optimistic opening proposals. Research has shown that this strategy is by far the most successful.[38] In our case, the optimistic packages proposed by each party are illustrated by Figure 7. Both parties are prepared to be flexible with respect to these proposals.

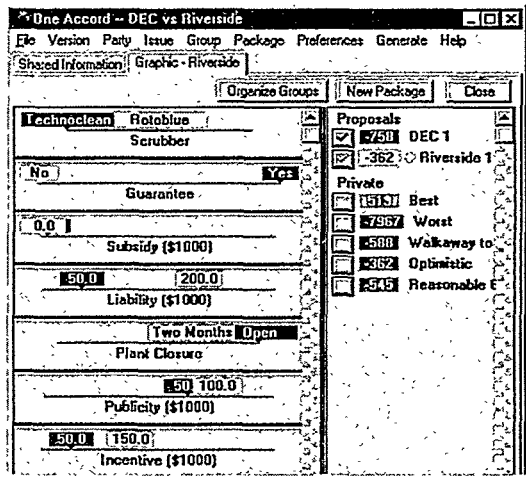

Figure 7: Initial Optimistic Proposals

Listed in the "Proposals" group in the right pane are "DEC 1" and "Riverside 1." These packages are the initial optimistic[39] proposals from each party. Their issue values[40] are displayed in the left pane. DEC 1 has a rating of negative 758. Because Riverside is

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[38] *See* RICHARD G. SHELL, BARGAINING FOR ADVANTAGE: NEGOTIATION STRATEGIES FOR REASONABLE PEOPLE 165 (1999).

[39] The term "optimistic" as used here means that the party making the proposal does not really expect it to be accepted and is prepared to make further concessions.

[40] By definition, a complete package is composed of a set of "issue values." An issue value is a possible decision for the subject issue.

measuring satisfaction in terms of thousands of dollars, this rating implies a cost of $758,000. This sum is more than DEC would expect to pay if the outcome was decided in court. On the other hand, the proposal identified as Riverside 1 would cost Riverside only $362,000.[41]

B. *Divisions*

"Division" is an item under the One Accord "Generate" menu that attempts to generate a compromise package that would give each party an average level of satisfaction compared to current party proposals. If parties agree that they are equally distant from a fair solution, this division is perceived to be fairer than simply splitting the difference on every issue. Another One Accord function, called "Multiple Division," will generate a series of packages to fill in the holes between proposals least acceptable to each party. Division functionality is not illustrated in this example.

C. *Equivalent Packages*

At any time during the One Accord process, either party can request One Accord to generate an equivalent package. A certain package is equivalent to another package if each of them would produce the same level of satisfaction to a particular party. When generating an equivalent package, One Accord uses the least acceptable package for each party as a reference. Early in the negotiation process, when parties are still relatively far from resolution, this routine assists parties in fine-tuning their preferences. Later in the process, the equivalent function can help parties solve an impasse, as illustrated in the next subpart.

D. *Dealing with an Apparent Impasse*

The hypothetical at this point in the One Accord process assumes that the negotiation dance has reached the point of impasse. Figure 8 illustrates the impasse as seen from Riverside's private point of view. Figure 9 plots this impasse in "satisfaction space."[42]

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[41] The white dot is a private marker, indicating acceptance. It may be put on any package, whether private or published. By definition, a proposal will always have a white dot.

[42] "Satisfaction space" describes a graphical plot of one party's satisfaction ratings for packages against another party's satisfaction ratings for those packages.

