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NEGOTIATIONS

1) PROLOGUE

Negotiation is one kind of problem-solving process, one in which people attempt to reach a joint decision on matters of common concern in situations where they are in disagreement, dispute and conflict.

There is no shortage of disputes and conflicts. There are disputes between husband and wife, between siblings, between friends, between individual and firm, between firm and firm, between developer and environmentalist, between regions within a nation, between a region or city or state and the nation, between nation and nation etc.

Negotiation or bargaining is only one established way for settling disagreements. Other mechanisms are traditions, regulations, courts, markets, etc.

The study of negotiations has attracted the attention of a diverse variety of social scientists, and therefore the bargaining problem has become a major focus of analysis in a number of diverse fields.

First of all, game theorists and some decision theorists have sought to get at the essentials of decision-making and the associated strategies in situations where two or more parties are interdependent, and where, therefore the outcome of their conflict and competition must be a product of their joint requirements and the interaction of their separate choices.

Secondly, bargaining theorists, mainly economists, have sought to develop theory that would enable them to predict the outcome of negotiations essentially between firms, between a seller, between a union and the management.

Thirdly, political scientists, studying international conflict and negotiation among organized political parties, among interest groups, within bureaucracies, and among groups of nations.

Fourthly, social psychologists, concerned with interpersonal behaviour and the nature of interaction under conditions of conflict, have been especially active in devising and carrying out experiments and laboratory simulations of real-life conditions in order to investigate and to reach generalizations about particular aspects of negotiations.

Lastly, sociologists and mainly social anthropologists, by following a cross-cultural method, have tried to show that patterns of interactive behaviour in negotiations are essentially similar despite marked differences in interests, ideas, values, rules and assumptions among negotiators in different societies.

Here we are going to take a look at the first two fields, that of game and economic theorizing with some real-world applications attached.

2) DEFINITIONS

There is no clear distinction between negotiation and bargaining. Some writers take them as synonyms. Others have made a slight distinction and even dictionary definitions are not sufficiently discriminating.

Schelling, like some other writers (Cross, Shackle, Coddington etc.) saw no particular analytical importance between the two concepts.

Broadly speaking, negotiation can be defined as a process by which parties interact in developing an agreement. Throughout the process of interaction, the parties give each other information, directly and indirectly. Each engages in learning about the other, about himself, and about the possibilities of their common situation. Negotiation is a process of discovery. Discovery leads to some degree of reorganization and adjustment of understanding, expectations, and behaviour, leading eventually to more specific discussion about possible terms of a final, agreed outcome.

Bargaining can be viewed as a subset, in mathematical terms, of negotiation. So, the bargaining process occurs within the frame of negotiation, and consists of the presentation and exchange of more or less specific proposals for the terms of agreement on particular issues, usually that of buying and selling.

The presence of the parties at the bargaining table implies interdependence through a common interest. It also implies the existence of conflict between the parties. And as Ikle said; "Without common interest there is nothing to negotiate for; without conflict, nothing to negotiate about."

But there are different types of controversies.

Disagreements are commonly resolved within a relationship by dyadic and private problem-solving between the parties themselves. The temporary fighting between a husband and wife - (in love) - can be viewed as a disagreement.

Disputes take place when the two parties are unable and/or unwilling to resolve their disagreement. At least one party is unsatisfied and the continued disagreement cannot be tolerated. This party therefore attempts to take the disagreement out of the private, into the public domain with the intent that something must be done.

Often disputes are not settled amicably and all sides suffer: children fight each other, husband and wife separate, labour and management settle grievances through strikes, and nations resolve their differences through wars.

Other disputes are reconciled through the efforts of intervenors (mediators and arbitrators) within the public domain. It is true that disputes could be more efficiently reconciled if the negotiator and the "third party", (the intervenor) were more skillful.

The public domain embodies four types of intervenors. The facilitator who arranges for the relevant parties to come to the negotiating table.

The mediator is an impartial outsider who tries to aid the negotiators in their quest to find a compromise agreement.

The arbitrator (or arbiter) after hearing the arguments and proposals of all sides and after finding out "the facts", may also try to lead the negotiators to devise their own solutions or may suggest reasonable solutions.

A rules manipulator is given the authority to alter or constrain the process of negotiation -- or, put another way, to modify the rules of the game.

Conflicts imply a bodily, mental or moral struggle or better warfare caused by opposing views, beliefs etc. They are worse than disputes, and they usually have detrimental and heavy physical consequences. In their case the intervention of the third party(ies) is compulsory.

Finally, outcome is the culmination of the negotiation process. In other words, outcome is a positive joint agreement by the two parties or the terms relating to at least a number of the issues *in* dispute.

Strategy means a complete description of how a player intends to play a game from beginning to end.

As in every scientific field, in negotiations also exist two views. The positive (is) and the normative (ought) bargaining analysis. The former, the describers examine how real people (wildcatters, bankers, generals, labour leaders, and so on) actually analyze the given choices, how they actually behave, how they actually think, how they rationalize their choices to themselves.

