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# Analytical Support for International Negotiators: Developing the Toolkit

by

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The need for a practical and integrated analytical toolkit for international negotiators and their staffs is addressed in this paper. Methodologists must confront several critical issues including the transformation of descriptive/explanatory approaches to normative and prescriptive techniques, synthesis of process and substantive models, the application of end user-focused strategies rather than technique-focused approaches, and the design of effective presentation and delivery mechanisms. Application of analytical tools in the pre-negotiation phase is highlighted, with functions and analytical requirements elaborated. Several families of analytical methods that can satisfy these requirements are reviewed. Finally, an agenda for future research is identified.

Keywords: Negotiation support systems, pre-negotiation, analytical methodologies

# 1. Information Requirements for International Negotiation

The negotiation process – especially in the international arena – is extremely dependent upon information. Negotiators require information about their own country's goals and resistance points. They need reciprocal information about their counterparts. They require information to develop tactical and strategic approaches to joint problem solving, that is, effective ways of persuading other interested parties to come to the table and reach mutually acceptable accords. Negotiators need to have adequate issue-specific knowledge to generate innovative, but realistic, options for solution, as well as the information to evaluate the costs and benefits inherent in seeking each of these possible accommodations. That means that they need to understand in detail the substantive issues which they are debating; in this age, that often means a sophisticated knowledge of science, technology, and economics.

Actors in the negotiation process require more than just descriptive information. The bargaining environment must be diagnosed, alternate proposals compared, national interests of competing parties contrasted, feasible strategies examined, long term costs and benefits projected, and likely outcomes estimated. This kind of analysis of basic descriptive data is necessary to answer the types of questions that negotiators typically confront in planning for a bargaining session.

Despite this heavy information dependency, international negotiators, especially from developing countries, usually confront their counterparts with little more than their wits, instructions from their home government, and minimal background information develop by their staffs. International negotiation is still viewed by practitioners as an art form, not a science. Most nations can little afford the in depth analyses of issues that are required to understand the implications of one negotiation proposal over another. Many delegations, especially from developing countries, arrive at complicated multilateral negotiation sessions having performed minimal assessments of their own interests and positions, let alone that of other key nations and coalitions. Moreover, negotiators lack tools and techniques for effective joint problem-solving that have been developed in the management sciences. International negotiation has clearly not entered the modern information era.

At the same time, the information "revolution" has arrived. Personal computers and powerful software packages make most problems of data storage, retrieval, and analysis trivial activities. Many sources of data are automated so that monitoring can be immediate and up-to-date. Facsimile and electronic mail communication facilities make the transmission of information between the site of negotiation and one's home government instantaneous. Most importantly, extensive research has been conducted and practical applications developed, primarily for industry, that enhance rational decision making and planning activities; the results of this work are now available to support other application areas, including negotiation situations.

If the power of information can be harnassed to support international negotiation, will it help and how? More importantly perhaps is the answer to the question, "What will it take to be used?"

## 2. Analytical Support for Negotiation

While there has certainly been extensive research on the use of analytical techniques to describe and explain the processes of international negotiation (Raiffa, 1982), there has been relatively little work accomplished to assist international negotiators in a practical way during the process. If researchers now turn their attention to this problem, there are several critical issues that must be addressed.

- *Descriptive/Explanatory versus Normative/Prescriptive Goals.* Researchers have focused primarily on developing methods that can describe and explain the negotiation process in historical cases, not normative or prescriptive tools that can assist in a practical way in the negotiation itself (Spector, 1991a). Existing approaches need to be examined to assess whether they can be transformed into meaningful and useable tools.

