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## AN ESSAY ON BARGAINING

By THOMAS C. SCHELLING\*

This paper presents a tactical approach to the analysis of bargaining. The subject includes both explicit bargaining and the tacit kind in which adversaries watch and interpret each other's behavior, each aware that his own actions are being interpreted and anticipated, each acting with a view to the expectations that he creates. In economics the subject covers wage negotiations, tariff negotiations, competition where competitors are few, settlements out of court, and the real estate agent and his customer. Outside economics it ranges from the threat of massive retaliation to taking the right of way from a taxi.

Our concern will *not* be with the part of bargaining that consists of exploring for mutually profitable adjustments, and that might be called the "efficiency" aspect of bargaining. For example, can an insurance firm save money, and make a client happier, by offering a cash settlement rather than repairing the client's car; can an employer save money by granting a voluntary wage increase to employees who agree to take a substantial part of their wages in merchandise? Instead, we shall be concerned with what might be called the "distributional" aspect of bargaining: the situations in which more for one means less for the other. When the business is finally sold to the one interested buyer, what price does it go for? When two dynamite trucks meet on a road wide enough for one, who backs up?

These are situations that ultimately involve an element of pure bargaining—bargaining in which each party is guided mainly by his expectations of what the other will accept. But with each guided by expectations and knowing that the other is too, expectations become compounded. A bargain is struck when somebody makes a final, sufficient concession. Why does he concede? Because he thinks the other will not. "I must concede because he won't. He won't because he thinks I will. He thinks I will because he thinks I think he thinks so. . . ." There is some range of alternative outcomes in which any point is better for both sides than no agreement at all. To insist on any such point is pure bargaining, since one always *would* take less rather than

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reach no agreement at all, and since one always *can* recede if retreat proves necessary to agreement. Yet if both parties are aware of the limits to this range, *any* outcome is a point from which at least one party would have been willing to retreat and the other knows it! There is no resting place.

There is, however, an outcome; and if we cannot find it in the logic of the situation we may find it in the tactics employed. The purpose of this essay is to call attention to an important class of tactics, of a kind that is peculiarly appropriate to the logic of indeterminate situations. The essence of these tactics is some voluntary but irreversible sacrifice of freedom of choice. They rest on the paradox that the power to constrain an adversary may depend on the power to bind oneself; that, in bargaining, weakness is often strength, freedom may be freedom to capitulate, and to burn bridges behind one may suffice to undo an opponent.

### I. *Bargaining Power: the Power to Bind Oneself*

“Bargaining power,” “bargaining strength,” “bargaining skill” suggest that the advantage goes to the powerful, the strong, or the skillful. It does, of course, if those qualities are defined to mean only that negotiations are won by those who win. But if the terms imply that it is an advantage to be more intelligent or more skilled in debate, or to have more financial resources, more physical strength, more military potency, or more ability to withstand losses, then the term does a disservice. These qualities are by no means universal advantages in bargaining situations; they often have a contrary value.

The sophisticated negotiator may find it difficult to seem as obstinate as a truly obstinate man. If a man knocks at a door and says that he will stab himself on the porch unless given \$10, he is more likely to get the \$10 if his eyes are bloodshot. The threat of mutual destruction cannot be used to deter an adversary who is too unintelligent to comprehend it or too weak to enforce his will on those he represents. The government that cannot control its balance of payments, or collect taxes, or muster the political unity to defend itself, may enjoy assistance that would be denied it if it could control its own resources. And, to cite an example familiar from economic theory, “price leadership” in oligopoly may be an unprofitable distinction evaded by the small firms and assumed perforce by the large one.

Bargaining power has also been described as the power to fool and bluff, “the ability to set the best price for yourself and fool the other man into thinking this was your maximum offer.”<sup>1</sup> Fooling and bluffing are certainly involved; but there are two kinds of fooling. One is

<sup>1</sup> J. N. Morgan, “Bilateral Monopoly and the Competitive Output,” *Quart. Jour. Econ.*, Aug. 1949, LXIII, 376, n.6.

deceiving about the facts; a buyer may lie about his income or misrepresent the size of his family. The other is purely tactical. Suppose each knows everything about the other, and each knows what the other knows. What is there to fool about? The buyer may say that, though he'd really pay up to twenty and the seller knows it, he is firmly resolved as a tactical matter not to budge above sixteen. If the seller capitulates, was he fooled? Or was he convinced of the truth? Or did the buyer really not know what he would do next if the tactic failed? If the buyer really "feels" himself firmly resolved, and bases his resolve on the conviction that the seller will capitulate, and the seller does, the buyer may say afterwards that he was "not fooling." Whatever has occurred, it is not adequately conveyed by the notions of bluffing and fooling.

How does one person make another believe something? The answer depends importantly on the factual question, "Is it true?" It is easier to prove the truth of something that is true than of something false. To prove the truth about our health we can call on a reputable doctor; to prove the truth about our costs or income we may let the person look at books that have been audited by a reputable firm or the Bureau of Internal Revenue. But to persuade him of something false we may have no such convincing evidence.

When one wishes to persuade someone that he would not pay more than \$16,000 for a house that is really worth \$20,000 to him, what can he do to take advantage of the usually superior credibility of the truth over a false assertion? Answer: make it true. How can a buyer make it true? If he likes the house because it is near his business he might move his business, persuading the seller that the house is really now worth only \$16,000 to him. This would be unprofitable; he is no better off than if he had paid the higher price.

But suppose the buyer could make an irrevocable and enforceable bet with some third party, duly recorded and certified, according to which he would pay for the house no more than \$16,000, or forfeit \$5,000. The seller has lost; the buyer need simply present the truth. Unless the seller is enraged and withholds the house in sheer spite, the situation has been rigged against him; the "objective" situation—the buyer's true incentive—has been voluntarily, conspicuously, and irreversibly changed. The seller can take it or leave it. This example demonstrates that if the buyer can accept an irrevocable commitment, in a way that is unambiguously visible to the seller, he can squeeze the range of indeterminacy down to the point most favorable to him. It also suggests, by its artificiality, that the tactic is one that may or may not be available; whether the buyer can find an effective device for committing himself may depend on who he is, who the seller is, where they live, and a number of legal and institutional arrangements

(including, in our artificial example, whether bets are legally enforceable).

If both men live in a culture where “cross my heart” is universally accepted as potent, all the buyer has to do is allege that he will pay no more than \$16,000, using this invocation of penalty, and he wins—or at least he wins if the seller does not beat him to it by shouting “\$19,000, cross my heart.” If the buyer is an agent authorized by a board of directors to buy at \$16,000 but not a cent more, and the directors cannot constitutionally meet again for several months and the buyer cannot exceed his authority, and if all this can be made known to the seller, then the buyer “wins”—if, again, the seller has not tied himself up with a commitment to \$19,000. Or if the buyer can assert that he will pay no more than \$16,000 so firmly that he would suffer intolerable loss of personal prestige or bargaining reputation by paying more, and if the fact of his paying more would necessarily be known, and if the seller appreciates all this, then a loud declaration by itself may provide the commitment. The device, of course, is a needless surrender of flexibility unless it can be made fully evident and understandable to the seller.