The latter, the prescribers, are interested in how people should or ought to behave, rather than how they do behave. Their aim is to guide the perplexed decision maker in choosing an action that is consonant with the decision maker's true beliefs and values.

The "is" and "ought" of decision making gets more complicated when there are two or more interacting decision makers, which is certainly the case in bargaining and negotiating.

3) GAME-THEORETIC MODELS OF NEGOTIATIONS

Most game theorists regard the bargaining problem as a special case of interdependent decision making. Many of them talk about a conflict situation (be it economic, political or military) as a "game", the disputants as "players of the game", and strategic analysis as "game theory".

The theory of games can be regarded as composed of two parts: a descriptive theory and a solution theory.

The descriptive part concerns the representation of the players and their preferences, the rules and strategic possibilities, and the outcomes and payoffs.

The solution part concerns the end results of rational, motivated activity by the players. Since the objectives of a solution theory are less definite than those of a descriptive theory, it is not surprising to find several distinct solution concepts built on the same descriptive foundation.

Thus, the resultant search for determinate solutions within the framework of game theory has not led to a general model governing rational choice in interdependent decision making.

Bargaining situations are of two basic types, when it is viewed from the strategy chosen. The first when each bargainer can threaten the outcome but nothing worse, the parties may be said to be engaged in "fixed-threat" bargaining. The second and more general case of "variable-threat" bargaining implies that in the absence of some advantageous agreement, the parties have options as to the actions that they may unilaterally adopt; so that threats and counter threats as to the damages that they may inflict on one another are inherently variable.

Similarly from the viewpoint of the players involved, the purest and most well-known theoretic solutions are those associated with the Von Neumann-Morgestern analysis of two person, zero-sum interactions. Two-person, zero-sum games are particularly attractive in analytical terms since they are defined in such a way as to facilitate the efforts of the rational individual to predict the (probable) choices of the other player. But if the interaction is not actually zero-sum in nature, the use of zero-sum rules to guide decision making can lead to bizarre results, as Rapoport has painfully demonstrated in the case of the prisoner's dilemma and as Ellsberg has most persuasively challenged on a number of grounds.

The solution concept for nonzero sum games has received a good deal of attention especially since Nash proved that all non-zero sum games exhibit at least one equilibrium point.

Many specific schemes that have been devised to generate prediction concerning the distribution of payoffs in the so called cooperative games (or bargaining games) all take the form of detailed decision rules (or sets of conditions) that produce determinate outcomes. The most well known of these schemes are associated with scholars as Nash, Shapley, Raiffa, Braithwaite and Harsanyi.

Furthermore, these schemes are primarily concerned with problems of cooperative antagonists with the hypothesis that such disputants recognize that they have differences of interests; they would like to find a compromise, but they fully expect that all parties will be principally worried about their own interests.

And negotiations rarely are strictly competitive, but the players may behave as if they were competitive; the players might consider themselves as strictly opposed disputants rather than jointly cooperative problem solvers.

Consequently, it is hardly surprising that none of these solutions yields good results when treated as "descriptive" theory rather than "prescriptive" theory. It is true that each player could proceed by assuming that the other will behave on the basis of some one of these decision rules and select his own optimal strategy accordingly.

Although much of the game-theoretical discussion focuses entirely on two-person games, there is also a large game-theoretic literature dealing with N-person interactions (both zero-sum and nonzero-sum), and some of this literature raises analyses of N-person games concentrate on two distinguishable issues:

- 1) the formation of coalitions in games involving three or more players
- 2) the payoffs to the individual players in an N-person interaction.

Therefore, in games involving three or more players where some subset of the players can increase their payoffs by banding together, the formation of coalitions tends to become a central feature of the interaction.

The characteristic function of an N-person game is a payoff vector specifying the payoffs to all possible coalitions in the game.

By contrast, some scholars have attempted to determine the expected value or worth of the individual player in an N-person interaction instead of elaborating on the problem of coalition formation.

The most well-known solution concepts of this type are the Shapley Value and Harsanyi's generalization of the Nash solution to cover N-person games.

Although a substantial part of N-person game theory is clearly relevant to the bargaining problem, the formal results are severely limited. Many of the conclusions seem more applicable to prescriptive analysis than to the production of descriptive theory.

(A) Two Person ($N=2$) Game

Two-party bargaining can be divided into two types: (1) distributive (two parties, one issue) and (2) integrative (two parties, many issues).