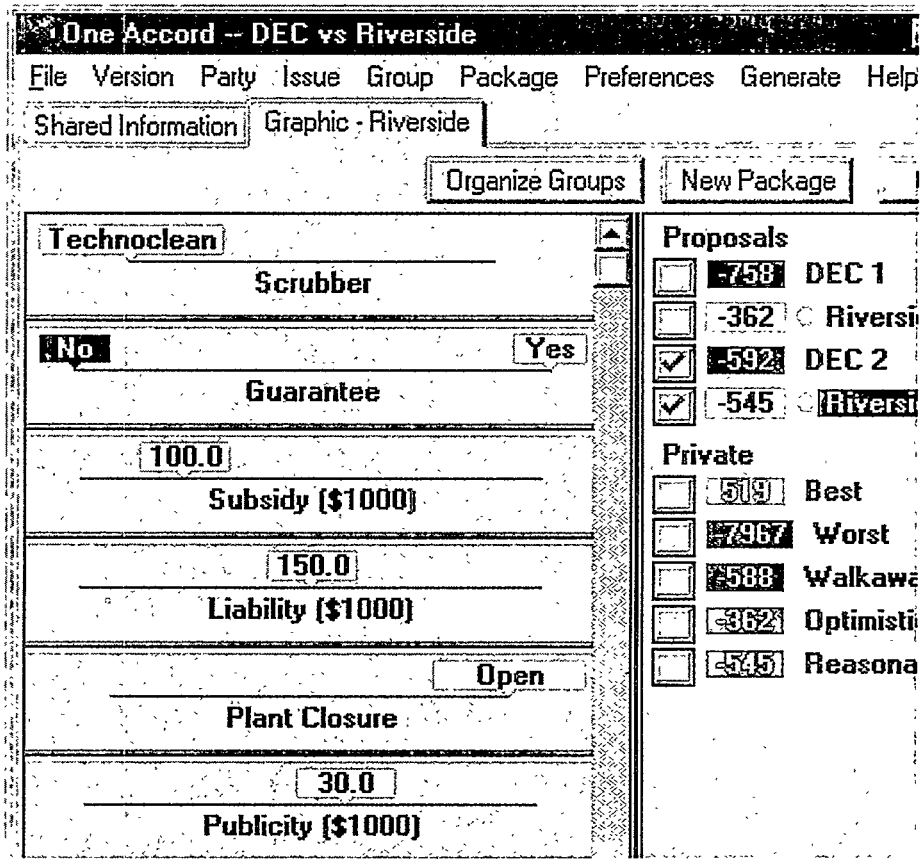

Figure 8: Impasse

"DEC 2" and "Riverside 2" are supposedly final offers made by each party. The negotiators for each party think that they can go no further. The issue values of both packages are displayed in the left pane. Riverside's proposal is displayed on top. As shown in the left pane, the two packages are different only on the guarantee issue. Riverside wants a guarantee but DEC is unwilling to give one.

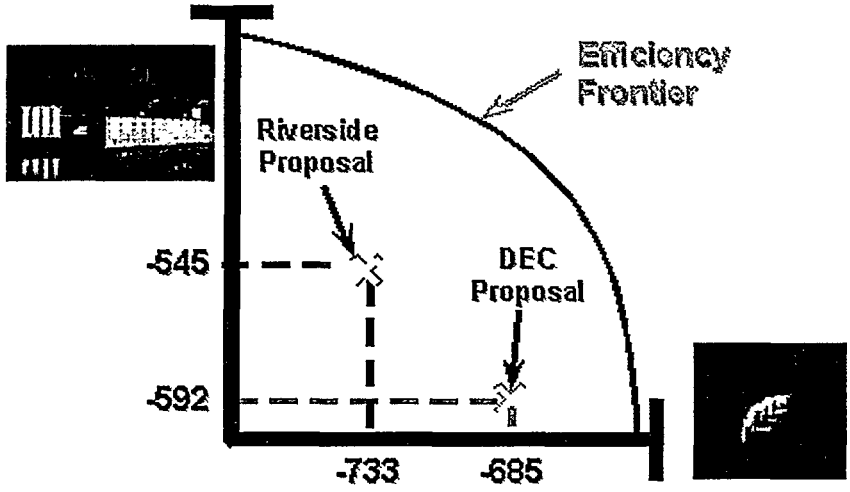

Figure 9: Impasse in Satisfaction Space

The same two packages that are displayed in Figure 8 are plotted here in satisfaction space. The ratings shown on the vertical (Y) axis are the same as those seen by Riverside in its private view in Figure 8. The composite view, however, is known only at the neutral One Accord Internet site and is not communicated to either party.

In this hypothetical, the parties tentatively have agreed on everything except the guarantee issue. Riverside contends that there is no way that it can agree to a Technoclean without a guarantee, particularly in light of Riverside's prior concessions in this negotiation. Similarly, DEC contends that that it cannot give the requested guarantee because DEC already has made other substantial concessions. It is not possible to split the difference on the guarantee issue because the only options are yes or no. Therefore, this impasse looks like it could lead to a win-lose or even a lose-lose situation. The difference is really not that great to either party, but either one giving in would suffer loss of face. Can One Accord be used to solve the impasse? The answer is shown in Figure 10.

