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A BEHAVIORAL FRAMEWORK FOR THE
MANAGEMENT OF
TECHNOLOGY TRANSFER NEGOTIATIONS

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ABSTRACT

This paper develops a behavioral framework for use in the management of technology transfer negotiations (TTN's). This term refers to negotiations conducted for the acquisition of technology, either embodied or disembodied in equipment, most frequently, across international boundaries. This work draws concepts from the organizational behavior literature and applies them to the conditions of uncertainty, complexity, and asymmetric distribution of knowledge between the parties, that characterize negotiations that result in the international transfer of technology.

A distinguishing feature of this work is its emphasis on the negotiation process itself. It is this micro focus what allows us to produce recommendations to managers who are actually involved in TTN's. Most literature on international technology transfer, on the other hand, is concerned with improving, through public policy making, the bargaining power of technology buyers.

As a starting assumption, it is considered that the parties conducting complex negotiations, such as TTN's, are limited in their capacity to evaluate alternatives by two factors, bounded rationality and organizational heterogeneity. The first, a fact of human nature, cannot be modified, while the second is, as we explain in the paper, susceptible to manipulation. The consideration of these two factors help explain why real negotiations do not follow the continuous pattern of mutual concessions expected by economic theorists. Instead, they constitute a discontinuous, staged, process which includes, among other aspects, a search for a negotiating agenda and internal negotiation.

Two basic conclusions are derived from our analysis. The first is that economic models of negotiation are inadequate to describe TTN's, thus a different framework is needed. The second, and most important, is that negotiating behavior is strongly influenced by the degree of informal association, or organization, among negotiators (the existence of groups or "clans"). This form of organization, which may be parallel to the formal organization, is associated with a set of implicit norms of conduct. In situations characterized by uncertainty and complexity, such as TTN's, these implicit norms may constitute the only available guideline of conduct. Explicit corporate and governmental instructions, the result of most of existing analyses, constitute only very partial guidelines because they cannot be implemented. Then, we argue that, in order to be useful, a negotiation strategy must deal with the set of implicit norms of conduct which characterize the informal organization of negotiating teams. The key to this strategic possibility is the process of socialization, e.g. attainment of goal congruency, well known to organization scholars.

While "natural" socialization has long been recognized as existing within organizations, it has only recently been realized that it can be planned. Here we argue for the adoption of planned socialization strategies, com-
bined with specific guidelines, in the management of TTN's. It is shown how 10 socializing tactics can be combined to produce the set of attributes which are deemed necessary for a negotiating team to be successful. When time constrains socialization it is possible to follow certain hiring practices which ensure goal congruency within the negotiating teams.

The importance of improving strategies for the transfer of technology hardly needs elaboration. Discussions of the injustice of the terms under which technology is transferred have permeated much of the literature on foreign direct investment and, in fact, today's licensing contracts contain less restrictive clauses than ever before. Further progress, however, rests on the buyers' capacity to manage TTN's, as many of the undesirable aspects of existing arrangements result from the buyers own actions. This paper, we think, provides a starting point in this direction.
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I. INTRODUCTION

This paper is concerned with the problems faced by managers who are engaged in the acquisition or sale of technology by means of negotiated agreements, most frequently, across international boundaries. This emphasis is at odds with much of the abundant literature on international technology transfer which, in our opinion, overemphasized the capacity of government regulation to alter the balance of bargaining power between the parties involved. Furthermore, by stressing the importance of government as actor, this traditional line of research has led to a long standing debate with high ideological content in which objectivity has suffered. While we do not deny the validity of such a focus, as it deals with a good part of the issues, we contend here that it is partial and, even more, that it has diverted energies from the analysis of negotiation process itself.

As argued throughout this paper, the neglect of the theme of negotiation corresponds to the lack of a theoretical framework suitable for dealing with the conditions of information asymmetry and uncertainty prevailing during technology transfer negotiations (hereinafter TTN). This is not surprising since, as we will see, much of bargaining theory was developed for its use in collective bargaining. Many of its assumptions -- unique and stable utility functions, knowledge of the opponent's utility function and of the rules of the game, among others -- are clearly inadequate for technology transfer negotiations. But this is not all. By stressing the calculus of solutions, analytical models of bargaining \(^1\) tend to ignore other processes, such as agenda setting, which are equally important during complex negotiations.
A growing body of evidence, including case studies (Appendix I, this paper; Bennett and Sharpe, 1977; Brezzo, 1975; Naim, 1979) and the statistical analysis of agreements (Contractor, 1981), indicates that a neutral view of negotiation is largely inadequate. Negotiations conducted under the most favorable of conditions frequently result in agreements that are unfavorable to the party that has the most advantages. The parties, as we will discuss, seem unable to utilize all their bargaining power. These experiences have not escaped the attention of researchers and published work with substantial emphasis on negotiation is starting to appear.

Students of international politics (Zartman, 1975, 1977; Winham, 1977, 1979; Lockart, 1979) have shown that negotiations do not follow the continuous pattern described by traditional bargaining theory. The complexity of the issues causes the parties to be uncertain not only about the outcomes, e.g. terms of agreement, but also about the items to be negotiated. "Agenda setting" and "strategic search" occupy a considerable part of their attention. Similarly, complexity and heterogeneity of the parties themselves mean that intraparty negotiation plays an important role in affecting bargaining performance. The result, which this line of research describes, is a discontinuous, staged process which starts with a search for a common agenda and continues towards a resolution of the partial issues.