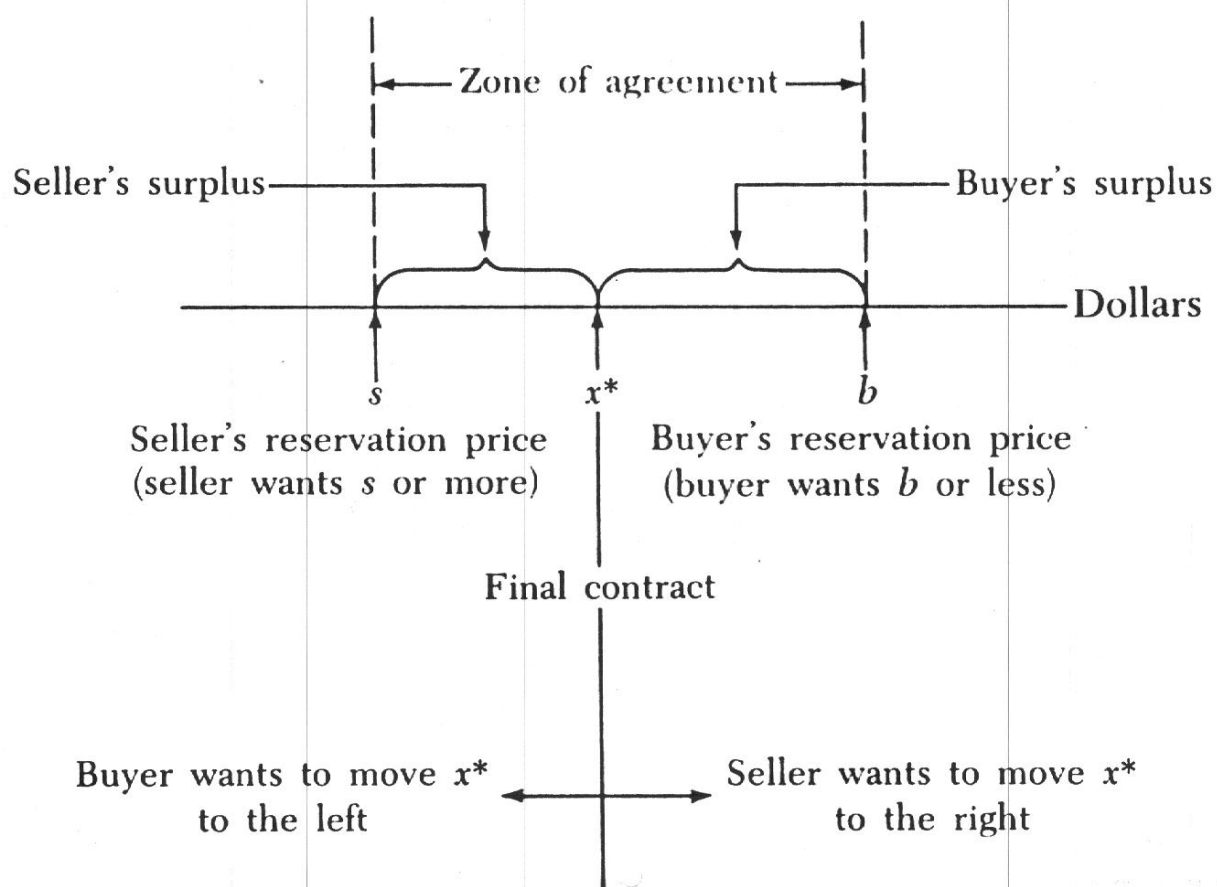
(A1) Two Parties, One Issue

In the distributive case one single issue, such as money, is under contention and the parties have almost strictly opposing interests on that issue: the more you get, the less the other party gets.

Analytically speaking, let's consider a case with two bargainers who must jointly decide a determinate value of a continuous variable - namely money - that they can mutually adjust.

We assume that the setting, the language, the costumes etc. are irrelevant that no neutral third-party interveners exist and that a single-threat (that only at breaking off negotiations and revert to the status quo) bargaining model.

Fig. 1 The geometry of distributive bargaining



The seller has a reservation price s , that represents the very minimum he will settle for.

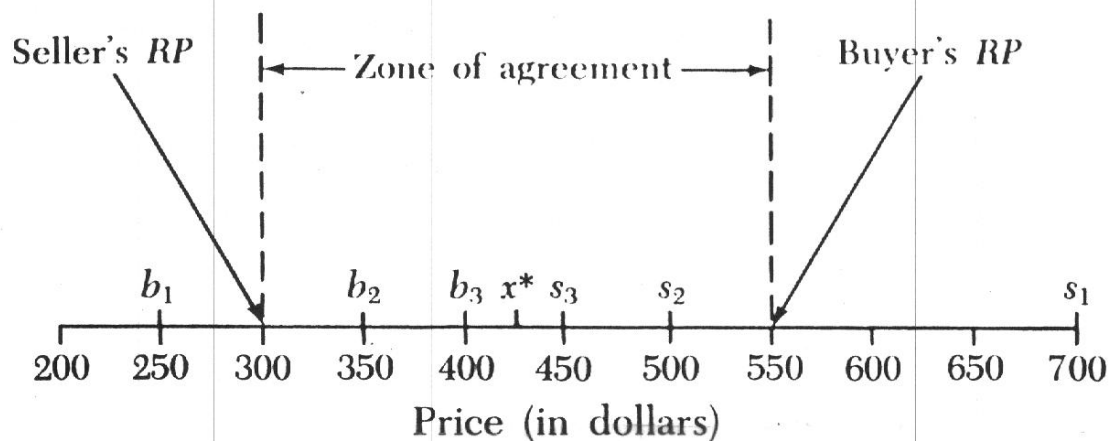
Similarly, the buyer has some reservation price b , that represents the very maximum he will settle for.

