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# Negotiation and the Web: Users' Perception and Acceptance

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## **Negotiation and the Web: Users' Perceptions and Acceptance**

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# Contents

|  |    |
|--|----|
| 1. Introduction                                | 1  |
| 2. Negotiation and the Web                     | 2  |
| 3. INSPIRE negotiations                        | 4  |
| 3.1 The InterNeg Project                       | 4  |
| 3.2 Negotiation analysis and INSPIRE           | 5  |
| 3.3 The negotiation topic                      | 6  |
| 3.4. INSPIRE's users                           | 7  |
| 4. The INSPIRE experiments                     | 7  |
| 4.1 Weight assignment and utility construction | 7  |
| 4.2 INSPIRE's outputs                          | 9  |
| 4.3 The role of graphs                         | 10 |
| 5. Evaluation of the INSPIRE system            | 12 |
| 6. Conclusion                                  | 13 |
| References                                     | 14 |

## **Abstract**

New information technologies invariably provide excellent opportunities for improving the efficiency and effectiveness of decision making and negotiation through the development of novel decision support techniques. Emerging Internet related technologies and, in particular, the World Wide Web provide yet another opportunity for radical change and improvement in the support and practice of negotiations. This view is supported by the results of a cross-cultural experiment that we have been conducting over the past year as part of the InterNeg project, observing computer-assisted international negotiations over the Web. One of the surprises from this experiment is the degree of acceptance that the Web/computer technology achieved among a user base comprising both experienced negotiators and students. In this paper we report our experimental results and suggest the reasons behind and requirements for successful acceptance of Web based negotiation support technology, with the aim of stimulating further exploration of the opportunities held out by these new technologies.

**Keywords:** negotiation, negotiation support, international negotiation, business negotiations, cross-cultural study, Internet, World Wide Web, decision support.

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# Negotiation and the Web: Users' Perceptions and Acceptance

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## 1. Introduction

New information technologies invariably provide excellent opportunities for improving the efficiency and effectiveness of decision making and negotiation through the development of novel decision support techniques. However, it seems that the degree of adoption of these techniques is relatively low in the traditional negotiation and mediation community. By traditional we mean those who are involved with the art of negotiation, who are considered "practitioners of negotiation" (Martin 1988). This is possibly because they harbor a certain degree of skepticism about the usefulness of these technologies in a field that is held to be as much of an art as a science. This skepticism is also reflected by the *Negotiation Journal*, in which papers on the use of computer and communication technologies rarely appear; the notable exception being a series of six articles that appeared in April 1995.

There are very few reported cases of large dedicated computer systems having been successfully used in complex international negotiations (Sebenius 1984; Hordijk 1991). More often computer packages are applied to analyze the negotiation problem and determine possible offers and compromises (Aaron 1995). At the same time a very large number of people use computer and communication technologies to correspond, determine implications of decision alternatives, conduct simulation, sensitivity analysis, etc. It seems only natural to assume that these people also negotiate using these technologies.

More importantly, however, the very rapid spread of computing technologies greatly expands the number of people who engage in international negotiations. These include executives, managers, bureaucrats and engineers and they must use computing technologies to negotiate. We specifically refer to those who now engage in transactions that were previously too costly to be considered. Their companies do not hire experts or send employees to conduct face-to-face negotiation. Their markets were local earlier but now they are increasingly becoming global. A similar phenomenon appears with respect to the cooperation between remote small communities, local and central governments, aid agencies, large corporations that make deals with small suppliers, etc.



This paper explores the implications of the World Wide Web<sup>1</sup> for negotiation and it outlines the InterNeg project. It outlines the world's first Web-based negotiation support system, INSPIRE, and reports results based on the use of this system by 596 users from over 30 countries.

## 2. Negotiation and the Web

The World Wide Web provides yet another opportunity for radical change and improvement in the support and practice of negotiations. Web technology has several characteristics that can potentially have a major impact on the conduct of business in general and the support and practice of negotiations in particular.