This paper is concerned with developing a framework for the management of TTN's, conceived as the discontinuous process indicated in the previous paragraph. To this end, we draw from concepts of organizational theory to elucidate the determinants of behavior under such negotiations. One of the most important conclusions of this paper is that negotiating behavior is
strongly influenced by informal, implicit norms of conduct which, in turn, are associated with the existence of groups or "clans" (Ouchi, 1979, 1980). In consequence, explicit corporate and governmental instructions, constitute only very partial guidelines for conduct during complex negotiations. In order to be effective, we argue that a negotiation strategy must deal with that set of implicit rules of conduct. The key to this strategic possibility is the process of socialization, e.g. attainment of goal congruency, well known to organization scholars. While "natural" socialization has long been recognized as existing within organizations (Schein, 1968), it has only recently been realized that it can be planned (Schein and Van Maanen, 1977). Here we argue for the adoption of planned socialization strategies in combination with explicit guidelines in the management of TTN's. When time constraints socialization, it is possible to follow certain hiring strategies to ensure goal congruency among members of negotiating teams.

The importance of improving strategies for TTN's hardly needs further recognition. Discussions of the injustice of the terms under which technology is transferred have permeated most of the literature on foreign direct investment and, in fact, today's contracts contain less restrictive clauses than ever before. To go any further, however, it seems very important to discover hidden restrictions present in licensing contracts which, in some instances, are the result of the buyer's own actions. Other problems, also discussed here, stem from the fact that many TTN's are being conducted between "nationalized" enterprises and their former partner corporations (Vernon, 1981) so that opposing parties are still linked by the same sort of informal ties as clans, as mentioned earlier.

This paper is organized as follows. The second section briefly reviews
the traditional theory of bargaining and discusses its applicability to TTN's. Then, in the next section, we proceed to present a behavioral approach to the same process followed, in the fourth section, by a number of strategic recommendations for the management of TTN's. This last section includes proposals for the future research.
II. BARGAINING THEORIES

The process of technology transfer to LDC's occurs within a bargaining framework where the subject of negotiation, technology, is complex, information is asymmetrically distributed among the parties and, very importantly, there are substantial, often structurally-related, conflicts of interest both possible and necessary because community of interest coexists with conflicting goals. Most bargaining theories, on the other hand, have been developed to deal with labor disputes where these stated conditions do not prevail, at least simultaneously.

In most situations where the transfer of technology is negotiated, such as licensing, sale of capital goods, technical assistance and managerial contracts, negotiations occur between heterogeneous teams. Therefore, it is not realistic to expect that they have unique utilities and, even less, that each party has knowledge of the utility functions of its opponent. These two conditions alone invalidate the well known Nash theory of bargaining for its use in TTN's. Furthermore, in contrast with other situations, the payoffs associated with each outcome are uncertain. In fact, they are contingent upon many exogenous variables (politics, economics, organization, etc.). Another frequently used assumption, that each individual has full knowledge of the rules of the game is also inadequate in this case because cultural and language related issues hamper the communication between the parties, at least during the initial stages of bargaining.

In contrast with Nash's theory, Zeuthen (1930) and Harsanyi (1961) developed a theory which views bargaining as a problem of risk and apply
to its techniques of maximization of expected utility. This approach assumes that each party is constantly comparing the alternatives of immediately accepting his opponents latest offer versus holding out his current demand, at the risk of causing a stalemate. Still, Zeuthen's and Harsanyi's approaches depend on precise definitions of utility and risk.

Another group of bargaining theories is based on Hicks' (1963) work in wage theory where (Chapter 7) the author argues that both the employer's tendency to make concessions and the union's resistance are a function of the duration of the strike. Several authors have constructed complete bargaining theories from the elements from the elements sketched roughly by hicks, one of the analytically clearest and simplest being that of Foldes (1964). The essence of this approach is that disagreement involves delay and loss of utility to both parties. However, this theory can only be applied to very specific employer-employee situations and, in any event, still assumes perfect information. Cross (1965) has attempted to relax the assumption of perfect information while, at the same time, retaining an analytical approach. His results show that a useful theory must be, indeed, very complex.

Still another set of approaches to the problem of bargaining for technology can be devised through the use of the theories of foreign direct investment. The product life cycle theory portrays the notion that bargaining power of the supplier decreases with time while for the recipient the opposite happens. Other parallel theories, such as that of Hymer (1976) and Magee (1979), predict the existence of industry-wide cycles with the same bargaining power consequences.
Then, at any given moment it is possible to devise the relative strength of the adversary from easily obtained information. Stobaugh (1969), for example, has been able to establish, not without controversy, the existence of such cycles within the petrochemical industry. The optimal moment for negotiation (from the host country's, or buyer's perspective) can, in principle, be devised by balancing two terms. One is the buyer's progressive gain in bargaining power coming from the loss in appropriability of the technology to be negotiated. The other is the progressive loss in expected returns from the commercial application of the technology by the buyer which arises as the knowledge becomes available to competitors or, eventually, obsolete. Since the supplier is aware of this last effect, it is translated into a loss of bargaining power. If a country has a large market and/or negotiates for a mature technology, the theory is that it can rest in peace, for it will always strike favorable deals. However, all these considerations lead us to the determination of "potential" bargaining strength while the relevant question is how potential can be translated into effective bargaining strength. Naim (1979-b) and Acosta (1977) have documented cases where Venezuela has not been able to translate almost ideal bargaining conditions into advantageous results.