If $b < s$ that is, if the maximum price the buyer will settle for is lower than the minimum price the seller will settle for, there is no possible zone of agreement.

However, if $s \leq b$, then the zone of agreement (for the final contract x^*) is the interval from s to b . The sum of the surplus value is $b-s$, which is independent of the intervening x^* value. In this sense, the game appears to be quasi constant - sum (in surplus values).

A typical pattern of concessions is depicted in Figure 2, where s_1 , b_1 , s_2 , b_2 , and so on represent the prices successively proposed by the seller and buyer. This is called "the negotiation dance". The seller might open with a value of $s_1 = \$700$; the buyer retorts with $b_1 = 250$; then in succession cause $s_2 = 500$ (breaking the buyer's RP), $b_2 = 300$ (breaking the seller's RP), $s_3 = 450$, $b_3 = 400$ and a final contract price of $x^* = 425$.

Fig. 2 The Negotiation Dance



The Boulware strategy of making a reasonable opening and remaining firm works sometimes, but more often than not it antagonizes the other party, and many of the no- agreements resulted from this strategy.

In distributive bargaining, successive offers by the seller are usually monotonely decreasing, whereas those by the buyer are monotonely increasing.

Indeed, one of the principles of good-faith bargaining is that once a concession is made, it is not reversed.

We can go deeper and deeper by investigating the areas of

- each investigating the area offer's RP
- one party knows the adversary's RP
- each party has probabilistic information about the other's RP
- simultaneous Revelation Resolution etc.

It is true that during negotiations, real penalties may be incurred by one side or the other with the passage of time; but many unskillful negotiators place a dysfunctional premium on speed. Their concerns are not only anxiety-along-the-way or fear that the other side will opt out or concern that a totally unexpected event will intervene or even politeness, but rather a psychological uneasiness about wasting time.

Business firms often engage in distributive bargaining problems where an entire firm is the prize. An acquiring firm (the buyer) may wish to incorporate another firm (the seller) for a given price.

In this limited domain, where there is a single continuous factor and two monolithic parties, one of which wants more and the other less of the factor to be jointly determined, and where each party is assumed to have only one threat potential: the termination of formal bargaining, how can third-party intervention help?

Following are a number of ways.

By bringing parties together. A mediator can identify potential bargaining pairs, match up a suitable buyer and seller, match up firms for a merger, or initiate discussion. This is essentially a brokerage function.

By establishing a constructive ambience for negotiation. This could include maintaining rules of civilized debate, acting as a neutral discussion leader, helping to set the agenda, suggesting processes for negotiations, smoothing out interpersonal conflicts, giving reticent people a chance to speak, and preparing neutral minutes.

By collecting and judiciously communicating selected confidential material. On the basis of such information, a mediator can determine whether there is a potential zone of agreement.

By helping the parties to clarify their values and to derive responsible reservation prices. This is done by analyzing with each disputant the implications of a no-contract outcome.

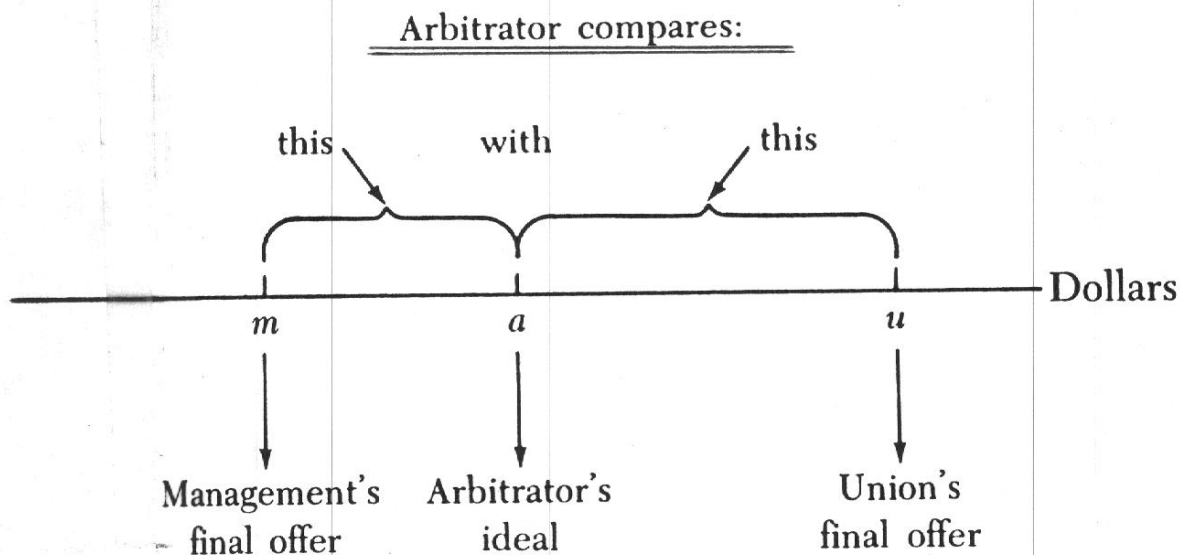
By deflating unreasonable claims and loosening commitments. Mediators can then minimize excessive posturing and aid in breaking down barriers.