Incidentally, some of the more contractual kinds of commitments are not as effective as they at first seem. In the example of the self-inflicted penalty through the bet, it remains possible for the seller to seek out the third party and offer a modest sum in consideration of the latter’s releasing the buyer from the bet, threatening to sell the house for \$16,000 if the release is not forthcoming. The effect of the bet—as of most such contractual commitments—is to shift the locus and personnel of the negotiation, in the hope that the third party will be less available for negotiation or less subject to an incentive to concede. To put it differently, a *contractual* commitment is usually the assumption of a contingent “transfer cost,” not a “real cost”; and if all interested parties can be brought into the negotiation the range of indeterminacy remains as it was. But if the third party were available only at substantial transportation cost, to that extent a truly irrevocable commitment would have been assumed. (If bets were made with a number of people, the “real costs” of bringing them into the negotiation might be made prohibitive.)<sup>2</sup>

<sup>2</sup> Perhaps the “ideal” solution to the bilateral monopoly problem is as follows. One member of the pair shifts his marginal cost curve so that joint profits are now zero at the output at which joint profits originally would have been maximized. He does this through an irrevocable sale-leaseback arrangement; he sells a royalty contract to some third party for a lump sum, the royalties so related to his output that joint costs exceed joint revenue at all other outputs. He cannot now afford to produce at any price or output except that price and output at which the entire original joint profits accrue to him; the other member of the bilateral monopoly sees the contract, appreciates the situation,

The most interesting parts of our topic concern whether and how commitments can be taken; but it is worth while to consider briefly a model in which practical problems are absent—a world in which absolute commitments are freely available. Consider a culture in which “cross my heart” is universally recognized as absolutely binding. Any offer accompanied by this invocation is a final offer, and is so recognized. If each party knows the other’s true reservation price, the object is to be first with a firm offer. Complete responsibility for the outcome then rests with the other, who can take it or leave it as he chooses (and who chooses to take it). Bargaining is all over; the commitment (*i.e.*, the first offer) wins.

Interpose some communication difficulty. They must bargain by letter; the invocation becomes effective when signed but cannot be known to the other until its arrival. Now when one party writes such a letter the other may already have signed his own, or may yet do so before the letter of the first arrives. There is then no sale; both are bound to incompatible positions. Each must now recognize this possibility of stalemate, and take into account the likelihood that the other already has, or will have, signed his own commitment.

An asymmetry in communication may well favor the one who is (and is known to be) unavailable for the receipt of messages, for he is the one who cannot be deterred from his own commitment by receipt of the other’s. (On the other hand, if the one who cannot communicate can feign ignorance of his own inability, the other too may be deterred from his own commitment by fear of the first’s unwitting commitment.) If the commitments depend not just on words but on special forms or ceremonies, ignorance of the other party’s commitment ceremonies may be an advantage if the ignorance is fully appreciated, since it makes the other aware that only his own restraint can avert stalemate.

Suppose only part of the population belongs to the cult in which “cross my heart” is (or is believed to be) absolutely binding. If everyone knows (and is known to know) everyone else’s affiliation, those

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and accepts his true minimum profits. The “winner” really gains the entire original profit via the lump sum for which he sold royalty rights; this profit does not affect his incentives because it is independent of what he produces. The third party pays the lump sum (minus a small discount for inducement) because he knows that the second party will have to capitulate and that therefore he will in fact get his contingent royalty. The hitch is that the royalty-rights buyer must not be available to the “losing member”; otherwise the latter can force him to renounce his royalty claim by threatening not to reach a bargain, thus restoring the original marginal cost situation. But we may imagine the development of institutions that specialize in royalty purchases, whose ultimate success depends on a reputation for never renegotiating, and whose incentives can thus not be appealed to in any single negotiation.

belonging to this particular cult have the advantage. They can commit themselves, the others cannot. If the buyer says "\$16,000, cross my heart" his offer is final; if the seller says "\$19,000" he is (and is known to be) only "bargaining."

If each does not know the other's true reservation price there is an initial stage in which each tries to discover the other's and misrepresent his own, as in ordinary bargaining. But the process of discovery and revelation becomes quickly merged with the process of creating and discovering commitments; the commitments permanently change, for all practical purposes, the "true" reservation prices. If one party has, and the other has not, the belief in a binding ceremony, the latter pursues the "ordinary" bargaining technique of *asserting* his reservation price, while the former proceeds to *make* his.

The foregoing discussion has tried to suggest both the plausibility and the logic of self-commitment. Some examples may suggest the relevance of the tactic, although an observer can seldom distinguish with confidence the consciously logical, the intuitive, or the inadvertent, use of a visible tactic. First, it has not been uncommon for union officials to stir up excitement and determination on the part of the membership during or prior to a wage negotiation. If the union is going to insist on \$2 and expects the management to counter with \$1.60, an effort is made to persuade the membership not only that the management could pay \$2 but even perhaps that the negotiators themselves are incompetent if they fail to obtain close to \$2. The purpose—or, rather, a plausible purpose suggested by our analysis—is to make clear to the management that the negotiators could not accept less than \$2 *even if they wished to* because they no longer control the members or because they would lose their own positions if they tried. In other words, the negotiators reduce the scope of their own authority, and confront the management with the threat of a strike that the union itself cannot avert, even though it was the union's own action that eliminated its power to prevent the strike.

Something similar occurs when the United States government negotiates with other governments on, say, the uses to which foreign assistance will be put, or tariff reduction. If the executive branch is free to negotiate the best arrangement it can, it may be unable to make any position stick and may end by conceding controversial points because its partners know, or believe obstinately, that the United States would rather concede than terminate the negotiations. But if the executive branch negotiates under legislative authority, with its position constrained by law, and it is evident that Congress will not be reconvened to change the law within the necessary time period, then the



executive branch has a firm position that is visible to its negotiating partners.

When national representatives go to international negotiations knowing that there is a wide range of potential agreement within which the outcome will depend on bargaining, they seem often to create a bargaining position by public statements, statements calculated to arouse a public opinion that permits no concessions to be made. If a binding public opinion can be cultivated, and made evident to the other side, the initial position can thereby be made visibly "final."

These examples have certain characteristics in common. First, they clearly depend not only on incurring a commitment but on communicating it persuasively to the other party. Second, it is by no means easy to establish the commitment, nor is it entirely clear to either of the parties concerned just how strong the commitment is. Third, similar activity may be available to the parties on both sides. Fourth, the possibility of commitment, though perhaps available to both sides, is by no means equally available; the ability of a democratic government to get itself tied by public opinion may be different from the ability of a totalitarian government to incur such a commitment. Fifth, they all run the risk of establishing an immovable position that goes beyond the ability of the other to concede, and thereby provoke the likelihood of stalemate or breakdown.

## II. *Institutional and Structural Characteristics of the Negotiation*

Some institutional and structural characteristics of bargaining situations may make the commitment tactic easy or difficult to use, or make it more available to one party than the other, or affect the likelihood of simultaneous commitment or stalemate.

*Use of a Bargaining Agent.* The use of a bargaining agent affects the power of commitment in at least two ways. First, the agent may be given instructions that are difficult or impossible to change, such instructions (and their inflexibility) being visible to the opposite party. The principle applies in distinguishing the legislative from the executive branch, or the management from the board of directors, as well as to a messenger-carried offer when the bargaining process has a time limit and the principal has interposed sufficient distance between himself and his messenger to make further communication evidently impossible before the time runs out.