- *Process – versus Substance-Focused Tools.* Issue-specific research has resulted in models that can help negotiators analyze the substance of disputes being debated. One excellent example is the Regional Acidification Information System (RAINS) developed by the International Institute for Applied Systems Analysis (IIASA). This model is employed by the United Nations Economic Commission for Europe (ECE) to negotiate issues of NO2 and SO2 emissions and depositions in Europe. Such techniques provide negotiators with an in depth understanding of the issue, the capacity to examine it from all sides, and importantly, the ability to test various assumptions (Shaw, 1991). Essentially, these substance-focused tools assist negotiators in defining or framing the problem, as well as testing what-if scenarios that can help them generate alternate proposals and formulas for agreement. Decision-making research, on the other hand, has resulted in many models that can explain the processes of convergence and divergence in negotiation. These process techniques can help negotiators analyze proposals, construct strategies, test strategies, evaluate strategies of other actors, and assess possible outcomes. These process tools can take the proposals and formulas developed using the substantive models and evaluate them in the light of what is politically possible, given the realities of the negotiators' interests, values, and goals. Researchers need to evaluate the possibilities of integrating these two types of models to support both the practical issue and behavioral requirements of negotiators.

- *Technique – versus End User-Focus.* Methodologists know the benefits and capabilities their techniques can provide to negotiators. Negotiation practitioners, however, are usually traditional in their approach, have no quantitative training, and know little about research conducted on negotiation processes. The typical result of technique-focused activities is practitioner resistance to using the available techniques. An alternative approach to introducing analytical methods into the negotiation workplace is to take an end user perspective. Using this strategy, researchers seek to understand the negotiators' requirements for information and analysis during the course of negotiations. Given this understanding, researchers can apply the appropriate techniques that satisfy information needs. The following questions need to be answered to implement this end user approach: What are the informational and analytical needs of the negotiators? How do these needs change as the negotiation progresses through its stages? Under what conditions is this information and analysis needed most? When is there likely to be a need for urgent responsiveness?

- *Presentation and Delivery.* It is important to find the right approach to present and deliver analytical tools to the negotiator. Are the tools to be used by individuals or by groups? Are they needed by parties to the negotiation who will use them independently or as part of a joint problem solving exercise? Are they needed by policy makers and staff back home or at the negotiation site? How can the results be stated in non-jargonistic terms? What form or package would deliver the information and analysis most effectively to the end user?

## 3. The Pre-Negotiation Process

The application of analytic techniques to the pre-negotiation process is particularly appropriate. This is the phase of negotiation in which the need for information, planning, and tradeoff assessment is instrumental in determining whether conflicting parties will in fact decide to come to the negotiating table or settle their disputes by unilateral means. It is a suitable time for each party to conduct a diagnosis of the situation: generating alternate formulas, defining its own interests clearly, inferring the motives and interests of the other parties, identifying opportunities for tradeoffs and compromises between opposing perspectives, and developing expectations for the final outcome of the negotiations. Decision analysis methods are relevant to supporting these activities.

Saunders (1985) describes the pre-negotiation process as one of defining the problem both unilaterally and with the other parties to the conflict. It is a testing or experimental phase before commitments are made to use the negotiation table as the accepted venue to resolve the dispute. Zartman (1989) expands upon this description by specifying the functions served by the pre-negotiation process in transforming conflictual into mixed-motive perceptions. Performance of each of these functions serves a purpose in the transition from unilateral to multilateral perspectives on solution options. They include:

1. *Risks*. Pre-negotiation helps nations identify and assess the risks involved in future negotiation within a low risk environment.

2. *Costs and Benefits*. In the pre-negotiation phase, nations can estimate the costs and benefits of concessions and agreement, thereby sorting out their motives for negotiating.

3. *Requitement*. This is the period during which each side can persuade the other that concessions will be responded to in a positive manner.

4. *Domestic Support*. Pre-negotiation can serve to build and consolidate domestic support for a negotiated outcome.

5. *Problem Solving*. This phase offers the opportunity to define the problem and search for options – ways out of the conflict. The identification of negotiable issues begins and parameters are defined that help evaluate and eliminate alternatives.

6. *Coalition Building*. The pre-negotiation period presents the opportunity to evaluate the benefits of building minimum winning or blocking coalitions.

7. *Confidence Building*. This is the phase in which trust-building measures can be evaluated and implemented to develop bridges from conflict to cooperation.

Each of these pre-negotiation functions has its informational counterpart – information and analysis are required to conduct them effectively. As an experimental or testing period, pre-negotiation is particularly useful if it helps parties evaluate, estimate, and simulate "what would happen if" scenarios. The analytical requirements implied by each function are described in Table 1.