The gap between "potential" and "actual" bargaining power can be attribute mostly to the existence of organizational or internal constraints upon the exercise of power. Accounts of modern practitioners seem to attach overwhelming importance to negotiation among members of the same party (Lockart, 1977; Winham, 1979; Zartman, 1977). When one party is more homogeneous than the other, as in the case of LDC's government-owned enterprises, internal bargaining can result in a considerable loss of bargaining power by the
disunited party. In sum, the assumption that negotiation is an external process, which has been necessary for the development of most of bargaining theory, is not quite valid in the case of TTN's.

Finally, we can devise technology transfer agreements where no direct bargaining takes place. Olivier (1979) has provided deterministic solutions for the case where the asymmetry of information is so large that it is advantageous for the buyer to delegate all relevant technological decisions to the seller. Depending on the magnitude of the "moral hazzard" associated with the delegation (agency type relationship) of technological-decision-making, he concludes that it is possible to reach an optimal trade-off between the "hazard" and the risk-sharing benefits. These risk-sharing benefits are obtained through the financial contracts derived from technology transfer projects (co-operation contracts in the text) as developed by Lessard (1977). This approach is limited to those very rare, almost nonexistent, cases where it is possible to delegate negotiation. Furthermore, it still assumes that the agent has the perfect knowledge lacked by the principal.

At this stage, the question of whether it is possible at all to device an operational theory for TTN's seems quite valid. As for this question, Bartos (1967) has shown that negotiations are, indeed, unpredictable, thus "not susceptible to completely determinate theorization, because of their structural characteristics of symmetry: what each side can learn to do, the other side can learn to undo." We contend in this paper that, although a general and determinate theory may not be available, it is still possible to
develop a heuristic view which matches the patterns of real negotiations. Perhaps the key to this objective lies, as other authors have pointed out (Winham, 1979; Zartman, 1975), on paying more attention to the process than the usual outcome-based theory recommends. It is this concern for process what leads us into a behavioral framework for analyzing the bargaining problem.
III. A BEHAVIORAL VIEW OF NEGOTIATIONS.

In an structural sense, the most important feature of TTN's is that information is distributed asymmetrically. In the context of such negotiations, information asymmetry applies in two dimensions. One, well discussed in the literature (Cross, 1965; Harnett and Cummins, 1980), refers to the lack of knowledge of the "rules of the game." These "rules" include: the other party's payoff table, cultural, organizational, political, etc., sets of rules which may, or may not, constitute legal instruments. The second source of information asymmetry is the well-known paradox of knowledge, which may be expressed as: you only acquire technology when you do not possess it. Therefore, involvement in a TTN presupposes some lack of knowledge on the part of the buyer. This second source of information asymmetry is a structural characteristic of TTN's which is rarely found in other types of negotiation.

Other features of TTN's are circumstantial in nature, as they can be present in other types of negotiation. First, TTN's tend not to be interpersonal because the parties are usually teams or, if single, they are responsible to the organizations they represent. One practical consequence, to be elaborated later, is an emphasis in intra-party bargaining and other organizational influences, while the theoretical result is that single utility functions cannot be used in the analysis. Second, the issues tend to be complex. In many TTN's, the subject of negotiation includes not only basic technology but, also, engineering, procurement, and other services. The practical and theoretical consequence is that there are usually many negotiable issues to be handled as part of a TTN.
Two concepts, "structural uncertainty" and "cybernetic decision making" (Winham, 1975), suffice to explain most of the pattern observed in complex negotiations such as TTN's. "Structural uncertainty" refers to those situations where the nature of the possible outcomes and not merely the probability associated with the different outcomes is unknown. "Cybernetic decision making" refers to a process of trial-and-error-search for the establishment of negotiation rules and priorities which takes place when decision makers with limited rationality face situations of uncertainty. Essentially, "cybernetic decision making" can be understood as a mechanism for coping with uncertainty or, alternatively, of creating structure where it is missing.

As we said, the traditional view of negotiations holds that they constitute a continuous process of exchanging concessions through which the parties converge to an agreement. We think, however, that the notion of a continuum loses interest in the complex situation that we describe here in that imposing continuous models assume a degree of structure which is lacking in TTN's. In reality, "structural uncertainty" determines that parties negotiate, at least partially, to find out what the issues are (agenda setting); thus, it is beyond their analytical capabilities to assess probable outcomes.

Now we can match the elements sketched in the foregoing discussion to delineate a standard pattern for TTN's. For expository purposes, we will consider the existence of three, not completely sequential, steps: agenda setting, partial resolution of conflict, and feedback-resolution.

First, there is a process of agenda setting, where by the parties find which are the issues requiring negotiation. This step includes, also the establishment of negotiation rules and hierarchies. Rules, or formulas, may
include criteria about how to deal with similar aspects: on an item by item basis or all at once. Some "covert" rules may include issue linkages. As for priorities and time schedule, these are agreed upon at this stage. In some cases, structure can be created around obvious groups of issues: types of products, of equipment, etc. In others, working groups can be created to deal with some aspects of negotiation. Through this stage information is disaggregated, discarded and reordered to match the agenda.