Second, an "agent" may be brought in as a principal in his own right, with an incentive structure of his own that differs from his principal's. This device is involved in automobile insurance; the private citizen, in settling out of court, cannot threaten suit as effectively as



the insurance company since the latter is more conspicuously obliged to carry out such threats to maintain its own reputation for subsequent accidents.<sup>3</sup>

*Secrecy vs. Publicity.* A potent means of commitment, and sometimes the only means, is the pledge of one's reputation. If national representatives can arrange to be charged with appeasement for every small concession, they place concession visibly beyond their own reach. If a union with other plants to deal with can arrange to make any retreat dramatically visible, it places its bargaining reputation in jeopardy and thereby becomes visibly incapable of serious compromise. (The same convenient jeopardy is the basis for the universally exploited defense, "If I did it for you I'd have to do it for everyone else.") But to commit in this fashion publicity is required. Both the initial offer and the final outcome would have to be known; and if secrecy surrounds either point, or if the outcome is inherently not observable, the device is unavailable. If one party has a "public" and the other has not, the latter may try to neutralize his disadvantage by excluding the relevant public; or if both parties fear the potentialities for stalemate in the simultaneous use of this tactic, they may try to enforce an agreement on secrecy.

*Intersecting Negotiations.* If a union is simultaneously engaged, or will shortly be engaged, in many negotiations while the management has no other plants and deals with no other unions, the management cannot convincingly stake its bargaining reputation while the union can. The advantage goes to the party that can persuasively point to an array of other negotiations in which its own position would be prejudiced if it made a concession in this one. (The "reputation value" of the bargain may be less related to the outcome than to the firmness with which some initial bargaining position is adhered to.) Defense against this tactic may involve, among other things, both misinterpretation of the other party's position and an effort to make the eventual outcome incommensurable with the initial positions. If the subjects under negotiation can be enlarged in the process of negotiation, or the wage figure replaced by fringe benefits that cannot be reduced to a wage equivalent, an "out" is provided to the party that has committed itself; and the availability of this "out" weakens the commitment itself, to the disadvantage of the committed party.

<sup>3</sup> The formal solution to the right-of-way problem in automobile traffic may be that the winner is the one who first becomes fully and visibly insured against all contingencies; since he then has no incentive to avoid accident, the other must yield and knows it. (The latter cannot counter in kind; no company will insure him now that the first is insured.) More seriously, the pooling of strike funds among unions reduces the visible incentive on each individual union to avoid a strike. As in the bilateral monopoly solution suggested earlier, there is a transfer of interest to a third party with a resulting visible shift in one's own incentive structure.

*Continuous Negotiations.* A special case of interrelated negotiations occurs when the same two parties are to negotiate other topics, simultaneously or in the future. The logic of this case is more subtle; to persuade the other that one cannot afford to recede, one says in effect, "If I conceded to you here, you would revise your estimate of me in our other negotiations; to protect my reputation with you I must stand firm." The second party is simultaneously the "third party" to whom one's bargaining reputation can be pledged. This situation occurs in the threat of local resistance to local aggression. The party threatening achieves its commitment, and hence the credibility of its threat, not by referring to what it would gain from carrying out the threat in this particular instance but by pointing to the long-run value of a fulfilled threat in enhancing the credibility of future threats.

*The Restrictive Agenda.* When there are two objects to negotiate, the decision to negotiate them simultaneously or in separate forums or at separate times is by no means neutral to the outcome, particularly when there is a latent extortionate threat that can be exploited only if it can be attached to some more ordinary, legitimate, bargaining situation. The protection against extortion depends on refusal, unavailability, or inability, to negotiate. But if the object of the extortionate threat can be brought onto the agenda with the other topic, the latent threat becomes effective.

Tariff bargaining is an example. If reciprocal tariffs on cheese and automobiles are to be negotiated, one party may alter the outcome by threatening a purely punitive change in some other tariff. But if the bargaining representatives of the threatened party are confined to the cheese-automobile agenda, and have no instructions that permit them even to take cognizance of other commodities, or if there are ground rules that forbid mention of other tariffs while cheese and automobiles remain unsettled, this extortionate weapon must await another opportunity. If the threat that would be brought to the conference table is one that cannot stand publicity, publicity itself may prevent its effective communication.

*The Possibility of Compensation.* As Fellner has pointed out, agreement may be dependent on some means of redistributing costs or gains.<sup>4</sup> If duopolists, for example, divide markets in a way that maximizes their combined profits, some initial accrual of profits is thereby determined; any other division of the profits requires that one firm be able to compensate the other. If the fact of compensation would be evidence of illegal collusion, or if the motive for compensation would be misunderstood by the stockholders, or if the two do not sufficiently

<sup>4</sup> W. Fellner, *Competition Among the Few* (New York, 1949), pp. 34-35, 191-97, 231-32, 234.

trust each other, some less optimum level of *joint* profits may be required in order that the initial accrual of profits to the two firms be in closer accordance with an agreed division of gains between them.

When agreement must be reached on something that is inherently a one-man act, any division of the cost depends on compensation. The "agenda" assumes particular importance in these cases, since a principal means of compensation is a concession on some other object. If two simultaneous negotiations can be brought into a contingent relationship with each other, a means of compensation is available. If they are kept separate, each remains an indivisible object.

It may be to the advantage of one party to keep a bargain isolated, and to the other to join it to some second bargain. If there are two projects, each with a cost of three, and each with a value of two to A and a value of four to B, and each is inherently a "one-man" project in its execution, and if compensation is institutionally impossible, B will be forced to pay the entire cost of each as long as the two projects are kept separate. He cannot usefully threaten nonperformance, since A has no incentive to carry out either project by himself. But if B can link the projects together, offering to carry out one while A carries out the other, and can effectively threaten to abandon both unless A carries out one of them, A is left an option with a gain of four and a cost of three, which he takes, and B cuts his cost in half.

An important limitation of economic problems, as prototypes of bargaining situations, is that they tend disproportionately to involve divisible objects and compensable activities. If a drainage ditch in the back of one house will protect both houses; and if it costs \$1,000 and is worth \$800 to each home-owner; neither would undertake it separately, but we nevertheless usually assume that they will get together and see that this project worth \$1,600 to the two of them gets carried out. But if it costs 10 hours a week to be scoutmaster, and each considers it worth 8 hours of his time to have a scout troop but one man must do the whole job, it is far from certain that the neighbors will reach a deal according to which one puts 10 hours on the job and the other pays him cash or does 5 hours' gardening for him. When two cars meet on a narrow road, the ensuing deadlock is aggravated by the absence of a custom of bidding to pay for the right of way. Parliamentary deadlocks occur when logrolling is impracticable. Measures that require unanimous agreement can often be initiated only if several are bundled together.<sup>5</sup>

*The Mechanics of Negotiation.* A number of other characteristics deserve mention, although we shall not work out their implications. Is

<sup>5</sup> Inclusion of a provision on the Saar in the "Paris Agreements" that ended the occupation of Western Germany may have reflected either this principle or the one in the preceding paragraph.

there a penalty on the conveyance of false information? Is there a penalty on called bluffs, *i.e.*, can one put forth an offer and withdraw it after it has been accepted? Is there a penalty on hiring an agent who pretends to be an interested party and makes insincere offers, simply to test the position of the other party? Can all interested parties be recognized? Is there a time limit on the bargaining? Does the bargaining take the particular structure of an auction, a Dutch auction, a sealed bid system, or some other formal arrangement? Is there a *status quo*, so that unavailability for negotiation can win the *status quo* for the party that prefers it? Is renegotiation possible in case of stalemate? What are the costs of stalemate? Can compliance with the agreement be observed? What, in general, are the means of communication, and are any of them susceptible of being put out of order by one party or the other? If there are several items to negotiate, are they negotiated in one comprehensive negotiation, separately in a particular order so that each piece is finished before the next is taken up, or simultaneously through different agents or under different rules.