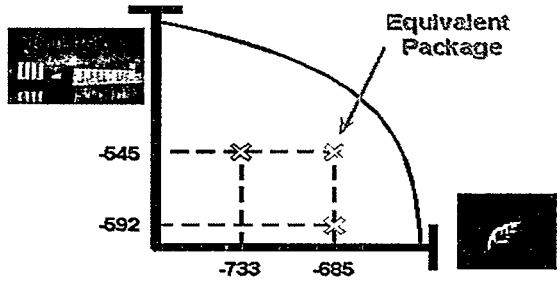

Figure 10: Equivalent in Satisfaction Space

The impasse positions of DEC and Riverside, as plotted here and in Figure 9, are close enough for One Accord to be able to generate an equivalent package, i.e., one that would provide each party with the same value as its current proposal.

By this time, Riverside's preferences are quite well represented and the equivalent package is easily accepted. After all, it would provide the same satisfaction as Riverside's last proposal. Unbeknownst to Riverside, DEC has received the identical package and for similar reasons also accepts it. Their win-win deal is illustrated in Figure 11.

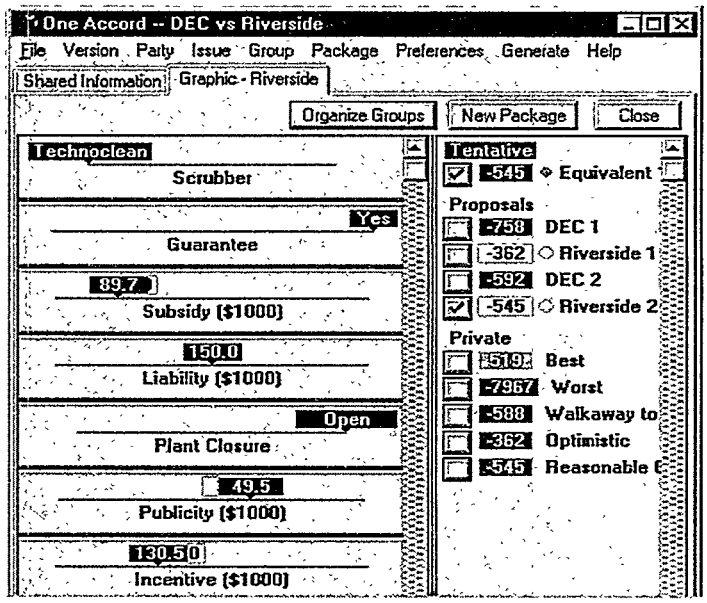

Figure 11: Equivalent Solves Impasse

From Riverside's point of view, the generated equivalent package and Riverside's last proposal each have a rating of negative -545. The equivalent is in the tentative group, indicating that both parties already have accepted it.

IX. Maximize Benefits

Seeking to find an even better resolution, the parties now request improvements from One Accord. Another package is generated, as illustrated in Figures 12 and 13.