The Web enables unprecedented levels of *bi-directional connectivity* or *reach*, in contrast with traditional broadcasting media which are unidirectional, and traditional bi-directional communication media which are limited to very few participants. This may, for example, often lead to the modification or displacement of negotiation as the normal mechanism for offer determination in a given context. Already software programs like Bargain Finder (Andersen Consulting, 1997) and Jango (Jango, 1997) can help a negotiator discover new alternatives and thereby improve his or her best alternative to the negotiated agreement (BATNA), that is the best alternative to the negotiated agreement (Fisher and Ury, 1983). Internet auction systems like E-Bay (1997) and First Auction (1997) may generate the best possible price. In a similar vein, discussion groups and collaboration technologies form the glue that leads to the formation of "virtual communities." This can be used to affect the balance of power in a negotiation situation; consider, e.g., the effect of stoking public discussion during a sensitive negotiation on environmental threats.

An important consequence of the Internet's reach is the vast increase in contact between small businesses across geographic, national and cultural boundaries. We now routinely hear of small-scale entrepreneurs landing unexpected propositions from (geographically) far-away prospective clients. This requires many business people---individuals or non-institutional negotiators who normally lack formal training in negotiation---to have to deal with counterparts whose cultural background is either unknown or unfamiliar, and faceless communication, including negotiation, is becoming an integral part of the business process. All this can lead to a qualitative change in the nature and common practice of negotiation, and correspondingly imply a need for change in negotiation training: the process has to be a lot more culturally sensitive, and preferably technologically aware. Cultural sensitivity is not a new idea; it has always been addressed in the context of international diplomacy and global business (Fisher 1980; Adler and Graham 1989; Cohen 1991; Faure and Rubin 1993). However, such sensitivity is now required but on a large scale and for routine business, and not only for the diplomatic and corporate elite. Further, technological awareness has led to a considerable increase in the demand for effective negotiation support software, as our experimental results show (Sections 4 and 5).

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<sup>1</sup> The term is used here in an extended sense that includes other related Internet technologies such as multimedia messaging.

A remarkable characteristic of the Web is its massive *scale* with respect to several dimensions: faster, larger, and cheaper. It allows for business and other exchanges and transactions to occur very quickly and in large volumes. This in turn often requires an increase in the speed and efficiency of decision making and negotiation processes. This calls for faster reactions from humans involved in the process, as well as for automation of parts of the process. In particular, it creates a need for tools that can manage the complexity of conducting a large number of negotiations simultaneously. Imagine for example a variant of the common Internet auctions, in which complex and inefficient bids are treated as negotiable offers. Then the specification of tradeoffs would need to be automated, and this in turn implies a need for modeling the participants' value systems. The payoff is successful interaction with a larger number of negotiating partners with increased possibility of achieving a good deal.

The speed of the medium of interaction has also induced a need for fast online mediation and dispute resolution; indeed an online legal consulting industry has sprung up and there is considerable research on the creation of electronic contracts. The technology not only creates the need but also provides the means for delivery of effective solutions: the Web is a vast information resource, a forum for consulting other experts and specialists, and a means for accessing negotiation support tools.

The most important attribute of Web-related technology is its *intelligence*. The Web is not a passive store of information; it can be used to transmit "live" objects, i.e., objects endowed with context-specific behavior. Java applets are a well known generic example; these are pieces of software that can execute specific negotiation support functions on a user's desktop machine. More specific examples are structured negotiation offers or bids; preference objects that represent a negotiator's value system in a given situation; product description objects that describe some of the items being negotiated; financial objects such as spreadsheet models of a company's balance sheet, etc. These objects "execute" in the appropriate context; for example, the preference representation can be used to rank negotiation alternatives or to search the Web for information relevant to the issues being negotiated. It is particularly important to note that availing of this facility to create and communicate a rich variety of negotiation-related concept representations can alter a practitioner's behavioral patterns. We have observed this effect in our experimental study (Section 4), where we compared how people who used mainly e-mail messages fared against people who used structured offers (menu-based offer composition) and graphical representation of negotiation history.