The importance of many of these structural questions becomes evident when one reflects on parliamentary technique. Rules that permit a president to veto an appropriation bill only in its entirety, or that require each amendment to be voted before the original act is voted on, or a priority system accorded to different kinds of motions, substantially alter the incentives that are brought to bear on each action. One who might be pressured into choosing second best is relieved of his vulnerability if he can vote earlier to eliminate that possibility, thereby leaving only first and third choices about which his preference is known to be so strong that no threat will be made.

*Principles and Precedents.* To be convincing, commitments usually have to be qualitative rather than quantitative, and to rest on some rationale. It may be difficult to conceive of a really firm commitment to  $\$2.07\frac{1}{2}$ ; why not  $\$2.02\frac{1}{4}$ ? The numerical scale is too continuous to provide good resting places, except at nice round numbers like  $\$2.00$ . But a commitment to the *principle* of "profit sharing," "cost-of-living increases," or any other basis for a numerical calculation that comes out at  $\$2.07\frac{1}{2}$ , may provide a foothold for a commitment. Furthermore, one may create something of a commitment by putting the principles and precedents themselves in jeopardy. If in the past one has successfully maintained the principle of, say, nonrecognition of governments imposed by force, and elects to nail his demands to that principle in the present negotiation, he not only adduces precedent behind his claim but risks the principle itself. Having pledged it, he may persuade his adversary that he would accept stalemate rather than capitulate and discredit the principle.

*Casistry.* If one reaches the point where concession is advisable, he

has to recognize two effects: it puts him closer to his opponent's position, and it affects his opponent's estimate of his firmness. Concession not only may be construed as capitulation, it may mark a prior commitment as a fraud, and make the adversary skeptical of any new pretense at commitment. One, therefore, needs an "excuse" for accommodating his opponent, preferably a rationalized reinterpretation of the original commitment, one that is persuasive to the adversary himself.

More interesting is the use of casuistry to release an opponent from a commitment. If one can demonstrate to an opponent that the latter is not committed, or that he has miscalculated his commitment, one may in fact undo or revise the opponent's commitment. Or if one can confuse the opponent's commitment, so that his constituents or principals or audience cannot exactly identify compliance with the commitment—show that "productivity" is ambiguous, or that "proportionate contributions" has several meanings—one may undo it or lower its value. In these cases it is to the opponent's disadvantage that this commitment be successfully refuted by argument. But when the opponent has resolved to make a moderate concession one may help him by proving that he *can* make a moderate concession consistent with his former position, and that if he does there are no grounds for believing it to reflect on his original principles. One must seek, in other words, a rationalization by which to deny himself too great a reward from his opponent's concession, otherwise the concession will not be made.<sup>6</sup>

### III. *The Threat*

When one threatens to fight if attacked or to cut his price if his competitor does, the threat is no more than a communication of one's own incentives, designed to impress on the other the automatic con-

<sup>6</sup>In many textbook problems, such as bilateral monopoly between firms, the ends of the bargaining range are points of zero profits for one or the other party; and to settle for one's minimum position is no better than no settlement at all. But apart from certain buying and selling situations there are commonly limits on the range of acceptable outcomes, and the least favorable outcome that one is free to accept may be substantially superior to stalemate. In these cases one's overriding purpose may be to forestall any misguided commitment by the other party. If the truth is more demonstrable than a false position, a conservative initial position is indicated, as it is if any withdrawal from an initial "advanced" position would discredit any subsequent attempt to convey the truth. Actually, though a person does not commonly invite penalties on his own behavior, the existence of an enforceable penalty on falsehood would be of assistance; if one can demonstrate, for example, his cost or income position by showing his income tax return, the penalties on fraud may enhance the value of this evidence.

Even the "pure" bilateral monopoly case becomes somewhat of this nature if the bargaining is conducted by agents or employees whose rewards are more dependent on *whether* agreement is reached than on how favorable the terms of the agreement are.

sequences of his act. And, incidentally, if it succeeds in deterring, it benefits both parties.

But more than communication is involved when one threatens an act that he would have no incentive to perform but that is designed to deter through its promise of mutual harm. To threaten massive retaliation against small encroachments is of this nature, as is the threat to bump a car that does not yield the right of way or to call a costly strike if the wage rate is not raised a few cents. The distinctive feature of this threat is that the threatener has no incentive to carry it out either before the event or after. He does have an incentive to bind himself to fulfill the threat, if he thinks the threat may be successful, because the threat and not its fulfillment gains the end; and fulfillment is not required if the threat succeeds. The more certain the contingent fulfillment is, the less likely is actual fulfillment. But the threat's efficacy depends on the credulity of the other party, and the threat is ineffectual unless the threatener can rearrange or display his own incentives so as to demonstrate that he would, *ex post*, have an incentive to carry it out.<sup>7</sup>

We are back again at the commitment. How can one commit himself in advance to an act that he would in fact prefer not to carry out in the event, in order that his commitment may deter the other party? One can of course bluff, to persuade the other falsely that the costs or damages to the threatener would be minor or negative. More interesting, the one making the threat may pretend that he himself erroneously believes his own costs to be small, and therefore would mistakenly go ahead and fulfill the threat. Or perhaps he can pretend a revenge motivation so strong as to overcome the prospect of self-damage; but this option is probably most readily available to the truly revengeful. Otherwise he must find a way to commit himself.

One may try to stake his reputation on fulfillment, in a manner that impresses the threatened person. One may even stake his reputation *with the threatened person himself*, on grounds that it would be worth the costs and pains to give a lesson to the latter if he fails to heed the threat. Or one may try to arrange a legal commitment, per-

<sup>7</sup> Incidentally, the deterrent threat has some interesting quantitative characteristics, reflecting the general asymmetry between rewards and punishments. It is not necessary, for example, that the threat promise more damage to the party threatened than to the party carrying it out. The threat to smash an old car with a new one may succeed if believed, or to sue expensively for small damages, or to start a price war. Also, as far as the power to deter is concerned, there is no such thing as "too large" a threat; if it is large enough to succeed, it is not carried out anyway. A threat is only "too large" if its very size interferes with its credibility. Atomic destruction for small misdemeanors, like expensive incarceration for overtime parking, would be superfluous but not exorbitant unless the threatened person considered it too awful to be real and ignored it.



haps through contracting with a third party.<sup>8</sup> Or if one can turn the whole business over to an agent whose salary (or business reputation) depends on carrying out the threat but who is unalterably relieved of any responsibility for the further costs, one may shift the incentive.