Second, there is a process of partial resolution of conflict. During this stage, the issues defined in the agenda are dealt with sequentially, that is, "a package is built" (Winham, 1977:99). In some instances, the different issues can be negotiated simultaneously by separate teams. The resolution of each individual conflict can, perhaps, be explained in terms of conventional bargaining theories (that is, continuous models).

Third, there is a process of feedback and resolution. During this stage, the parties submit the terms for approval in their respective organizations. Internal bargaining plays an important role during this and the previous stage. The consideration of this internal process will necessarily lead us to examine the effects of organization, both "formal" and "informal," upon the characteristics of negotiators and, of course, their conduct.

The Importance of Organization during Negotiation

The predominance of different types of organization, and the internal structure of such organizations, can be explained as a problem of transaction costs, which include the costs of controlling the conduct of economic agents (Williamson, 1975 and 1979). It is a basic tenet of the behavioral approach to organizations that certain characteristics of economic agents,
limited rationality and opportunism, when coupled with the characteristics of the transactions, frequency and level of uncertainty, determine the transaction costs. The form of organization which minimizes these costs the argument follows, will be the most efficient and, eventually, self-select itself. It is clear, for instance, that control is costly or impossible when transactions occur in uncertain situations. The argument runs as follows (Ouchi, 1979, 1980):

Normally, control within organizations, and hierarchies in particular, is implemented through formal channels, behavior control and output control. The first "mode" of control is akin to individual surveillance and requires some knowledge of the means-ends relationships, that is the transformation process. In other words, there has to exist some knowledge of the kind of behavior which is appropriate to fulfill the objectives of the organization. Individuals may be told, for example, that smoking is prohibited because the "theory of the office," that is the transformation process, indicates that smoking somehow affects the office's capacity to fulfill its objectives. Output control, on the other hand, requires the existence of a yardstick such as production volume, costs, etc. This is typical of organization producing measurable outputs. Both "modes" of control complement each other but, while output measurement can be used to compare performance among several subunits, behavior control is a subtle and subjective activity confined to small segments of the organization.

In all cases, information is at the heart of the control problem. When the information required to implement one "mode" of control is costly or impossible to obtain, the other "mode" may still be available. There are, however, cases where none of the two overt "modes" of control can be implemented. In such situations informal control enters the picture. This "mode" of control
is present in all organizations as a result of a natural socialization or acquaintance process (Schein and Van Maanen, 1977; Wanous, 1980), and becomes particularly relevant whenever overt forms of control are unfeasible. In its essence, informal control is the result of achieving substantial congruency among individuals. As organization members come to share several common goals, monitoring performance becomes largely unnecessary because very few members, if any, will attempt departures from the code of conduct representing those common goals.

One consequence of implicit control is the creation of subunits, groups or "clans," where the degree of goal congruency is relatively high. These "clans," while embedded in the hierarchical structure of the organization, are very influential in determining the behavior of organization in circumstances characterized by uncertainty and low frequency, e.g. where formal control fails. Direct evidence in this regard is abundant but fragmentary (Caiden and Wildavsky, 1979; Garcia Zamor, 1971; Peters, 1977), but much research in organizational communication (Rogers and Kincaid, 1981; Rogers and Agarwala-Rogers, 1976) has confirmed the existence of many groups of individuals --cliques-- with membership that frequently crosses hierarchical lines.

Several social mechanisms to increase goal congruency have been recognized. Two obvious ones are education (formal) and copartisanship. In addition, Van Maanen (1976) finds job socialization coupled with long term employment to be an effective way to "process" people together. Ouchi (1979, 1981), on the other hand, considers that the "ritual and ceremony" associated with staffing policies ensures that subunits are constituted by similar kinds of people. The prevalence of one type of mechanism over the other will depend on
the amount of time available for socialization.

In highly mobile organizations (such as government-owned enterprises where managerial level are replaced after each political cycle) there is insufficient time for socialization in order to acquire a common set of beliefs. Thus, the only way to achieve convergence of goals is by screening newcomers very carefully so that they will share a substantial part of their beliefs with those of their organization. When this happens, we can disentangle a "clan's" goals by examining its hiring practices. In a gross example, if a clan hires mostly engineers we can expect it to behave as if it were an engineer, or at least behave as such when transactions become very complex or uncertain. During the course of ordinary activities, though, clan members will act as other organization members.

As we said, an important consequence of the view that organizations are constituted by "clans" with the characteristics described above is that one can explain substantial portions of the behavior of its members examining the goals of the subunits rather than those of the organization. Furthermore, knowing the "common set of beliefs" that stabilizes "clans" could allow us to predict patterns of behavior toward risk and complexity. Consequently, we cannot expect to be able to manage processes occurring through clan-type behavior unless we are able to manipulate that set of common goals and beliefs that characterizes these groups. Attempts to elaborate explicit norms and procedures suitable for the occasion are likely to be of limited use when the conditions of ambiguity that led to clan formation are present. It is for this reason that we support the use of a behavioral approach, e.g. one that accounts for the existence of clans, for the analysis and, eventually, management of TTN's.
Consider the case of TTN's. The measurement of output, that is of the attributes that define a successful deal, is extremely difficult, if not impossible. Several factors conspire against output control: 1) the sharing of information from similar negotiations, that elusive goal of "most favored treatment" so vigorously advocated by LDC's economic integration efforts, is almost impossible or very expensive to achieve; 2) the low frequency of TTN's and the high turnover rate of state-owned enterprises make it difficult to learn from past experiences; 3) the ultimate outcome of the negotiation, a successful manufacturing venture, takes a long time to materialize, thus it is impossible to use it as a yardstick for negotiation performance. On the other hand, behavior control is also impossible since we do not know the behaviors that make a negotiator successful. Nevertheless, valuable checklists have been prepared for international treaty negotiations (Winham, 1979), which can be considered behavioraly equivalent to TTN's. However, the difference in the nature of the issues and interests involved in the two types of negotiation makes it inadvisable to attempt an outright application of such checklists to TTN's. Summarizing, as both modes of explicit control, output and behavior, break down, we can expect clan-type of behavior to prevail during TTN's. Note, however, that the members of a negotiation team do not belong necessarily to the same clique. It is expectable that members of a team appointed by executive order may disagree strongly in many areas and adopt incoherent positions during the course of negotiations.