By seeking joint gains. Mediators can devise new compromises and encourage bargainers to be more creative in their search for a solution. They can help negotiators elaborate a single factor problem into an integrative negotiating problem with several negotiable factors, thereby enabling the negotiators to exploit their differences in judgements and values.

By keeping negotiations going. A mediator can provide bargainers with a face saving means of holding the channels of communication open while they wait for a better external environment.

By articulating the rationale for agreement. A mediator can publicize the results of the negotiation in such a way as to promote implementation and acceptance.

Fig. 3 Idealized version of arbitrator's selection procedure in final offer arbitration. (Arbitrator selects the final offer m or u closest to his ideal a)



(A2) Two Parties, Many Issues

We have already seen that although a buyer and a seller may share no zone of agreement, they still might be able to negotiate a deal if they enrich the menu of possible contracts by introducing contingency payments at different time periods.

Such flexibility can enable both parties to exploit their different perceptions of the future, their different attitudes toward risk, and the different ways they feel about money now versus money in the future.

They are, in essence converting a single-factor problem into a multiple-factor problem. Such bargaining - in which there are two parties and several issues to be negotiated - is called integrative bargaining.

The parties are not strict competitors. It is no longer true that if one party gets more, the other necessarily has to get less: they both can get more. They can cooperate in order to enlarge the pie that they eventually will have to divide.

Some good examples of integrative bargaining are: The Panama Canal Negotiation (1900 and mid-1970's) and The US - Philippine Military Base Negotiations (1978).

Just as in the Panama case the analysts, 1) specified ranges for the issues 2) assessed an additive value scoring system for both sides, using U.S. perceptions of the other sides's desires 3) derived the efficient frontier and 4) generated different contractual packages that fell along this frontier.

Lately, in the USA-Canada Free Trade Deal (1987), in a striking example, once again U.S. negotiators and analysts did not appear to formalize reservation values for the entire package or for separate issues.

The intervention of a mediator turns the initial dyad of a dispute into a triadic interaction of some kind. The disputing parties retain their ability to decide whether or not to agree to and accept proposals for an outcome, irrespective of the source of the proposals. Yet clearly the mediator exercises influence in some degree. A mediator may be impartial, that is not directly related to either disputing party and his own interests are not directly touched by the dispute or by possible outcome.

In contrast, a mediator may be quite clearly interested party where his own interests make him concerned with the resolution of particular issues in dispute and with the disputants themselves (as in the following example of Camp-David negotiations).

Broadly speaking, a mediator, whatever his status and strategy, facilitates and to some degree influences, even controls, the exchange of information, the concomitant learning, and the consequent readjustment of perception, preferences and choices.

Even a quite passive mediator can encourage more positive communication and interactions between the parties, stimulating the continuation or the renewal of the exchange of information.

However, a mediator is not always a free agent who is able to choose his own strategy, he can be more or less forced into some line of action by the disputing parties. A more active participation by him produces a role something like that of a chairman.