The commitment problem is nicely illustrated by the legal doctrine of the "last clear chance" which recognizes that, in the events that led up to an accident, there was some point at which the accident became inevitable as a result of prior actions, and that the abilities of the two parties to prevent it may not have expired at the same time. In bargaining, the commitment is a device to leave the last clear chance to decide the outcome with the other party, in a manner that he fully appreciates; it is to relinquish further initiative, having rigged the incentives so that the other party must choose in one's favor. If one driver speeds up so that he cannot stop, and the other realizes it, the latter has to yield. A legislative rider at the end of a session leaves the President the last clear chance to pass the bill. This doctrine helps to understand some of those cases in which bargaining "strength" inheres in what is weakness by other standards. When a person—or a country—has lost the power to help himself, or the power to avert mutual damage, the other interested party has no choice but to assume the cost or responsibility. "Coercive deficiency" is the term Arthur Smithies uses to describe the tactic of deliberately exhausting one's annual budgetary allowance so early in the year that the need for more funds is irresistibly urgent.<sup>9</sup>

A related tactic is maneuvering into a *status quo* from which one can be dislodged only by an overt act, an act that precipitates mutual damage because the maneuvering party has relinquished the power to retreat. If one carries explosives visibly on his person, in a manner that makes destruction obviously inevitable for himself and for any assailant, he may deter assault much more than if he retained any control over the explosives. If one commits a token force of troops that would be unable to escape, the commitment to full resistance is increased. Walter Lippmann has used the analogy of the plate glass window that helps to protect a jewelry store: anyone can break it easily enough, but not without creating an uproar.

Similar techniques may be available to the one threatened. His best defense, of course, is to carry out the act before the threat is made;

<sup>8</sup> Mutual defense treaties among strong and weak nations might best be viewed in this light, *i.e.*, not as undertaken to reassure the small nations nor in exchange for a *quid pro quo*, but rather as a device for surrendering an embarrassing freedom of choice.

<sup>9</sup> A. Smithies, *The Budgetary Process in the United States* (New York, 1955), pp. 40, 56. One solution is the short tether of an apportionment process. See also T. C. Schelling, "American Foreign Assistance," *World Politics*, July 1955, VII, 609-25, regarding the same principle in foreign aid allocations.



in that case there is neither incentive nor commitment for retaliation. If he cannot hasten the act itself, he may commit himself to it; if the person to be threatened is already committed, the one who would threaten cannot deter with his threat, he can only make certain the mutually disastrous consequences that he threatens.<sup>10</sup> If the person to be threatened can arrange before the threat is made to share the risk with others (as suggested by the insurance solution to the right-of-way problem mentioned earlier) he may become so visibly unsusceptible to the threat as to dissuade the threatener. Or if by any other means he can either change or misrepresent his own incentives, to make it appear that he would gain in spite of threat fulfillment (or perhaps only that he thinks he would), the threatener may have to give up the threat as costly and fruitless; or if one can misrepresent himself as either unable to comprehend a threat, or too obstinate to heed it, he may deter the threat itself. Best of all may be *genuine* ignorance, obstinacy, or simple disbelief, since it may be more convincing to the prospective threatener; but of course if it fails to persuade him and he commits himself to the threat, both sides lose. Finally, both the threat and the commitment have to be communicated; if the threatened person can be unavailable for messages, or can destroy the communication channels, even though he does so in an obvious effort to avert threat, he may deter the threat itself.<sup>11</sup> But the time to show disbelief or obstinacy is before the threat is made, *i.e.*, before the commitment is taken, not just before the threat is fulfilled; it does no good to be incredulous, or out of town, when the messenger arrives with the committed threat.

In threat situations, as in ordinary bargaining, commitments are not altogether clear; each party cannot exactly estimate the costs and values to the other side of the two related actions involved in the

<sup>10</sup> The system of supplying the police with traffic tickets that are numbered and incapable of erasures makes it possible for the officer, by writing in the license number of the car before speaking to the driver, to preclude the latter's threat. Some trucks carry signs that say, "Alarm and lock system not subject to the driver's control." The time lock on bank vaults serves much the same purpose, as does the mandatory secret ballot in elections. So does starting an invasion with a small advance force that, though too small and premature to win the objective, attaches too much "face" to the enterprise to permit withdrawal: the larger force can then be readied without fear of inviting a purely deterrent threat. At Yale the faculty is protected by a rule that denies instructors the power to change a course grade once it has been recorded.

<sup>11</sup> The racketeer cannot sell protection if he cannot find his customer at home; nor can the kidnapper expect any ransom if he cannot communicate with friends or relatives. Thus, as a perhaps impractical suggestion, a law that required the immediate confinement of all interested friends and relatives when a kidnapping occurred might make the prospects for ransom unprofitably dim. The rotation of watchmen and policemen, or their assignment in random pairs, not only limits their exploitation of bribes but protects them from threats.

threat; the process of commitment may be a progressive one, the commitments acquiring their firmness by a sequence of actions. Communication is often neither entirely impossible nor entirely reliable; while certain evidence of one's commitment can be communicated directly, other evidence must travel by newspaper or hearsay, or be demonstrated by actions. In these cases the unhappy possibility of both acts occurring, as a result of simultaneous commitment, is increased. Furthermore, the recognition of this possibility of simultaneous commitment becomes itself a deterrent to the taking of commitments.<sup>12</sup>

In case a threat is made and fails to deter, there is a second stage prior to fulfillment in which *both* parties have an interest in undoing the commitment. The purpose of the threat is gone, its deterrence value is zero, and only the commitment exists to motivate fulfillment. This feature has, of course, an analogy with stalemate in ordinary bargaining, stalemate resulting from both parties getting committed to incompatible positions, or one party mistakenly committing himself to a position that the other truly would not accept. If there appears a possibility of undoing the commitment, *both* parties have an interest in doing so. How to undo it is a matter on which their interests diverge, since different ways of undoing it lead to different outcomes. Furthermore, "undoing" does not mean neglecting the commitment regardless of reputation; "undoing," if the commitment of reputation was real, means disconnecting the threat from one's reputation, perhaps one's own reputation with the threatened person himself. It is therefore a subtle and tenuous situation in which, though both have an interest in undoing the commitment, they may be quite unable to collaborate in undoing it.

Special care may be needed in defining the threat, both the act that is threatened against and the counter act that is threatened. The difficulty arises from the fact, just noted, that once the former has been done the incentive to perform the latter has disappeared. The credibility of the threat before the act depends on how visible to the threatened party is the ability of the threatening party to rationalize his way out of his commitment once it has failed its purpose. Any loopholes the threatening party leaves himself, if they are visible to the threatened party, weaken the visible commitment and hence reduce the credibility of the threat.

<sup>12</sup> It is a remarkable institutional fact that there is no simple, universal way for persons or nations to assume commitments of the kind we have been discussing. There are numerous ways they can try, but most of them are quite ambiguous, unsure, or only occasionally available. In the "cross-my-heart" society adverted to earlier, bargaining theory would reduce itself to game strategy and the mechanics of communication; but in most of the contemporary world the topic is mainly an empirical and institutional one of who can commit, how, and with what assurance of appreciation by the other side.

It is essential, therefore, for maximum credibility to leave as little room as possible for judgment or discretion in carrying out the threat. If one is committed to punish a certain type of behavior when it reaches certain limits, but the limits are not carefully and objectively defined, the party threatened will realize that when the time comes to decide whether the threat must be enforced or not, his interest and that of the threatening party will coincide in an attempt to avoid the mutually unpleasant consequences.