Preferences in groups

Negotiators' preferences are strongly influenced by their membership in clans. There are at least two types of effects: 1) those traceable to the identity and common goals of clan members; 2) those derived from the risk-
sharing possibilities which arise when individuals form groups.

In regard to the first type of effect, elsewhere (Villalba, 1981) negotiators' preferences have been linked to kinship relationships among members. In that instance, common engineering background was associated with a bias toward highly "packaged" transfers of technology. The reason, it was argued, is that purchasing many elements from the same technology source minimizes the possibilities of disruption in operation, for which engineers, by virtue of their training, are frequently held responsible. This effect of group formation is similar to that represented by the attitudinal model labeled as "engineering" man, as opposed to "economic" man (Wells, 1975), in reference to a marked preference for capital-intensive technologies, in which skills are built into machines.

The second type of effect, risk-sharing, has been examined by Gillis, Jenkins and Lessard (1981) in a different context; finance in state-owned enterprises. This analysis is not based on the assumption that there are differences in the risk-hearing abilities of individuals; all peculiarities toward risk are related to organizational mechanisms for the distribution of risk.

At the clan level, the transmission of risk perceptions is neutral because of the high level of socialization among its members. As we pointed out before, there has to be substantial goal congruency for the clan to exist. Thus, we do not expect individuals' and clans' perceptions to differ much. In other words, clan members tend to accept similar payoffs from similar amounts of risk. This conclusion agrees with recent writings on the subject (Fama, 1980; Tandon, 1980) which emphasize risk-sharing among managers, and with the conventional wisdom that associates "dilution of responsibility"
with the appointment of committees.

As for the organization at large, there are several mechanisms which account for the gap between managerially-relevant and enterprise-relevant risk. The same control failures that lead to clan formation, it is argued, diminish the ability of the hierarchy to set appropriate rewards to the risk borne by negotiators. The argument followed here is based on the low capacity of organizations to learn from TTN's, and on the possibilities for an unjust appropriation of the rewards of negotiation.

One consequence of this paucity of learning is that the organization finds it difficult to set appropriate rewards for TTN participants (one part of the lack of control is the lack of incentives). Low-risk, low-return projects will not be visible enough to compensate for the risk they entail at the individual and/or clan level. Managers (or negotiating clan-teams) will try to avoid these undertakings whenever possible. Medium-risk, medium-return projects, on the other hand, will be especially appreciated because the attention they generate is worth the risk. Returns coming from high-risk, high-return projects will, in general, be shared with other units. Further, there is a pervasive tendency for others to appropriate successful projects of this category. Faced with the alternatives of either sharing the rewards or relinquishing power over a project, TTN participants logically will avoid high-risk deals. In sum the existence of clans means that negotiators will avoid low and high-risk situations and favor, perhaps excessively, medium-risk situations. In short, the presence of clans will cause risk aversion to be a function of the relative size of the project under consideration.

Summarizing the discussion, we can say that the structural and circumstantial
features of TTN's, when paired with the limited rationality of negotiators, induce a pattern of behavior that is dependent on the "informal" relationships among such individuals.\textsuperscript{20} This informal organization, which is traceable to the relative affinity of goals and beliefs among individuals, can be responsible for biases in the selection of technology and for peculiar attitudes toward risk. The same reasons that lead to this pattern of behavior, e.g. "clan-type," cause a failure of the type of control mechanisms which would normally be implemented by the organizations to which negotiators are responsible. Thus, explicit instructions to guide negotiators are of limited help during TTN's and should be complemented with the implicit control system associated with the existence of "clans."
IV. MANAGERIAL IMPLICATIONS.

Up to this point, our main interest has been the development of a behavioral interpretation of the determinants of conduct during TTN's. We now focus on the inverse problem, that is, assuming that behavior during TTN's is influenced by the "informal" association of negotiators (e.g. clans), what can we do about managing them?

An answer to the practical question posed above will necessarily imply manipulation of the implicit control system, "culture," that dominates group, or clan, behavior. The reason is twofold. First, the organizations participating in TTN's are obviously interested in making that implicit control system work to their advantage. Second, as we pointed out before, the members of a negotiation team could be very different in terms of their goals (belong to different clans). It is important therefore, to reduce the possibility of disagreement (with all the negative effects on bargaining effectiveness) in the middle of negotiations. Ideally, negotiators should belong to the same clan. The strategies proposed here will consist of modifications in the socialization process undergone by newcomers to the groups, or in the design of particular personnel selection policies. To some extent, socialization and personnel selection are substitutes for each other, but can be mutually supporting or destructive.