A common misgiving expressed by practitioners new to the Web is that it loses the all-important cues that body language provides in face to face negotiations. In assuagement it must be remembered that the Web is not an "alternative" to traditional forms of interaction such as face to face or telephone conversation, but an enhancement. Both the

above modes of interaction are possible over the Web with Internet telephony and videoconferencing becoming increasingly commonplace.<sup>2</sup>

Indeed what is surprising to most negotiation researchers is that the reverse is more often true: *lack of face to face communication is an advantage*. The InterNeg study discovered this through user feedback (Section 4). The key factor behind this appears to be that Web based communication avoids the stress concomitant with face to face negotiation (i.e., it deflects a “hard sell”). The significance of this is nontrivial once you consider negotiation for everybody, as opposed to hardened professionals. The following section provides a brief introduction to the InterNeg project and outlines the study; some results of which are presented in Sections 4 and 5.

### 3. INSPIRE negotiations

#### 3.1 The InterNeg Project

The InterNeg project began in 1996 and currently involves the following activities:

- Construction of a comprehensive Web site *for and about negotiation*, located at: <http://interneg.carleton.ca>, in Canada and at: <http://iiasa.ac.at/Research/DAS/interneg>, in Austria;
- Development of decision and negotiation support methods and systems that can be effectively embedded in Web-based decision and negotiation support systems;
- Construction of Web-based systems amenable to use by people who have no prior knowledge of decision and negotiation analysis;
- Preparation of teaching and training tools and materials;
- Study of the use of the computer and communication technologies in decision making and negotiation; and
- Research on the differences in negotiation styles that result from differences in culture, education, age, sex, etc.

The key aspect of the InterNeg project that is discussed in this paper is the use of computer and communication technologies in negotiation. One outcome of this project is INSPIRE; the world's first Web-based decision and negotiation support system (available at <http://interneg.carleton.ca/inspire> and at <http://iiasa.ac.at/Research/DAS/inspire>). INSPIRE has been specifically developed to provide an experimental environment in which negotiation processes and negotiators' behavior can be studied. It has enabled a large scale systematic study of

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<sup>2</sup> This is not to suggest that physical presence in the same room makes no difference; on the contrary, studies have shown that in some cultures, e.g., Brazilian, there is a need for frequent physical contact between negotiators. However, the true value of this may be overrated, and in any case is incidental to our position: that business, and consequently negotiation, is increasingly going to be conducted via electronic media, and there is a need to adapt to such media and develop effective negotiation support systems.

cultural differences in negotiation, which was previously never possible. For more information about the project, its background and more detailed results see (Kersten and Noronha 1997a; Kersten and Noronha 1997b).

There are several key differences between our study and other studies. Negotiations through INSPIRE can be conducted anonymously, thus reducing cultural bias. They are conducted over several weeks, with or without imposed deadlines. Negotiations can be very easily conducted between people from different countries. That is, the technology circumvents the traditional barriers of space and time, and allows the users to employ techniques for the analysis of decisions and negotiations. Further, the users specify their own subjective preferences and negotiate using offers and/or free-text messages.

INSPIRE is being used to experimentally study decision making and negotiation, with the perspective of the cultural and technological impacts on the process and outcomes. As far as we know, this research is the first of its kind in the sense that the system has been used by many people, and from many countries, who have engaged in bilateral negotiations. We are interested in cultural differences, and in this way build on studies done by Adler and Graham 1989; Hofstede 1989; Cohen 1991; Rubin and Sander 1991; Eliasberg, Gauvin et al. 1992; Adler 1993; Faure and Rubin 1993; Chan, Triandis et al. 1994; Graham and Mintu-Wimsat 1997. We are also interested in the comparative use of different supporting technologies in negotiation.

### **3.2 Negotiation analysis and INSPIRE**

The INSPIRE system has its roots in negotiation analysis and such negotiation support systems as Nego and GDS1 (Kersten 1985; Kersten 1987) and Negotiation Assistant (Rangaswamy and Shell 1997), and an approach to negotiation support based on a hybrid conjoint measurement and optimization (Angur, Lofti et al. 1996). INSPIRE is used to support some of the activities conducted in each of the three phases of negotiation: pre-negotiation, negotiation, and post-settlement. In the pre-negotiation phase it is used for analysis of the alternatives (possible offers), and elicitation of preferences with respect to all alternatives. During the negotiation phase the system provides evaluations of the user's and his/her counterpart's offers; records the history of the negotiation and makes it available for easy review; provides graphical visualization of the negotiation's dynamics in each user's utility space; and allows for anonymous exchange of offers and messages. In the post-settlement phase the system determines whether the achieved compromise is non-dominated (efficient). If this is not the case it generates and displays several alternatives that dominate the achieved compromise and allows the users to continue negotiation until they reach an efficient compromise.