In order to make a threat precise, so that its terms are visible both to the threatened party and to any third parties whose reaction to the whole affair is of value to the adversaries, it may be necessary to introduce some arbitrary elements. The threat must involve overt acts rather than intentions; it must be attached to the visible deeds, not invisible ones; it may have to attach itself to certain ancillary actions that are of no consequence in themselves to the threatening party. It may, for example, have to put a penalty on the carrying of weapons rather than their use; on suspicious behavior rather than observed misdemeanors; on proximity to a crime rather than the crime itself. And, finally, the act of punishment must be one whose effect or influence is clearly discernible.<sup>13</sup>

In order that one be able to pledge his reputation behind a threat, there must be continuity between the present and subsequent issues that will arise. This need for continuity suggests a means of making the original threat more effective; if it can be decomposed into a series of consecutive smaller threats, there is an opportunity to demonstrate on the first few transgressions that the threat will be carried out on the rest. Even the first few become more plausible, since there is a more obvious incentive to fulfill them as a "lesson."

This principle is perhaps most relevant to acts that are inherently a matter of degree. In foreign aid programs the overt act of terminating assistance may be so obviously painful to both sides as not to be taken seriously by the recipient, but if each small misuse of funds is to be accompanied by a small reduction in assistance, never so large as to leave the recipient helpless nor to provoke a diplomatic breach, the willingness to carry it out will receive more credulity; or, if it does not at first, a few lessons may be persuasive without too much damage.<sup>14</sup>

<sup>13</sup> During 1950, the Economic Cooperation Administration declared its intention to reward Marshall Plan countries that followed especially sound policies, and to penalize those that did not, through the device of larger or smaller aid allotments. But since the base figures had not been determined, and since their determination would ultimately involve judgment rather than formulas, there would be no way afterwards to see whether in fact the additions and subtractions were made, and the plan suffered from implausibility.

<sup>14</sup> Perhaps the common requirement for amortization of loans at frequent intervals,

The threatening party may not, of course, be able to divide the act into steps. (Both the act to be deterred and the punishment must be divisible.) But the principle at least suggests the unwisdom of defining aggression, or transgression, in terms of some critical degree or amount that will be deemed intolerable. When the act to be deterred is inherently a sequence of steps whose cumulative effect is what matters, a threat geared to the increments may be more credible than one that must be carried either all at once or not at all when some particular point has been reached. It may even be impossible to define a "critical point" with sufficient clarity to be persuasive.

To make the threatened acts divisible, the acts themselves may have to be modified. Parts of an act that cannot be decomposed may have to be left out; ancillary acts that go with the event, though of no interest in themselves, may be objects to which a threat can effectively be attached. For example, actions that are only preparatory to the main act, and by themselves do no damage, may be susceptible of chronological division and thus be effective objects of the threat. The man who would kick a dog should be threatened with modest punishment for each step toward the dog, even though his proximity is of no interest in itself.

Similar to decomposing a threat into a series is starting a threat with a punitive act that grows in severity with the passage of time. Where a threat of death by violence might not be credited, cutting off the food supply might bring submission. For moral or public relations purposes, this device may in fact leave the "last clear chance" to the other, whose demise is then blamed on his stubbornness if the threat fails. But in any case the threatener gets his overt act out of the way while it is still preliminary and minor, rather than letting it stand as a final, dreadful, and visible obstacle to his resolution. And if the suffering party is the only one in a position to know, from moment to moment, how near to catastrophe they have progressed, his is the last clear chance in a real sense. Furthermore, the threatener may be embarrassed by his adversary's collapse but not by his discomfort; and the device may therefore transform a dangerous once-for-all threat into a less costly continuous one. Tenants are less easily removed by threat of forcible eviction than by simply shutting off the utilities.<sup>15</sup>

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rather than in a lump sum at the end of the loan period, reflects an analogous principle, as does the custom of giving frequent examinations in a college course to avoid letting a student's failure hinge exclusively on a single grading decision after the course is finished.

<sup>15</sup> This seems to be the tactic that avoided an explosion and induced de Gaulle's forces to vacate a province they had occupied in Northern Italy in June 1945, after they had

A piecemeal approach may also be used by the threatened person. If he cannot obviate the threat by hastening the entire act, he may hasten some initial stage that clearly commits him to eventual completion. Or, if his act is divisible while the threatener's retaliation comes only in the large economy size, performing it as a series of increments may deny the threatener the dramatic overt act that would trigger his response.

#### IV. *The Promise*

Among the legal privileges of corporations, two that are mentioned in textbooks are the right to sue and the "right" to be sued. Who wants to be sued! But the right to be sued is the power to make a promise: to borrow money, to enter a contract, to do business with someone who might be damaged. If suit does arise the "right" seems a liability in retrospect; beforehand it was a prerequisite to doing business.

In brief, the right to be sued is the power to accept a commitment. In the commitments discussed up to this point, it was essential that one's adversary (or "partner," however we wish to describe him) not have the power to release one from the commitment; the commitment was, in effect, to some third party, real or fictitious. The promise is a commitment to the second party in the bargain, and is required whenever the final action of one or of each is outside the other's control. It is required whenever an agreement leaves any incentive to cheat.<sup>16</sup>

This need for promises is more than incidental; it has an institutional importance of its own. It is not always easy to make a convincing, self-binding, promise. Both the kidnapper who would like to release his prisoner, and the prisoner, may search desperately for a way to commit the latter against informing on his captor, without finding one. If the victim has committed an act whose disclosure could lead to blackmail, he may confess it; if not, he might commit one in the presence of his captor, to create the bond that will ensure his silence. But these extreme possibilities illustrate how difficult, as well as important, it may be to assume a promise. If the law will not enforce price agreements; or if the union is unable to obligate itself to a no-

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announced that any effort of their allies to dislodge them would be treated as a hostile act. See Harry S. Truman, *Year of Decisions* (New York, 1955), pp. 239-42; and Winston S. Churchill, *Triumph and Tragedy*, Vol. VI of *The Second World War* (Boston, 1953) pp. 566-68.

<sup>16</sup> The threat may seem to be a promise if the pledge behind it is only one's reputation with his adversary; but it is not a promise from which the second party can unilaterally release the threatener, since he cannot convincingly dissociate his own future estimate of the threatener from the latter's performance.

strike pledge; or if a contractor has no assets to pay damages if he loses a suit, and the law will not imprison debtors; or if there is no "audience" to which one can pledge his reputation; it may not be possible to strike a bargain, or at least the same bargain that would otherwise be struck.

Bargaining may have to concern itself with an "incentive" system as well as the division of gains. Oligopolists may lobby for a "fair-trade" law; or exchange shares or stocks. An agreement to stay out of each other's market may require an agreement to redesign the products to be unsuitable in each other's area. Two countries that wish to agree not to make military use of an island may have to destroy the usefulness of the island itself. (In effect, a "third-party commitment" has to be assumed when an effective "second-party commitment" cannot be devised.)<sup>17</sup>

Fulfillment is not always observable. If one sells his vote in a secret election, or a government agrees to recommend an act to its parliament, or an employee agrees not to steal from inventory, or a teacher agrees to keep his political opinions out of class, or a country agrees to stimulate exports "as much as possible," there is no reliable way to observe or measure compliance. The observable outcome is subject to a number of influences, only one of which is covered by the agreement. The bargain may therefore have to be expressed in terms of something observable, even though what is observable is not the intended object of the bargain. One may have to pay the bribed voter if the election is won, not on how he voted; to pay a salesman a commission on sales, rather than on skill and effort; to reward policemen according to statistics on crime rather than on attention to duty; or to punish all employees for the transgressions of one. And where performance is a matter of degree, the bargain may have to define arbitrary limits distinguishing performance from nonperformance; a specified loss of inventory treated as evidence of theft; a specified increase in exports considered an "adequate" effort; specified samples of performance taken as representative of total performance.<sup>18</sup>

The tactic of decomposition applies to promises as well as to threats. What makes many agreements enforceable is only the recognition of future opportunities for agreement that will be eliminated if mutual

<sup>17</sup> In an earlier age, hostages were exchanged.