The application of one or another type of strategy (socialization or selection), or a combination of both, will depend on several factors. In some instances, such as certain government enterprises where job duration is short, socialization strategies will not be feasible due to time constraints. In other cases, scarcity of qualified personnel or particular characteristics of the job, such as confidentiality, deter the enter of new personnel. In
all cases, however, a complete strategy for TTN's will include not only a socialization-selection plan, but also the elaboration of a set of guidelines or checklist 21 to assist in the evaluation of different options as well as in the mechanics of the process.

The Job of Negotiator

Before the design of any bargaining strategy, it seems important to specify the requirements of the role of negotiator. Traditionally, the word negotiator has been associated with qualities such as skill, cunning and craft. We expect negotiators to be accomplished manipulators of other people. In the case of TTN's, however, we are more concerned with group than individual performance.

The attributes of an ideal negotiating team could be summarized as follows:

a) Technical competence. Its importance is self-explanatory. It is not permanent and its maintenance requires continuous communication with the outside. In this regard, we may recall that the task of maintaining links with external sources of information is not participated in equally by all the members of a group. This function, called "gatekeeping" by Allen (1977), requires certain specialization and is particularly complex in technology bargaining because of the multidisciplinary nature of the relevant information. This attribute can be manipulated more through selection than through socialization strategies.

b) Cohesiveness. It is a natural consequence of the socializing mechanism that keeps the groups together. Groups created by mandate may lack this characteristic unless they undergo a particular kind of socialization. This attribute allows the group to concentrate on the subjects of negotiation by reducing the importance of internal negotiation. It can be manipulated through socialization and/or selection processes.

c) Flexibility, innovativeness. It allows the team to modify positions and exchange concessions so that negotiations do not reach a stalemate. However, excessive innovativeness can be dangerous if the subject of negotiations is critical. In particular, we refer to those cases where the group or individual rejects completely the norms associated with a particular role; that is, becomes a rebel. This attribute is highly sensitive to both socialization and selection procedures.
d) Inclusiveness. This attribute refers to the image presented by the group to the rest of the organization. Unless negotiators are considered "insiders," they will not be granted the autonomy they need to be effective negotiators. It may be associated with "apparent" loyalty to the organization, commitment to specialized or professional skills, membership in certain associations and historical factors. This characteristic is, again, sensitive to selection and socialization strategies.

e) Independence. It refers to the absence of biases that could impair the group's ability to compare different options. In contrast to the previous attribute, "inclusiveness," this one refers to actual behavior, not to others' impressions of group loyalty. Biases may be based on organizational, individual-professional, and historical-political grounds. In some instances biases may result from previous employment or institutional linkages; a nationalized firm negotiating with its former parent corporation is a good example. Again, this attribute is susceptible to manipulation by selection and socialization strategies.

The constitution and maintenance of groups or teams with these previously described "ideal" characteristics is difficult. At least two factors militate against reaching this goal: heterogeneous candidates and group longevity. Having candidates for the position of negotiator that come from different backgrounds (sometimes it is a requirement to create a multidisciplinary group) means that the intensity and orientation of the socialization must be different for each group member. Of course, this difficulty can be reduced by selecting candidates with similar degrees of tenure and breadth of experience within the organization. The task of maintaining group effectiveness throughout time is complicated because some of the attributes mentioned above may evolve differently as the group ages: characteristics a, c and e tend to deteriorate while d improves (Katz, 1980). In the case of cohesiveness, b, it cannot be said a priori whether the direction of change is favorable or not. Two processes are at work: team building-learning, and role differentiation. The first leads to greater cohesiveness while the second does not.
Strategies

As was pointed out before, most of the characteristics of an "ideal" negotiating group can be manipulated, at least partially, during the socialization processes. Van Maanen and Schein (1977) have identified at least six major dimensions that describe a socialization process. Individual responses to such process will depend on how those dimensions are combined in a given strategy. They are (table 1):

a) collective vs. individual (self-explanatory)
b) formal vs. informal (self-explanatory)
c) sequential vs. random (self-explanatory)
d) fixed vs. variable (refers to the term of duration)
e) serial vs. disjunctive (serial indicates that role models, such as experienced members are used in socialization; disjunctive, the contrary)
f) investiture vs. divestiture (refers to the degree to which an individual's identity and abilities are suppressed by socialization--divestiture--are supported).

No single strategy will produce the type of group we described earlier, so we will have to combine changes along several of these dimensions. Responses to socialization take the form of changes in the stance toward the features of a given job.