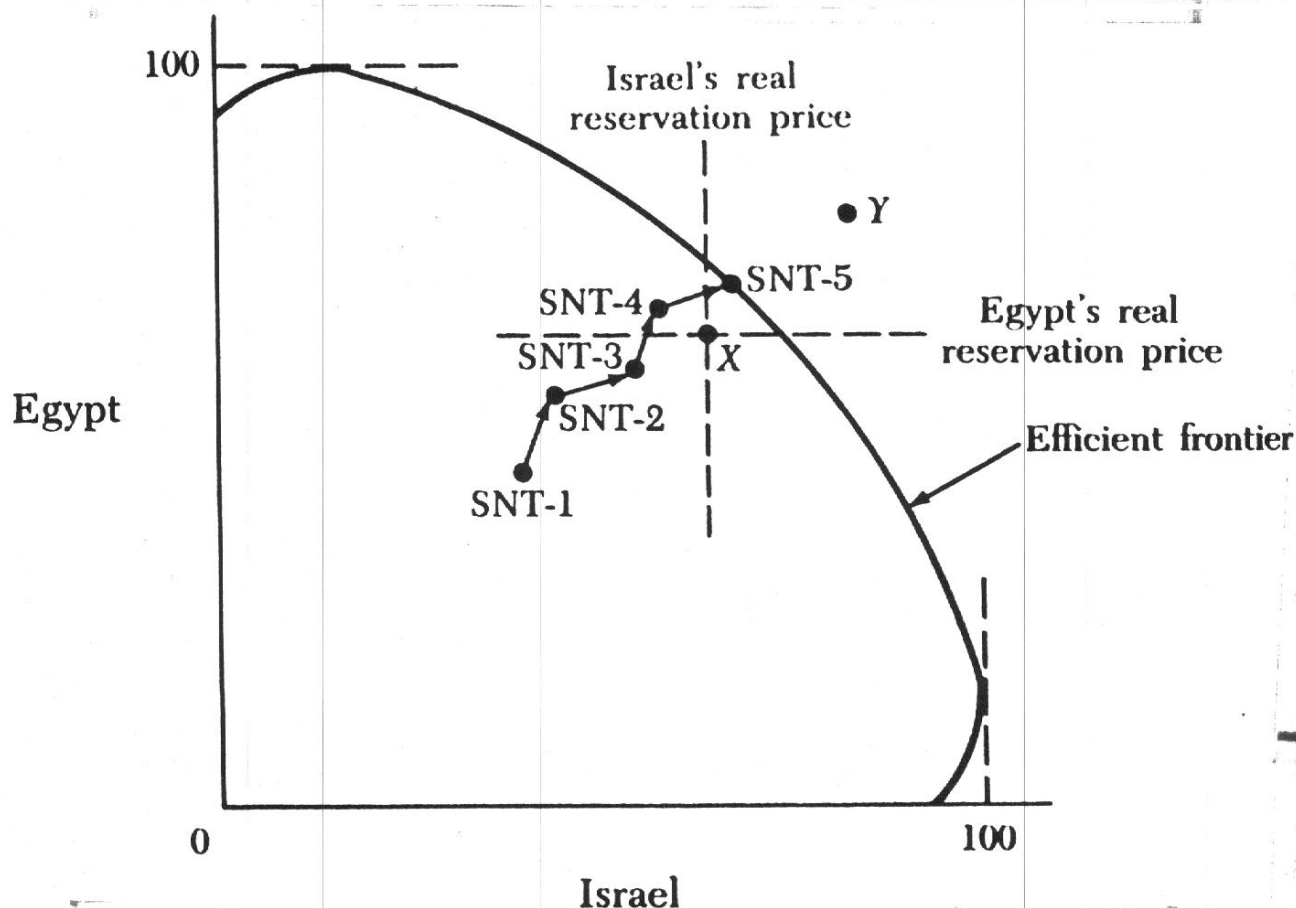
Furthermore, he goes beyond the role of keeping order and facilitating procedure - perhaps ignoring that kind of action - when he acts as enunciator of rules and norms relevant to issues in negotiation. His intention is to remind the parties of what they have temporarily forgotten or neglected.

In the role of prompter, he makes more positive contribution, although his suggestions remain tentative and limited. Finally, in the role of leader, a mediator more or less, directly injects his own opinions and recommendations. He offers evaluations of the information from and the preferences and demands of either party. But, let's take a look on a real world situation - The Camp David Negotiations (1977). These negotiations differ from the previous mentioned ones, because here we have a third-party intervenor (that of USA) with mediating clout between Israel and Egypt. In this negotiating process a different technique was employed, the "single negotiating text" (SNT) a device suggested by Roger Fisher. The use of some sort of SNT is often employed in international negotiations, especially with multiparty negotiation.

The US team devised and proposed an entire package for the consideration of the two protagonists. They made it clear that the US was not trying to push this first proposal, but that it was meant to serve as an initial, single negotiating text - a text to be criticized by both sides and then modified and remodified in an iterative manner. These modifications would be made by the US team, based on the criticisms of the two sides.

The SNT was to be used as a means of concentrating the attention of both sides on the same composite text.

Fig. 4 A hypothetical march of joint evaluations of successive SNT's



Moving from the original offer (SNT-1), which both parties - negotiators drop, to the SNT-2 etc. If SNT-5 is modified to the advantage of one side, it is only at the expense of the other side. At SNT-5 both negotiators are on the efficient frontier and no achievable joint evaluations are northeast of it. Point X represents a composite reservation value: Egypt would rather have no agreement than any deal that yields an evaluation south of X; Israel would rather have no agreement than any deal that yields an evaluation west of X; both sides would prefer to have any point northeast of X rather than the no-agreement state. But each, acting strategically, does not announce that SNT-5 is better than no agreement. And of course, if the composite reservation value were at Y rather than X, then they would be acting sincerely, in their rejections of SNT-5.

It is true that leaders who do not act strategically may not be behaving in the best interests of their people, countries, companies, etc. But strategic misrepresentations can lead to inefficiencies in outcomes and to ensuing mistrust. And it is a challenge of how can be devised negotiating processes that will encourage more honest revelations and less strategic behaviour.

(B) Many Parties, Many Issues
(Coalition Analysis)

Game theorists, starting with the seminal contribution of Morgenstern and Von Neumann (1944), have investigated the cooperative n-person games. The cornerstone of their theory was the characteristic function which represents, in a single numerical index, the potential worth of each coalition of players. There are several ways to define this characteristic set, but it is traditionally denoted by $V(S)$, and have some specific properties, like superadditive, essential, constant-sum and symmetric.

Alpha theory and beta theory are essential features of coalition analysis. In alpha theory, a payoff vector lies in $V(S)$ if and only if the coalition S has a strategy that assures all its members that amount or more (in expected value), regardless of the behaviour of the player outside S . Similarly, in beta theory, a payoff vector lies in $V(S)$ if and only if the player outside S have no strategy that makes it impossible for all members of S to get that amount or more.