<sup>18</sup> Inability to assume an enforceable promise, like inability to perform the activity demanded, may protect one from an extortionate threat. The mandatory secret ballot is a nuisance to the voter who would like to sell his vote, but protection to the one who would fear coercion.



trust is not created and maintained, and whose value outweighs the momentary gain from cheating in the present instance. Each party must be confident that the other will not jeopardize future opportunities by destroying trust at the outset. This confidence does not always exist; and one of the purposes of piecemeal bargains is to cultivate the necessary mutual expectations. Neither may be willing to trust the other's prudence (or the other's confidence in the first's prudence, etc.) on a large issue. But if a number of preparatory bargains can be struck on a small scale, each may be willing to risk a small investment to create a tradition of trust. The purpose is to let each party demonstrate that he appreciates the need for trust and that he knows the other does too. So if a major issue has to be negotiated, it may be necessary to seek out and negotiate some minor items for "practice," to establish the necessary confidence in each other's awareness of the long-term value of good faith.

Even if the future will bring no recurrence, it may be possible to create the equivalence of continuity by dividing the bargaining issue into consecutive parts. If each party agrees to send a million dollars to the Red Cross on condition the other does, each may be tempted to cheat if the other contributes first, and each one's anticipation of the other's cheating will inhibit agreement. But if the contribution is divided into consecutive small contributions, each can try the other's good faith for a small price. Furthermore, since each can keep the other on short tether to the finish, no one ever need risk more than one small contribution at a time. Finally, this change in the incentive structure itself takes most of the risk out of the initial contribution; the value of established trust is made obviously visible to both.

Preparatory bargains serve another purpose. Bargaining can only occur when at least one party takes initiative in proposing a bargain. A deterrent to initiative is the information it yields, or may seem to yield, about one's eagerness. But if each has visible reason to expect the other to meet him half way, because of a history of successful bargaining, that very history provides protection against the inference of overeagerness.<sup>19</sup>

<sup>19</sup> Perhaps two adversaries who look forward to some large negotiated settlement would do well to keep avenues open for negotiation of minor issues. If, for example, the number of loose ends in dispute between East and West should narrow down so much that nothing remains to be negotiated but the "ultimate issue" (some final, permanent disposition of all territories and armaments) the possibility of even opening negotiations on the latter might be jeopardized. Or if the minor issues are not disposed of, but become so attached to the "big" issue that willingness to negotiate on them would be construed as overeagerness on the whole settlement, the possibility of preparatory bargains might disappear.



### V. *An Illustrative Game*

Various bargaining situations involving commitments, threats, promises, and communication problems, can be illustrated by variants of a game in which each of two persons has a pair of alternatives from which to choose. North chooses either  $A$  or  $\alpha$ ; East chooses either  $B$  or  $\beta$ . Each person's gain depends on the choices of both. Each of the four possible combined choices,  $AB$ ,  $A\beta$ ,  $\alpha B$ , or  $\alpha\beta$ , yields a particular gain or loss for North and a particular gain or loss for East. No compensation is payable between North and East. In general, each person's preference may depend on the choice the other makes.

Each such game can be quantitatively represented in a two dimensional graph, with North's gain measured vertically and East's horizontally, and the values of the four combined choices denoted by points labeled  $AB$ ,  $A\beta$ ,  $\alpha\beta$ , and  $\alpha B$ . In spite of the simplicity of the game there is actually a large number of qualitatively different variants, depending not only on the relative positions of the four points in the plane but also on the "rules" about order of moves, possibility of communication, availability of means of commitment, enforceability of promises, and whether two or more games between two persons can be joined together. The variations can be multiplied almost without limit by selecting different hypotheses about what each player knows or guesses about the "values" of the four outcomes for the other player, and what he guesses the other party guesses about himself. For convenience we assume here that the eight "values" are obvious in an obvious way to both persons. And, just as we have ruled out compensation, we rule out also threats of actions that lie outside the game. A very small sample of such games is presented.

Figure 1 represents an "ordinary" bargaining situation if we adopt the rule that North and East must reach explicit agreement before they choose.  $A\beta$  and  $\alpha B$  can be thought of as alternative agreements that they may reach, while  $AB$  and  $\alpha\beta$ , with zero values for both persons, can be interpreted as the bargaining equivalent of "no sale." Whoever can first commit himself wins. If North can commit himself to  $A$  he will secure  $A\beta$ , since he leaves East a choice between  $A\beta$  and  $AB$  and the former is obviously East's choice under the circumstances. If East could have committed himself first to  $B$ , however, North would have been restricted to a choice of  $\alpha B$  or no agreement (*i.e.*, of  $\alpha B$  or  $AB$ ) and would have agreed to  $\alpha B$ . As a matter of fact, first commitment is a kind of "first move"; and in a game with the same numbers but with moves in turn, first move would be an advantage. If, by mistake, both parties get committed, North to  $A$  and East to  $B$ , they lock themselves in stalemate at  $AB$ .

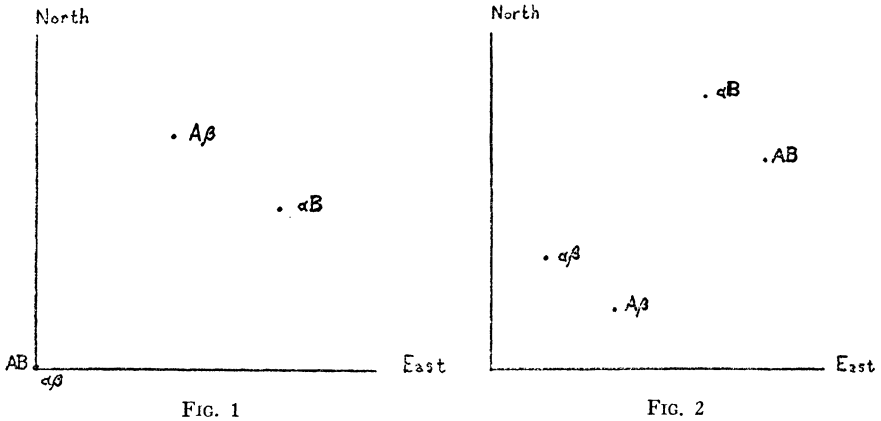


Figure 2 illustrates a deterrent threat if we interpret  $AB$  as the *status quo*, with North planning a shift to  $\alpha$  (leading to  $\alpha B$ ) and East threatening a shift to  $\beta$  (resulting in  $\alpha\beta$ ) if he does. If North moves first, East can only lose by moving to  $\beta$ , and similarly if North can commit himself to  $\alpha$  before East can make his threat; but if East can effectively threaten the mutually undesirable  $\alpha\beta$ , he leaves North only a choice of  $\alpha\beta$  or  $AB$  and North chooses the latter. Note that it is not sufficient for East to commit his *choice* in advance, as it was in Figure 1; he must commit himself to a *conditional* choice,  $B$  or  $\beta$  depending on whether North chooses  $A$  or  $\alpha$ . If East committed his choice he would obtain only the advantage of “first move”; and in the present game, if moves were in turn, North would win at  $\alpha B$  regardless of who moved first. (East would choose  $B$  rather than  $\beta$ , to leave North a choice of  $\alpha B$  or  $AB$  rather than of  $\alpha\beta$  or  $A\beta$ ; and North would take  $\alpha B$ . North, with first move, would choose  $\alpha$  rather than  $A$ , leaving East  $\alpha\beta$  or  $\alpha B$  rather than  $A\beta$  or  $AB$ ; East would take  $\alpha B$ .)