The easiest response of a newcomer to a given role is to assume a custodial, conformist, attitude toward the features of the new role. The other extreme of response is called innovative and it presents two varieties: "content" innovation, which results from a rejection of the technical and strategic bases of the new role (the reformist), and "role innovation" which leads
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Type of boundary passage most commonly associated with it</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective vs. individual</td>
<td>Functional (new technical skills)</td>
<td>-enhances group homogeneity</td>
</tr>
<tr>
<td></td>
<td>Hierarchical</td>
<td>-custodial response likely</td>
</tr>
<tr>
<td>Formal vs. Informal</td>
<td>Hierarchical and inclusionary (new risky activity)</td>
<td>-very likely to be successful</td>
</tr>
<tr>
<td></td>
<td>Functional</td>
<td>-innovative response likely</td>
</tr>
<tr>
<td>Sequential vs. Random</td>
<td>Hierarchical</td>
<td>-custodial response likely</td>
</tr>
<tr>
<td>Fixed vs. Variable</td>
<td>Inclusionary, not inclusionary</td>
<td>-innovative response likely</td>
</tr>
<tr>
<td></td>
<td>Functional</td>
<td>-bad for groups homogeneity</td>
</tr>
<tr>
<td></td>
<td>Inclusionary; functional and hierarchical at discretion</td>
<td>-custodial response likely</td>
</tr>
<tr>
<td>Serial vs. Disjunctive</td>
<td>Functional and hierarchical at discretion</td>
<td>-content innovation response likely</td>
</tr>
<tr>
<td>Investiture</td>
<td>Hierarchical, inclusionary</td>
<td>-custodial response likely</td>
</tr>
<tr>
<td>Divestiture</td>
<td>Initial entry</td>
<td>-custodial response likely</td>
</tr>
</tbody>
</table>

Source: Schein and Van Maanen (1981)
to a redefinition of the entire role (the rebel). If our aim is to produce innovative and flexible groups, our socialization scheme ought to seek generation of an innovative response. If, at the same time, we are interested in maintaining inclusiveness, that is the organization's acceptance of the team, we should avoid the extreme "role innovation" response. A group that openly rejects most of the norms of conduct and performance is likely to raise feelings of distrust among other parts of the organization and, eventually, lose its negotiating leverage entirely.

Other responses to socialization include increases or decreases in group cohesiveness, technical competence and independence. The effectiveness of socialization alone in modifying these attributes is, however, more limited than in the case of innovativeness and inclusiveness. It seems necessary to combine socialization with selection strategies to achieve the desired results.

Another aspect of socialization concerns the type of role change, or "boundary passage" in the sociologists' parlance. These role changes can be classified into three types: functional, hierarchical and inclusionary (which implies a change in the degree of tenure or acceptance brought by a new role). This aspect is very important because some socialization strategies (see table 1) can only be applied to specific boundary passages.

It is possible to maximize the likelihood of one or another type of response by choosing a socialization strategy that combines the characteristics described above in a certain manner. A custodial response, for example, will be likely to result from a socialization strategy that is sequential, variable, serial, and involves divestiture (see table 1 for the result of other combinations). Other characteristics can be manipulated during the implementation
of socialization strategies; For example, technical competence through training. Independence of the group can be enhanced by a disjunctive strategy, because individuals do not have to follow a model, and by selecting them from multiple backgrounds.

In sum, the chances of creating a negotiating group characterized by technical competence, cohesiveness, flexibility, inclusiveness and independence will be increased by implementing a strategy that is collective, formal, random, fixed and disjunctive and, in some instances, includes a process of investiture. Organization members that undergo different boundary passages in order to become negotiators (for example, one from middle management in marketing vs. a senior executive in finance) will require different "processing" but the variations will lie more in emphasis than substance.

**Implementation**

Socialization tactics consist of activities such as training, education (norms and procedures of the organization), apprenticeship, dramatic shared experiences, creation of illusions, provision of particular status and facilities, etc. It is important to remember, though, that these activities may require a considerable commitment in time and resources.

The implementation of a socialization strategy may require the creation of a formal apparatus in some instances. For those frequently involved in TTN's, it would benefit the firm to institutionalize the negotiation function through the creation of an organizational unit in charge of selecting, socializing and maintaining the vitality of negotiating teams. This unit ought to provide for the periodic renewal of the teams since, as pointed out before, group effectiveness decreases after a certain age. In other instances,
negotiations may not be frequent enough to justify the formalization of this function and groups will have to be created through selection strategies mostly. Socialization, of course, will take place but it will not be the main cause of group homogeneity.

The effects of socialization, being a process which involves changes in group beliefs, may last for a long time. This aspect seems relevant for those TTN's which occur between many nationalized firms and their former parent corporations. In these cases, it is very likely that two members of a previous group or clan will bargain on different sides of the table. From the point of view of each company's management, the behavior of both persons is very difficult to control and their agreements are justifiably suspect. In such a case it may be appropriate to apply a divestiture strategy aimed at "unfreezing" or "unhinging" previously held beliefs and values so that the likelihood of "selling out to the enemy" is reduced. One option is to select those who did not undergo the old socialization process, for example, employees hired after nationalization.
V. CONCLUSIONS AND FINAL COMMENTS

Our analysis of the behavioral characteristics of TTN's led us to discard most of the received negotiation theory. In contrast, we presented a framework that, although not amenable to simple model building, provides a general approach useful to describe and, eventually, manage this type of negotiations. We want to stress, however, that the view presented here does not exclude the use of traditional models of bargaining, although it certainly relegates them to the solution of partial issues.

In accordance with our behavioral framework, we conclude that negotiators' behavior during TTN's is dependent on the pattern of informal relationships existing in their respective organizations (herein characterized as clans). The mechanism for this influence is as follows. The normal mechanisms of control are relatively useless during TTN's; therefore, negotiators find themselves bound only by their personal and group-based convictions about what should be done.

It is obviously in the interest of the parent organizations to close the gap between personal-clan and organization convictions. To this end, we proposed the implementation of a strategy for achieving goal congruency according to the desired terms. This strategy, known as socialization in the literature, can be complemented with staffing policies tailored to the occasion. Another possibility, such as hiring in agents or "co-participants" for negotiation, is not recommended unless the alien elements undergo at least some socialization with the rest of the group. Not allowing for such a process will create disagreement within the team, with all the debilitating
consequences it carries with it.