An important objective of our study is the analysis of the effects and usefulness of some common decision analytic techniques in practical negotiations. In the current experiments we have chosen to use conjoint analysis for preference elicitation and utility construction because it is simple and does not impose major requirements of the users (Green and Wind 1973).

In order to keep the process simple we have decided not to provide support for other types of analysis including the specification of BATNA and reservation prices, the analysis of the opponent's strategies and tactics, or assessment of the possible contract curve. We use only one type of graph, clearly define the negotiation issues, and provide

users with several salient options for each issue. In contrast with the negotiation analytic focus on the prescriptive/descriptive approach, the system provides the same type of support to both parties. The support is neither prescriptive nor descriptive; users can use its ratings but are not forced to, and the history and graphs provide a rich representation of the process without indicating the good or preferred alternatives or strategies.

### 3.3 The negotiation topic

Negotiations through INSPIRE are bilateral. To obtain adequate data for statistically valid comparisons, the system provides negotiators with a single problem to resolve. The negotiators represent two companies: Itex Manufacturing, a producer of bicycle parts, and Cypress Cycles that builds bicycles. The case has been designed to evoke a negotiation situation with which users from almost any country are familiar without requiring much contextual explanation. As the predominantly international users' proficiency in English is often low, the case is fairly simple and well structured. Its description fits within one and a half pages.

Both sides negotiate over the same four issues: the price of the bicycle components, delivery schedules, payment arrangements, and terms for the return of defective parts. For each issue there is a pre-specified set of options, i.e., issue values. Altogether, there are 180 complete and different potential offers (alternatives) that specify values for all four issues.

Each side is given a clear indication as to the desirability of the options (issue values) but only in terms of the direction and not specific trade-off values. For example, it is stated in Itex's case description that a higher price is better for Itex, the seller. Similar indications are given with respect to other issues. An example of the wording for the issue Returns, which describes the return policy of defective parts, appears in the box below.

Table 1.

An issue and its options

| Issue: RETURNS   |
|--|
| <ol style="list-style-type: none"> <li>1. Full price on all returned parts. Parts returned at Cypress' option. Itex pays shipping on all returned goods for a 75% refund.</li> <li>2. Five percent spoilage allowed. If more than five percent of a shipment is unacceptable the whole shipment is returned for a 75% refund.</li> <li>3. Ten percent spoilage allowed. If more than 10% of a shipment is unacceptable the whole shipment is returned for a 75% refund.</li> </ol> <p>Number 1 is the most preferred and number 3 the least preferred.</p> |

### 3.4. INSPIRE's users

Apart from the data logged by the system, much of our knowledge about the users of the INSPIRE system comes from two questionnaires administered by the system during and after the negotiation.

Between September 1996 and August 1997 there were 596 users of the INSPIRE system. Some users never began negotiation and, therefore, the data describing them is considered unusable. The records of 434 negotiators (217 negotiations) are considered usable. INSPIRE's users are from over 30 countries. They have different cultural and educational backgrounds; they include Web surfers, undergraduate and graduate students, researchers, engineers, managers and executives. Some of these countries and the number of users from each country are listed in Table 2. 67 users did not specify their nationality but conducted negotiations, and their data is considered usable.

Table 2.

INSPIRE's users

| Country | No. | Country   | No. | Country | No. | Country         | No. |
|---------|-----|-----------|-----|---------|-----|-----------------|-----|
| Canada  | 76  | Iraq      | 4   | Myanmar | 11  | US              | 26  |
| China   | 79  | Japan     | 4   | Poland  | 8   | Vietnam         | 6   |
| Finland | 22  | Korea     | 13  | Russia  | 4   | Other countries | 64  |
| India   | 33  | Sri Lanka | 9   | Taiwan  | 5   | Not available   | 67  |

## 4. The INSPIRE experiments

### 4.1 Weight assignment and utility construction

The pre-negotiation analysis phase involves preference elicitation activities leading to the construction of a utility function. In an effort to minimize the system's data requirements, we selected hybrid conjoint analysis with orthogonal designs (Green and Wind 1973; Angur, Lotfi et al. 1996) as tools to elicit preferences and construct a utility function rather than one of the better known, but data intensive, multi-attribute utility procedures.