Figure 3 illustrates the promise. Whoever goes first, or even if moves are simultaneous,  $\alpha B$  is a “minimax”; either can achieve it by himself, and neither can threaten the other with anything worse. Both would, however, prefer  $A\beta$  to  $\alpha B$ ; but to reach  $A\beta$  they must trust each other or be able to make enforceable promises. Whoever goes first, the other has an incentive to cheat; if North chooses  $A$ , East can take  $AB$ , and if East chooses  $\beta$  first, North can choose  $\alpha\beta$ . If moves are simultaneous each has an incentive to cheat, and each may expect the other to cheat; and either deliberate cheating, or self-protection against the other’s incentive to cheat, indicates choices of  $\alpha$  and  $B$ . At least one party must be able to commit himself to abstention; then the other can move first. If both must move simultaneously, both must be able to make enforceable promises.

Figure 4 is the same as Figure 3 except that  $\alpha B$  has been moved leftward. Here, in the absence of communication, North wins at  $\alpha\beta$  regardless of whether he or East moves first or moves are simultaneous. If, however, East can communicate a conditional commitment, he can force North to choose  $A$  and an outcome of  $A\beta$ . But this commitment is something more than either a promise or a threat; it is both a promise and a threat. He must threaten  $\alpha B$  if North chooses  $\alpha$ ; and he

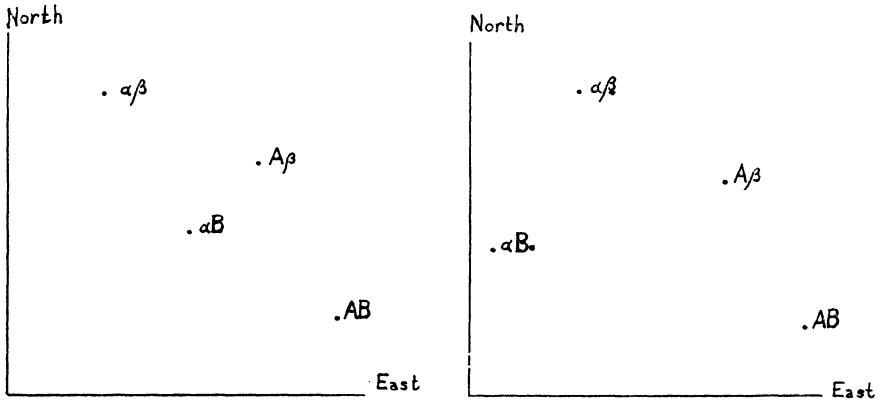


FIG. 3

FIG. 4

must promise “not  $AB$ ” if North chooses  $A$ . The threat alone will not induce North to avoid  $\alpha$ ;  $\alpha B$  is better than  $AB$  for North, and  $AB$  is what he gets with  $A$  if East is free to choose  $B$ . East must commit himself to do, for either  $\alpha$  or  $A$ , the opposite of what he would do if he were not committed: abstention from  $AB$  or immolation at  $\alpha B$ .

Finally, Figures 5 and 6 show two games that separately contain nothing of interest but together make possible an extortionate threat. Figure 5 has a minimax solution at  $\alpha B$ ; either can achieve  $\alpha B$ , neither can enforce anything better, no collaboration is possible, no threat can be made. Figure 6, though contrasting with Figure 5 in the identity of interest between the two parties, is similarly devoid of any need for collaboration or communication or any possible threat to exploit. With or without communication, with or without an order of moves, the outcome is at  $AB$ .

But suppose the two games are simultaneously up for decision, and the same two parties are involved in both. If either party can commit himself to a threat he may improve his position. East, for example, could threaten to choose  $\beta$  rather than  $B$  in game 6, unless North chose  $A$  rather than  $\alpha$  in game 5; alternatively, North could threaten  $\alpha$  in game 6 unless East chose  $\beta$  in game 5. Assuming the intervals large

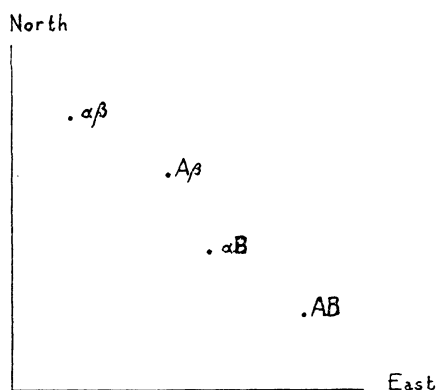


FIG. 5

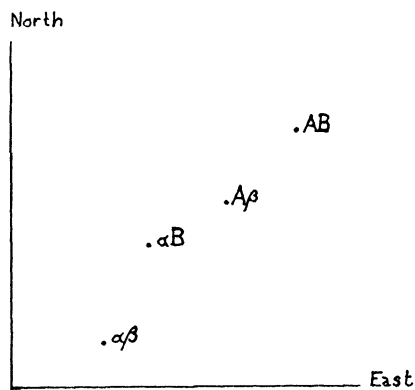


FIG. 6

enough in game 6, and the threat persuasively committed and communicated, the threatener gains in game 5 at no cost in game 6. Because his threat succeeds he does not carry it out; so he gets  $AB$  in 6 as well as his preferred choice in game 5. To express this result differently, game 6 supplies what was ruled out earlier, namely the threat of an act "outside the game." From the point of view of game 5, game 6 is an extraneous act, and East might as well threaten to burn North's house down if he does not choose  $A$  in 5. But such purely extortionate threats are not always easy to make; they often require an occasion, an object, and a means of communication, and additionally often suffer from illegality, immorality, or resistance out of sheer stubbornness. The joining of two negotiations on the same agenda may thus succeed where a purely gratuitous threat would be impracticable.

If North cannot commit himself to a threat, and consequently desires only to prevent a threat by East, it is in his interest that communication be impossible; or, if communication occurs, it is in his interest that the two games not be placed on the same agenda; or, if he cannot prevent their being discussed together by East, it is in his interest to turn each game over to a different agent whose compensation depends only on the outcome of his own game. If North can force game 6 to be played first, and is unable to commit himself in response to a threat, the threat is obviated. If he can commit his choice in game 5 before the threat is made, he is safe. But if he can commit himself in game 5, and game 6 is to be played first, East could threaten to choose  $\beta$  in game 6 unless North assumed a prior commitment to  $A$  in game 5; in this case North's ability to commit himself is a disadvantage, since it permits him to be forced into "playing" game 5 ahead of 6.

Incidentally, dropping AB vertically in Figure 2 to below the level  $\alpha\beta$  would illustrate an important principle, namely, that moving one point in a manner “unfavorable” to North may actually improve the outcome for him. The threat that kept him from winning in Figure 2 depends on the comparative attractiveness of AB over  $\alpha\beta$  for North; if AB is made worse for him than  $\alpha\beta$  he becomes immune to the threat, which then is not made, and he wins at  $\alpha\beta$ . This is an abstract analogy of the principle that, in bargaining, weakness may be strength.