Table 1

Pre-Negotiation Functions and their Analytical Requirements

| PRE-NEGOTIATION FUNCTIONS | ANALYTICAL REQUIREMENTS |
|---|---|
| Risks | Examine range of national interests; evaluate extent of preference adjustment required; evaluate impacts of reaching a negotiated agreement |
| Costs and Benefits | Tradeoff costs and benefits of potential concessions |
| Requitement | Evaluate likely external responses to concessions |
| Domestic Support | Evaluate likely reactions of internal interest groups to alternate outcomes |
| Problem Solving | Generate alternative formulas; evaluate alternatives |
| Coalition Building | Tradeoff costs and benefits of alternate coalitions; evaluate extent of preference adjustment required to form coalitions |
| Confidence Building | Generate alternate trust-building measures; tradeoff costs and benefits of alternatives |

These informational and analytical needs must be satisfied in the pre-negotiation period. Many of these same needs reappear in other phases of the negotiation process. The challenge for researchers is to identify the analytical methods that are most appropriate for satisfying these requirements.

# 4. Families of Analytical Methods

There are several families of analytical methodologies that negotiation researchers have employed extensively and which may be useful in supporting negotiators in a practical sense. These include:

*Decision Analysis.* Decision analysis is a methodology typically used to support decision makers actively in assessing alternative courses of action. It is usually applied in a consultative, prescriptive mode to help decision makers weigh their options in relation to a basic set of evaluation criteria. In the negotiation context, Raiffa (1982), Ulvila and Snider (1980), Ulvila (1990), and Spector (1991b) have demonstrated how decision analytic methods can be used by negotiators and policy makers to assist in structuring the bargaining space and evaluating a range of alternative outcomes, taking into account own and other party interests and preferences.

*Multi-Objective Optimization.* This family of models asserts that negotiators pursue multiple objectives within the bargaining environment and seek to optimize their payoffs in the final outcome. Multi-objective optimization models have been applied to negotiation problems (Messner, 1985; Krus and Bronisz, 1991; Wierzbicki and Makowski, 1991), facilitating problem structuring and analyzing decision options. These models incorporate the concepts of feedback, non-linear relationships, uncertainty, and constraints on decision selection, factors that are essential in analyzing a negotiation context realistically.

*Statistical Analysis.* Statistical methods have been used extensively to understand and explain the processes of international negotiation (Druckman and Harris, 1990; Hopmann and King, 1976; Spector, 1983). The utility of these techniques for direct support to practitioners revolves around inferential issues, the extent to which general trends concerning negotiation processes can be used in giving advice in specific negotiation contexts. Druckman (1991) addresses some of these problems and identifies two strategies, situational diagnoses and time-series analysis, that may provide appropriate paths for applying statistical approaches to support negotiators.

*Cognitive Theory.* This area of research focuses on the thinking processes of negotiators – their beliefs. values, and perceptions – and how these impact upon likely strategy choices and the opportunities for convergence and divergence (Jönsson, 1991). One particular technique, cognitive mapping, appears particularly useful in representing causal and quasi-causal reasoning that can be applied by negotiators to understand shared and conflicting meanings and reframe the problem and solution path. Bonham (1991) presents several examples of how this technique has been applied to the 1905 Swedish- Norwegian negotiations over union dissolution, the 1919 negotiations over the future of the Saar Basin, the Mutual Balanced Force Reduction negotiations during the 1970s, and the 1970 internal crisis within Jordan.

*Game Theory.* The extensive research literature on game theory has been a cornerstone of the quantitative tradition in the field of bargaining and negotiation. As discussed in Brams (1990), game theory facilitates representation of negotiation interactions in which actors formulate their best course of action, taking into account the rational actions of the other actors. Cooperative and noncooperative games can be applied depending upon the nature of the possible agreement, whether, respectively, it offers all parties a distribution of some positive value or assumes that a binding agreement cannot be imposed and focuses instead on strategy choices. Game theory primarily has offered post-hoc explanations of negotiation situations; Munier (1991), however, suggests an interesting methodological modification to select among Nash equilibria points, thus enabling the generation of unambiguous recommendations based upon game theoretic applications.