Preference elicitation is a very simple three-step process taking about fifteen minutes. During this time the user is presented with issues and options, and is asked to assign weights to each of them separately. First, and after reading the case, a table containing all the issues is displayed and the user is asked to distribute 100 points among all the issues. Next, a table with the salient options for each issue is displayed, as illustrated in Figure 1. Note, that the table is generated separately for each user; the maximum rating value given in brackets for each issue is the weight the user entered in the previous step.

The third step during utility construction presents the user with a set of "packages" or possible offers and asks for a holistic comparison. These ratings are decomposed by the system into marginal utilities but not displayed to the user.

Ease of use of any system's features is an important indicator of its potential success. Table 3 presents questionnaire data on the users' perception of the difficulty in weighting issues and options required to construct the utility function. In this and subsequent tables, we provide assessments provided by all the users and by users from countries with more than 20 INSPIRE users.

File Edit View Go Bookmarks Options Directory Window Help

Location: <http://www.business.carleton.ca/cgi-bin/inspire/2.2b1/save/issue>

Please enter your ratings below. Remember, the greater the value you give to an option, the more important it is to you, relative to the other options *within the issue*.

| Price   | Rating<br>(Max = 30) | Delivery | Rating<br>(Max = 30) |
|---------|----------------------|----------|----------------------|
| 3.47 \$ | <input type="text"/> | 20 days  | <input type="text"/> |
| 3.71 \$ | <input type="text"/> | 30 days  | <input type="text"/> |
| 3.98 \$ | <input type="text"/> | 45 days  | <input type="text"/> |
| 4.12 \$ | <input type="text"/> | 60 days  | <input type="text"/> |
| 4.37 \$ | <input type="text"/> |          |                      |

| Payment                | Rating<br>(Max = 20) | Returns                      | Rating<br>(Max = 20) |
|------------------------|----------------------|------------------------------|----------------------|
| Upon delivery          | <input type="text"/> | Full price                   | <input type="text"/> |
| 30 days after delivery | <input type="text"/> | 75% refund with 5% spoilage  | <input type="text"/> |
| 60 days after delivery | <input type="text"/> | 75% refund with 10% spoilage | <input type="text"/> |

Clear all entries Submit your ratings

Figure 1. An INSPIRE page illustrating the option-rating feature.

Table 3.

Utility construction <sup>a</sup>

|                                       | Total     | Canada    | China     | Finland   | India     | US        |
|---------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Valid cases <sup>b</sup>              | 198       | 76        | 79        | 21        | 33        | 26        |
| Ease of weighing issues <sup>c</sup>  | 2.8 (0.9) | 2.8 (1.0) | 2.8 (0.7) | 2.6 (1.1) | 2.1 (0.9) | 3.0 (0.9) |
| Ease of weighing options <sup>c</sup> | 3.1 (1.0) | 3.1 (1.0) | 3.1 (0.7) | 2.9 (0.6) | 3.0 (1.3) | 3.1 (0.8) |

<sup>a</sup> Mean value (Variance)

<sup>b</sup> No. of users who answered particular questions in the questionnaires.

<sup>c</sup> 1 - Extremely easy, 7 - Extremely difficult

Overall, it appears that users have no difficulty with these tools; their average response is 2.8 and 3.1 that is below the value of 3.5, which is the midpoint of the difficulty scale.

## 4.2 INSPIRE's outputs

During the negotiation phase INSPIRE provides its users with three distinct types of outputs:

1. ratings of the packages based on the utility function,
2. messages formulated by the negotiating partners, and
3. graphs representing the negotiation dynamics.