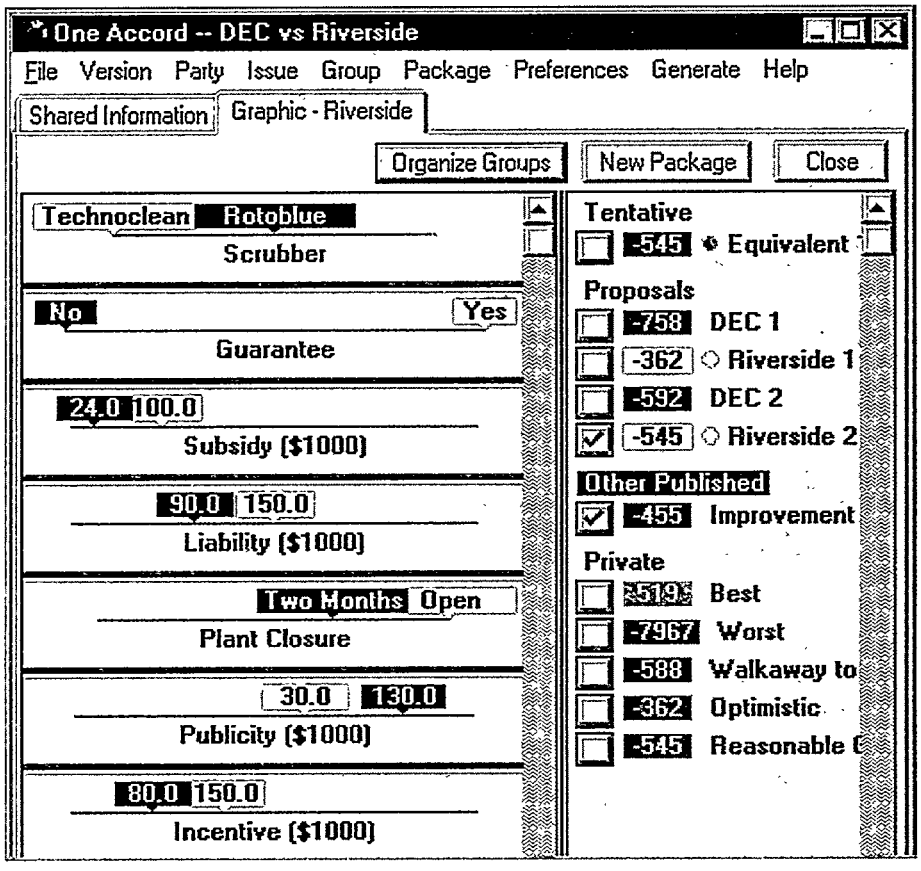

Figure 12: Improvement

One Accord has generated an improvement to the tentative solution. The improvement is being compared to Riverside's final proposal. According to the ratings, the improvement is better by almost ninety points. If both parties accept it, it will become the new tentative solution.

The improvement generated by One Accord is worth nearly $100,000 more to Riverside than the current tentative agreement. Riverside readily accepts it. Because One Accord attempts to divide benefits fairly to each party, DEC also sees significant improvements and accepts the improved package. In this hypothetical, the improved package generated by One Accord becomes the framework for a final, written settlement agreement.

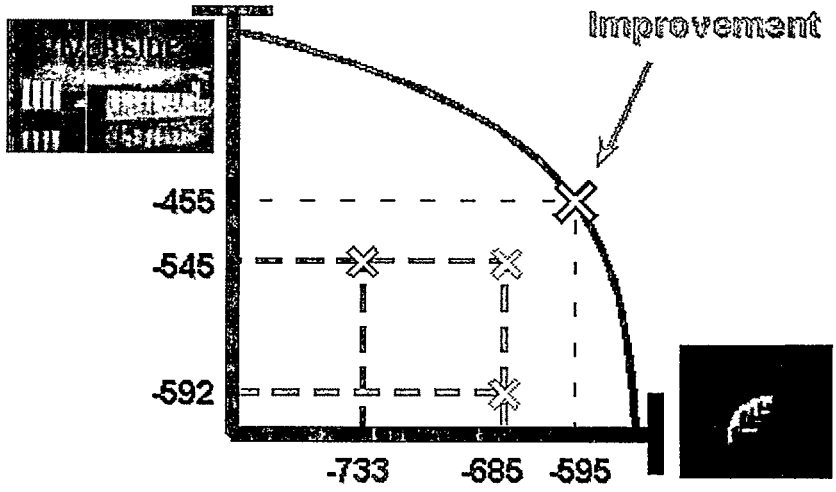

Figure 13: Improvement in Satisfaction Space

The generated improvement, plotted on the efficiency frontier, is better by almost ninety points for each party. In this hypothetical research case, for ease of comparison, the same scale was used to measure satisfaction for each party. In application of One Accord to real cases, each party chooses satisfaction scales independently. Resulting ratings remain confidential and are never compared by anybody

X. CONCLUSIONS

The authors have presented a new negotiating process made possible with the One Accord negotiation support system. Preliminary research shows significant potential for negotiating parties to gain from using such systems. In a Cornell study with a similarly complex case, the average gains were sixteen percent for each party.[43] In the authors' opinion, this process will reduce time, cost, and stress if parties pay attention to avoiding the pitfalls that often exhaust conventional negotiators.[44]

The facilitated negotiation described in this paper is intended both to (1) encourage mutual gains bargaining and (2) work toward the goal of Pareto efficiency in negotiation. The One Accord process, when used with a skilled neutral, can encourage both goals. As with any technology, it cannot mechanically be applied to complex situations. The effective use of this process involves many of the principles underlying mutual gains bargaining,

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[43] *See* Thiessen et al., *supra* note 26, at 109.

[44] *See* SHELL, *supra* note 38, at 165 (reporting from his own research that when most negotiators had finished "a hotly contested, complex deal, they were tired and wanted to stop" rather than participate in a postsettlement settlement exercise).

effective mediation, and facilitation. The software is no substitute for proper preparation and thoughtful participation in negotiation. However, the structure proposed and One Accord software work in synergy with, rather than supplanting, those basic negotiation principles. Multiparty and multi-issue negotiations are frequent and usually complex. These tools and processes can take parties to a place of effectively viewing their options and making the best possible decisions in negotiation.