*Information Management.* The hardware and software capabilities available to deliver decision support to negotiation practitioners is expanding rapidly. The problem for negotiation researchers is to identify what information is required by end users and what technology is appropriate to satisfy these needs. Andriole (1991) suggests that some approaches which appear to be very simple and straightforward, such as easy to use data bases, spreadsheets, and electronic mail, may be the right way to introduce practitioners to analytical and informational sources.

*Expert Systems.* Rule-based expert systems provide a structure that represent formally the reasoning logic of experienced negotiation practitioners. Given the network of rules, specific negotiation processes can be simulated to support the analysis of ongoing negotiation problems. Kersten and Michalowski (1989) and Kersten, et al. (1990) illustrate the application of this technique to negotiations with hostage-takers and labor-management negotiations, respectively. The major challenge in using expert systems, as is the case with many of the other techniques, is the ability to leap from general principles to specific applications.

# 5. Future Research Directions

Each of these families of techniques has a solid foundation of results that can be used to push forward an integrated plan of research which incorporates the best aspects of each in designing a toolkit for international negotiators. However, there needs to be a clear agenda as to how these research tracks can be merged with the objective of developing a practical set of tools. Four research activities must be accomplished to achieve this goal:

1. *Information Requirements Analysis.* Information engineering and logic suggest that any attempt to apply analytical methodologies to support international negotiators should commence with a needs assessment. Ideally, this evaluation would seek to identify both the information and analytical requirements of negotiation actors at all levels, at all stages of the process, and within all types of negotiations. This is a large, if not impossible, task, if a comprehensive analysis is desired. However, it would be useful to conduct such a requirements analysis in more manageable pieces incrementally, to understand the needs of negotiators at different actor levels, stages, and types in this structure. Researchers would have to collect data through direct interviewing, observation, analysis of case studies and memoirs of negotiators, and evaluation of the negotiation literature.

2. *Inventory and Experimental Assessment of Techniques.* A detailed inventory of existing methodologies, describing their capabilities and limits, would be very useful in assessing the opportunities to support international negotiators. Again, to make this activity manageable, only analytical techniques that have been applied to negotiation settings should be included in the inventory. The families of techniques described earlier can serve as the basic categories for this review. In addition, it would be interesting to conduct an experimental assessment of a few of the prominent method-

ologies from each of the families. Such an experiment would challenge each of the selected techniques to analyze and provide recommendations, as best it can, against a common set of historical negotiation cases. The experiment would help researchers assess the benefits and limitations of each technique while holding the application constant; it would uncover the ways in which each technique can support negotiators, to what degree, and to what level of detail. The results of these activities would yield an understanding of the relative strengths and weaknesses of the available methods, and begin to provide a roadmap of how the techniques might be integrated into a negotiator's toolkit.

3. *Needs-Capabilities Matching.* This activity matches the requirements analysis with the assessment of technique capability. The resulting matrix would provide researchers with an understanding of how techniques can be applied to satisfy negotiator needs.

4. *Capacity Building and Dialogues with Practitioners.* The recognition and acceptance of analytical methodologies by negotiation practitioners is not a foregone conclusion, despite an end user orientation and requirements analyses that may be performed. There needs to be a general building of capacity in understanding and applying analytical tools among negotiators and their staffs. This can only be accomplished in a spirit of dialogue between researchers and practitioners. Training in the form of policy exercises and games that introduce such techniques as supportive tools within the process of negotiation would provide opportunities for applied learning. Small working groups comprised of both researchers and negotiators that focus on real negotiation problems framed by the practitioner offer another forum for negotiators to try out alternative methodologies in search of bargaining outcomes.

## 6. Conclusion

International negotiators and their staffs are sorely in need of information and analytical support that the research community can provide. An orderly and integrated approach to designing useful tools for practitioners is likely to offer the most advantageous results. Research centers, such as the Project on the Processes of International Negotiation (PIN) at the International Institute for

Applied Systems Analysis, can stimulate such activities by drawing together multidisciplinary groups of researchers, along with negotiators, to address the problem. While it may appear to be a long-term goal, the design of a practical toolkit for practitioners can be a reality in the short term if a focused and incremental approach, such as described in this paper, is implemented.

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