Most decision and negotiation analytic techniques postulate the use of utility or some other valuation function as a mechanism for evaluating offers (packages). This, however, is by no means an accepted rule among researchers of decision making, and of negotiation in particular. The INSPIRE experiment may be seen as a test of the potential relevance of utility functions in negotiations. Most of the users had never used a utility-based approach to decision making and were using the system without any explanation of the decision theoretic methods underlying the system. Instead, they were provided a help facility which included an explanation of the role of scoring and utility, and also its purely tentative and subjective qualities.

Users' assessment of the importance and the usefulness of the rating of offers by INSPIRE (i.e., the importance of the utility function), and INSPIRE's message feature through which they communicate, is given in Table 4. On average, they find the utility ratings very useful: on the scale of 1 to 7, with 1 being "extremely helpful to the negotiation", the average of 199 responses is 2.4. While we cannot consider this statement as proof of the usefulness of utility-based approaches, it does encourage further research.

While the average importance stated by 199 users is high and similar for both utility and message importance (2.4 and 2.5) there are differences between countries, thus indicating possible significant cultural differences (the Chi-Square test rejects the null



hypothesis that culture is not related to the perception of utility importance at  $\alpha < 0.0005$ ). Canadian and Chinese users have similar assessment, though for Canadians the ability to use utility seem more important than for Chinese. For Finns and Indians, utility is very important while it is much less so for the Americans. Messages are very important for Indians but less for Finns and Americans. Note that most of the Indians are executives and engineers; the Finns, MIS students; and most of the Americans are graduate students of a negotiation course.

Table 4.

Utility construction

|                                 | Total     | Canada    | China     | Finland   | India     | US        |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Valid cases <sup>a</sup>        | 199       | 76        | 49        | 8         | 15        | 13        |
| Utility importance <sup>b</sup> | 2.4 (1.9) | 2.2 (1.4) | 2.6 (1.5) | 1.6 (0.5) | 1.9 (0.8) | 3.0 (1.1) |
| Messages helpful <sup>b</sup>   | 2.5 (1.9) | 2.4 (1.6) | 2.5 (1.7) | 3.7 (2.9) | 1.9 (0.7) | 2.6 (2.1) |

<sup>a</sup> No. of users who answered particular questions in the questionnaires.

<sup>b</sup> 1 - Extremely, 7 - Not at all.

### 4.3 The role of graphs

One of the simplest, and perhaps a controversial features of INSPIRE, is the negotiation graph. It is simple because it presents the scores of the two parties ordered in time and does not introduce any information that the user has not already seen. The only difference is the presentation.

An example of a negotiation graph is given in Figure 2. The graph represents actual negotiations between two Canadians; one from New Brunswick and one from Ottawa. Both sets of offers have been scored according to the utility function of "iron", (one of the negotiators gave himself the name of "iron"). Note, that although this graph depicts a complete (concluded) negotiation, users can view graphs at any time during the offer exchange and post-settlement phases.

The graph could be considered controversial because it may reflect a specific characteristic of negotiations that is not obvious to everyone. When one side (assume, *iron*) makes a concession then this concession is reflected in a decrease of *iron*'s score (utility). However, this may not be reflected on *Firestarter*'s graph; that is *iron*'s concession that is measured by the *Firestarter*'s utility can be seen on the graph as a reverse concession (or no change at all as it is illustrated with the move from offer [4] to offer [5]). This means that the evaluation (score) of the current *iron*'s offer is lower than that of *iron*'s previous offer. In other words, *Firestarter* may wrongly assume that their counterpart is being antagonistic, just as in most real-life misunderstandings. The reverse situation is also possible, that is one side hardens their position but this is perceived by the other side as a concession.