As for recommendations for further research, a systematic study of the relationships between organization patterns, negotiation patterns, and outcomes, could lead to a refinement of the basic arguments of this paper which are, of course, of an exploratory nature at this stage. Similarly, the inclusion of preference analysis into the study could help to develop a typology of groups, akin to the "engineering" and "economic" man described earlier, in relation to their performance during TTN's. These two studies, we think, could enhance the usefulness of the framework developed here.

As general conclusion, we may add that this paper stresses a whole set of organizational factors which seem important for conducting technology transfer negotiations in a successful manner. While the use of explicit guidelines, and some governmental policies to improve negotiating position, is not disapproved in this paper, we think that they can be complemented with the kind of strategies developed here. We think that more work in the direction developed in this paper could help to put the process of international technology transfer in terms which are satisfying to all the parties involved.
FOOTNOTES

1- The term "analytical theories of bargaining" refers to theories that produce determinate solutions to the bargaining problem. In many cases they are expressed in mathematical terms. We use the term "traditional" as synonymous to "analytical."

2- For a survey, see de Menil (1971), op. cit.

3- The existence of a substantial conflict of interest is not always recognized in the literature. Vernon (1968:348) argues that most of the conflict perceived between multinational corporations and less developed countries is the result of misunderstandings arising from an inadequate flow of information.

4- For a statement of this analytical approach to bargaining, see Nash (1950 and 1953).

5- The contingent character of international technology agreements has been mentioned frequently in the literature. See, for example, D. Smith and L. Wells, 1975.

6- The term "culture is used here in its most general sense. That is, it includes corporate as well as geographical connotations.

7- For an early statement of this theory, see Vernon, R., 1966

8- For a critique, see Walker, W., op. cit.

9- Naim, M. presents a very complete documentation of the Venezuelan experience in the automobile industry and deals explicitly with this question of potential vs. effective bargaining power (1979-b).

10- As quoted from Bartos (1967) op. cit., by Zartman (1975:70) op. cit.

11- In an international setting, the lack of knowledge of such rules by one party may be substantial. As an example, some countries have legislation which regulates the conduct of the parties during public negotiations.

12- Note, however that information asymmetry does not necessarily produces outcomes that are unfavorable to the less unknowledgeable party. As Schelling (1973) points out, the fact that one side knows less about what is fair and reasonable generally induces this party to concede more slowly than the informed opponent.

13- For an early treatment of this subject of internal bargaining, see Walton R., and McKersie, T. (1965) op. cit.

14- These models, however, may be quite useful in describing the resolution of the individual issues. Zartman (1977) discusses the applicability of these analytical theories in the context of international relations.
15-This pattern has been observed by this author during the negotiation of a comprehensive agreement for technical assistance in a recently nationalized oil company. In that instance, negotiations for technical assistance in exploration, refining, and other areas, took place more or less simultaneously, all under the guidelines of a general "umbrella" type of contract.

16-To be objective, the idea that organizational members form groups is not new at all. The theory of cognitive balance, first advanced by Heider in 1946, was aimed at explaining how co-orientation within groups is achieved, and a whole research tradition on small groups exists (Alba, 1981). It was Ouchi, however, who integrated group theory into a framework compatible with Williamson's (1975) ideas.

17-The term "clan," as used here, is similar to that developed by Ouchi in his Z Theory (1981) and other pieces (1979). In contrast to that author's view, "clans" are here assumed to encompass only segments of the organization.

18-For example, Decision 84 of the Andean Common Market contemplates the creation of data banks about technology negotiations. After three years of its approval, however, this provision has not been implemented to any significant extent.

19-Some of the reasons for this paucity of learning are: 1) segmentation associated with negotiations, e.g., the existence of clans, impedes the diffusion of knowledge from past negotiations; 2) If the firm is a state-owned enterprise, high turnover rates (Silva-Michelena, 1967) will eliminate sources of negotiating knowledge; 3) each TTN is unique, therefore much information is useless for future negotiations; 4) As TTN's are conducted with very low frequency, memory may fail.

20-Interestingly enough, a similar conclusion has been reached in a completely different framework by Temin (1979). During the course of his discussion about the doctor-patient relationship, this author contends that behavior is dominated by customs (he calls it "customary mode of behavior").

21-A checklist for negotiators has been developed by Winham (1979). Unfortunately, it was prepared for multilateral negotiations. A more orthodox set of guidelines, "cartilla" in Spanish, has been prepared by Moreno (1975).

22-Depending on the background of the members, some variations may be appropriate. Independence may be enhanced by bringing personnel from outside the organization. This, however, implies that newcomers will have to undergo a process of investiture (a process that involves divestiture, the opposite, will tend to produce a custodial response).

23-Formal methods for clique identification are available (see Rogers and Kincaid, 1981), but the personal experience of this author in their use is that they are perhaps too expensive and time consuming for managerial usage. Their usefulness seems to be limited to research. Similarly, techniques for the direct analysis of preferences have been developed. Conjoint analysis (Greenhalg and Neslin, 1981) is perhaps the most complete. However, negotiator's preferences can be inferred indirectly by observing their performance (or that of the group) during situations which are behaviorally equivalent to TTN's.
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