Perhaps the most immediate way to grasp the n-person problem - the inherent indeterminacy of the multiperson games - is to observe that it may be impossible to satisfy all coalitions at the same time. This solution concept is called the core.

A game that has a core has less potential for social conflict than one without a core, since every cooperative or collusive effective demand can be granted.

A coreless game, must leave at least one coalition unsatisfied. In a coreless game some constraints on coalition activity must be operative in the society or else they will be engendered during the play of the game. If a solution is not in the Core, then there is a probability of an existing group which can block the solution or proposal, according to the Von Neumann Morgenstern theory of stable sets. But this party has to threaten credibly and be able to dominate other proposals.

The Shapley arbitrated solution averages the contributions added by each player. Thus, every player gets a fair share (or arbitrated value).

By accepting that players can make offers that "cannot readily be refused", Raiffa suggested a face to face negotiation between parties while the others are present and the players get involved in some two-way coalition at some time during the negotiation.

Any two-party coalition can bargain with the remaining party, and divide that synergy in half; take the half received by the existing coalition of two parties and divide that in half. Then average the results over the three different starting two-party coalition and so on.

But many real-world negotiations are more complex than these simplistic theoretical simplifications. In reality there exist uncertainties and asymmetries of information, the parties are not clear about what their knowledge about the interests of others is likewise vague.

The multiparty, multi-issue negotiation problem can be illustrated at best in the Law of the sea negotiations. The increasing frequency of ocean use for commercial and military navigation, fishing, energy production, and scientific research led repeatedly to frictions and conflicts between nations and/or coalitions of states, and consequently to the largest, the longest and one of the most important international negotiations.

By 1978 these negotiations among 160 nations had reached agreement on about 90 percent of the contentious maritime issues under debate. According to Sebenius (1980), from the energy production viewpoint, four different major coalitions could be viewed as existing, along with negotiations from the various disputants. The first was the group of 77 developed countries with the technological advantages. The second was formed from the developing countries, who were not producers of the relevant minerals. The third with mainly political interests was the Eastern Block countries, who were not ready themselves to exploit the deep seabed treasures and who wished to gain the favour of some developing countries. And lastly, the mixed coalitions of the land-based producers of the relevant minerals, both developed (like Canada) and developing (like Zambia).

During the course of the negotiations many polemical statements were heard and a lot of hard financial tradeoffs took place in order to reaching a worthwhile agreement. The eventual outcome was a remarkable achievement, a real success story.

4) A SELECTION OF ECONOMIC MODELS OF BARGAINING

Although game theory is undoubtedly the best known approach to the analysis of interdependent decision making. There are several models in the field of economics which are highly relevant to the analysis of bargaining as a method of achieving negotiated settlements under conditions of strategic interaction.

The economic models of bargaining are, for the most part, relatively specific in substantive terms, in contrast to the theory of games which aims at the development of a remarkably general theory of interdependent decision making.

They are also fundamentally convergence models. This means that they always start from the premise that the initial demands of the parties are incompatible, perhaps even falling outside the contract zone. The key element in each of these models is the development of a specific concession mechanism that permits the positions of the parties to converge in the course of a series of offers and counter offers.

The oldest and perhaps best known of the economic models of negotiation are those associated with Zeuthen's pioneering work on economic warfare under conditions of bilateral monopoly. Zeuthen argues that each bargainer will assess the gains and losses associated with his bargaining strategies at any given point in a negotiation on an expected utility basis. This model is capable of producing determinate result(s) or solution(s) at the point where the product of the utilities of the two sides reaches its maximum value (like in Nash solution).

Another group of economic models of bargaining are characterized by the fact that they ultimately fail to produce determinate results for the bargaining process even though they place great emphasis on the calculations of the bargainers and concern themselves with the problem of developing a concession mechanism and are formulated by Pen.

Despite Pen's failure (to produce a determinate model of negotiations), it is worth emphasizing that he succeeds in conceptualizing some major features of bargaining, more clearly than the game theorists and the formulators of the other economic models of bargaining. His analysis leaves room for a wide variety of manipulative activities involving such devices as threats, promises, commitments and so forth. More specifically, he begins with preference or satisfaction functions for each side. Every potential settlement thus has a certain value. These settlements have a certain cost, however, if the opponent refuses to agree to that settlement. In the negotiations process, each party constantly assesses the value of a settlement relative to the cost of the settlement in terms of the probability that the opponent will refuse to settle at that point. This theory suggests that the parties will use strategies designed to reduce the perceived value of a settlement to the opponent, increase the perceived costs associated with nonagreement and maximize the perceived risk that nonagreement will occur if the opponent insists on a particular settlement.

Carl Stevens has formulated an "avoidance-avoidance" model of the negotiation process. Unlike Pen's model and conventional economic model,

where the parties are maximizing utilities, in Steven's model, the parties are avoiding alternatives. In this model, each party has a range of alternatives between two unattractive extremes.

Each party must choose an alternative between these unattractive extremes and, for a bargain to result, the positions must be the same. Negotiation becomes the process of exchanging information so that these positions can be coordinated. The information exchange includes attempts to modify the opponent's avoidance curve by influencing his perceptions of his own goals and his opponent's goals, and the relative unattractiveness of the two.