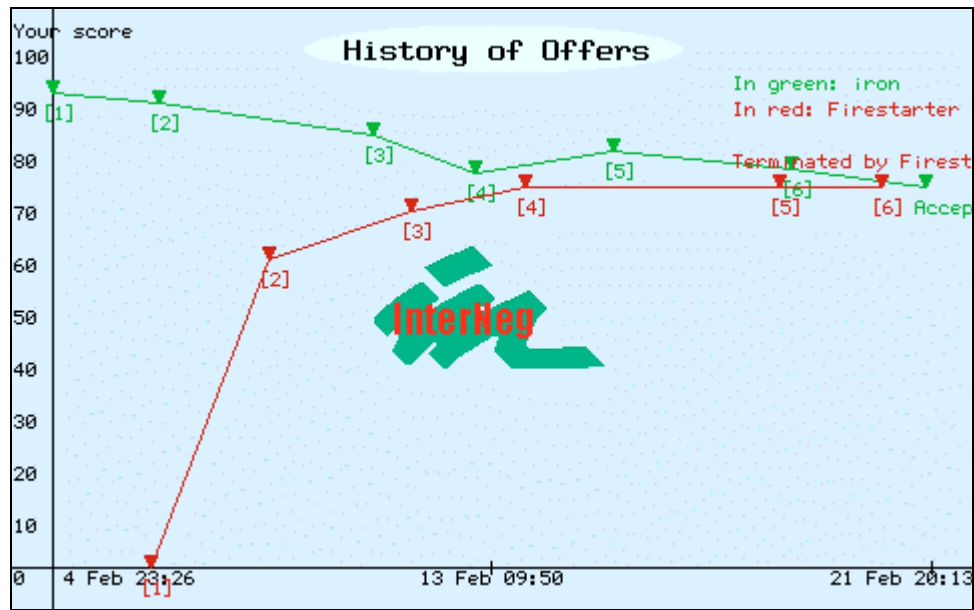


Figure 2. Graphical representation of negotiation between 'iron' and 'Firestarter'.

During extensive testing of INSPIRE we found that this pattern of concessions occurred frequently, not through interviews but through the graphs. Therefore we have made an effort to provide users with adequate and easy to grasp information and examples explaining the phenomenon.

Users claim that the graph plays a significant role in both their decisions and assessment of the opponent actions. This is despite the fact that the users have seen all the information contained in the graph before actually viewing it, but only in tabular form and spread over several tables. This indicates that the graphical presentation is considered more compelling. Data collected about the graph is presented in Table 5.

Overall 72% of the respondents used the graph. Some users did not want, or could not, view the graph due to a very poor Internet connection, as in the case of India where only 44% used it. However, all Indians who viewed the graph stated that it influenced their assessment and decisions. There are significant cultural variations between responses about the graph's influence and informativeness. Much fewer Finns and Americans were influenced by it than Chinese and Indians.

Data in Table 5 indicates that the graph seems to have a large impact on negotiations. However, there is no significant correlation between GAO, GND and GRI and such indicators as the user's control over the negotiation process, satisfaction with the negotiation and its outcome, and the result of the negotiation measured with utility. It is interesting that users remark about the effects of the graph on decision making but this influence does not seem to contribute to their attitudes, perceptions and decisions.

Table 5.

## The roles of the graph and messages

|                             | Total | Canada | China | Finland | India | US   |
|-----------------------------|-------|--------|-------|---------|-------|------|
| Valid cases <sup>a</sup>    | 205   | 61/43  | 50/40 | 9/9     | 16/7  | 11/9 |
| Was the graph used?         | 70.2% | 69%    | 82%   | 63%     | 40%   | 77%  |
| - Influences assessment     |       |        |       |         |       |      |
| about opponent (GAO)        | 66.7% | 56%    | 83%   | 17%     | 100%  | 30%  |
| - Influences decision (GND) | 60.7% | 56%    | 60%   | 50%     | 100%  | 30%  |
| - Is informative (GRI)      | 89.5% | 93%    | 98%   | 50%     | 71%   | 90%  |

<sup>a</sup> The first number corresponds to the number of respondents to the first question in the table. The second number corresponds to the number of respondents to questions about GAO, GND and GRI.

## 5. Evaluation of the INSPIRE system

INSPIRE's users are asked in the post-negotiation questionnaire whether they would use this system or a similar one in real negotiations, to prepare for a real negotiation, or as a practice tool to improve their skills. Their answers are summarized in Table 6. Generally users find the system very easy to use; their evaluation of the overall system and its potential is even more favorable than of some of its features.

In fact it far exceeded our earlier expectations. We had assumed that INSPIRE, and systems similar to it, would be considered more of a valuable teaching tool, and to a much lesser degree as a tool to prepare for real-life negotiation. While the relative evaluation for each of the three uses conforms to our expectation, the absolute levels of user acceptance of the system are very high. Especially if we take into account that for the vast majority of the users INSPIRE was the first decision or negotiation support system they had ever used.

At 83%, the proportion of the users who view the system as a useful preparatory tool that can be used by a negotiator before she/he enters actual negotiations is very high. Another very encouraging sign is that the Indians, all of whom are managers and executives evaluated the system highly. As Figure 3 shows, these responses were obtained from all types of negotiators, experienced or not.

Table 6.

The system and its potential

|                                     | Total     | Canada    | China     | Finland   | India     | US        |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Valid cases                         | 205       | 61        | 50        | 8         | 15        | 13        |
| INSPIRE is easy to use <sup>a</sup> | 2.3 (2.0) | 2.3 (1.2) | 2.3 (0.9) | 2.3 (1.1) | 2.2 (1.0) | 2.7 (0.8) |
| Use INSPIRE for:                    |           |           |           |           |           |           |
| practice                            | 90 %      | 92 %      | 88 %      | 63 %      | 100 %     | 85 %      |
| preparation                         | 83 %      | 85 %      | 76 %      | 88 %      | 100 %     | 77 %      |
| negotiation                         | 61 %      | 56 %      | 74 %      | 50 %      | 47 %      | 54 %      |

<sup>a</sup> 1 - Extremely easy, 7 - Extremely difficult

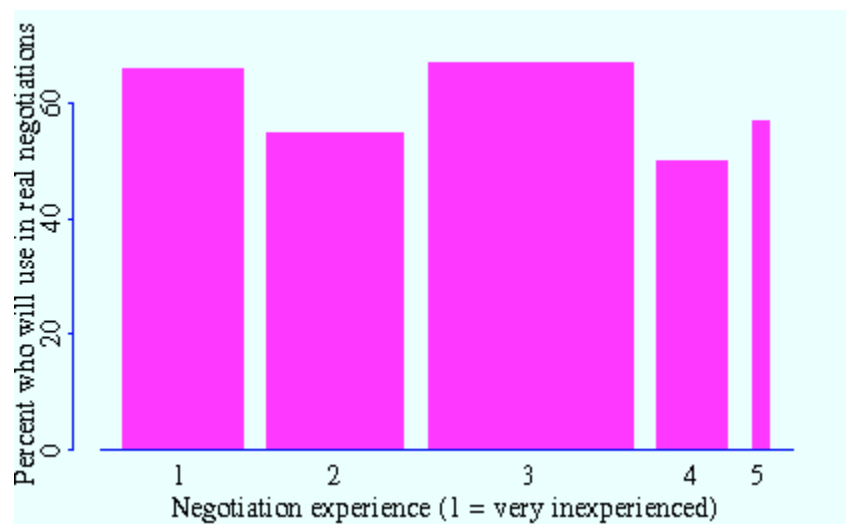


Figure 3. User evaluation of the system's potential for real negotiations, across different experience levels.<sup>3</sup> (Bar widths reflect sample sizes.)

## 6. Conclusion

An important finding of this study is the high level of acceptance of INSPIRE, and by implication, negotiation support systems of similar design, by a varied range of users. Despite its having been designed as a training and research prototype without the frills

<sup>3</sup> The percentages of users who responded affirmatively about using INSPIRE for preparation and for practice are higher all round, with similar distributions across negotiation experience.

and features of industrial-strength software, users surprised us by perceiving and commending its practical usefulness. This led us to develop a more powerful negotiation support system, INSS (InterNeg, 1997). As mentioned earlier, the cross-cultural research objectives behind INSPIRE led to several restrictions on its functionality; INSS does not have these limitations.

In particular, INSS enables sequential negotiation over issues, multiple negotiation cases, BATNAs, etc., and is expected to support a wider range of negotiation needs. Meanwhile INSPIRE continues to provide a semi-controlled experimental environment that can enable new studies in international negotiation behavior (e.g., linguistic forms of deference and indicators of power play; gender effects). It is our belief that studies based on these two systems, and the many others that will proliferate in response to the user demand for computer based negotiation aids as we have described, will lead to fascinating new tools and opportunities for novice negotiators and seasoned practitioners alike.

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