Rather than seeing negotiations as being faced with two unattractive alternatives, Marby sees each negotiator trading off penalties, or pain for rewards or pleasure. Each bargainer thus sees each possible settlement point in terms of net gain, and tactics used in the negotiation process are designed to influence the opponent's view of the net gain of any settlement. In the end, both parties see a positive net gain with no greater joint advantage in any other settlement.

Another group of economic models emphasize the role of time as a factor in bargaining and conceptualize the process of making concessions in terms of the adjustment of expectations through learning. The best representatives or exponents of this group is Cross, Coddington and Nicholson.

In the realm of labour management negotiations, Mckersie and Walton use the concept of subjectively expected utilities to explain the negotiation process. The relative attractiveness of any settlement is viewed by each side in terms of the probability of achieving that settlement. Each side also has a target point, which defines complete success in bargaining, and a resistance point, which defines minimum success. The bargaining process then becomes the process of manipulating the opponent's utilities and his assessment of the probability of achieving his goals so as to secure a settlement as close as possible to the target point.

It is easy to state actual cases of bargaining in the economic sphere, especially in the industrial and service sector of the economy. Negotiations of collective agreements covering wages, hours, other conditions of employment, setting prices, mergers etc. happen literally every single day.

Finally, unlike the models of game theory, the economic models of bargaining are generally regarded as descriptive rather than prescriptive (or normative) models.

Hence, it is difficult to interpret the results of the economic models as having any significance as prescriptive guidelines even though it is true, as Cross has demonstrated, that these models may lead to the conclusion that there is a substantial role for arbitration in many bargaining situations.

Broadly defined, arbitration is the submission of a dispute to an impartial person or persons for determination. Arbitration may be voluntary or compulsory, and the parties either agree or are required to

accept the decision of the arbitrator as final and binding.

King Solomon was an arbitrator and its early history arbitration was used to settle disputes between businessmen (commercial arbitration) or between countries (international arbitration). Labour arbitration, the arbitration of union-management disputes, first occurred in North America in 1865, and can be differentiated into two basic types: that dealing with "rights" disputes and that dealing with "interests" disputes. The latter, is that of contract negotiation disputes and is used when the parties cannot agree to the terms of a collective agreement. And the former, the so called "grievance" arbitration is today the most widely used form of labour arbitration.

5) EPILOGUE

Most negotiations are not strictly competitive, there are possibilities for joint games. The main part of every conflict or dispute consists in getting people to talk and listen to one another. That is not to say that extreme selfishness, aggressiveness or warfare are non-existing problems but individuals or states armed with interpersonal (or international) skills and as well as analytical qualifications can disarm the polemic warfare and help substantially the decision making in a peaceful way in any type of negotiations; in international arms-limitation talks, economic trade agreements, cartels, divorce mediator, global negotiations with developing countries, corporate takeovers, and so on.

Communication also supports the formation of coalitions. And a coalition is an agreement among two or more persons to coordinate their actions (choices or strategies). Coalitions include formal agreements of two or more persons to act as a single entity, as well as agreements to avoid certain joint choices. Coalition also include informal, perhaps even unobservable, agreements of two or more players to avoid mutually distasteful outcomes.

Thus, it is true that negotiations permit people to assess the preferences of others, to ascertain their willingness to compromise if the threat of no agreement is real, and to measure each other's beliefs about these parameters.

Every model of the processes of negotiation, of behaviour and interaction among negotiators, are of course conceptual constructions and simplifications of complex social circumstances. And when taking into consideration the manipulative and strategic elements of each behaviour (like misrepresentation of preferences) we can conclude that bargaining models are not only difficult to formulate but also difficult to solve.

But it is positive that a certain amount of analysis can be of great help to negotiators and intervenors in many different ways.

6) BIBLIOGRAPHY

- The Strategy of Conflict
by C. Schelling
(Harvard University Press, 1963)
- Game Theory in the Social Sciences
by Martin Shubik
(The MIT Press, 1982)
- Disputes and Negotiations
by P.H. Gulliver
(Academic Press, 1979)
- Negotiations (Social Psychological Perspectives)
by Daniel Druckman
(Sage Publications, 1977)
- The Practice of Industrial Relations
by D.A. Peach and D. Knechle
(McGraw-Hill Ryerson Ltd., 1975)
- Bargaining (Formal Theories of Negotiation)
by Oran R. Young
(University of Illinois Press, 1975)
- The Art & Science of Negotiation
by Howard Raiffa
(Harvard University Press, 1982)
- Strategy and Collective Bargaining Negotiation
by C.M. Stevens
(McGraw-Hill, 1963)
- Collective Bargaining
by J.T. Dunlop and J.I. Healy
(R.D. Irwin, 1953)
- How Nations Negotiate
by F.C. Ikle
(Harper, 1964)
- The Negotiation Process
by Zartman (1977)
- Game Theory and Political Theory
by D.C. Ordeshook (1987)