

# Detection of Negotiation Profile and Guidance to more Collaborative Approaches through Negotiation Games

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**Abstract** - *Negotiation is an activity that involves complex human relationships which should be treated with great caution to prevent them from being injured or destroyed, ruining any future chances of further negotiations or agreements. Therefore, the improvement of negotiation skills is essential and an important part of this improvement is the discovery of one's negotiation profile. This paper presents an evolution into a module of a Negotiation Support System that enables creation and management of negotiation games. Such evolution now allows the detection of the player's negotiation profile and is able to guide the negotiator into more collaborative negotiation approaches.*

**Keywords:** A Maximum of 6 Keywords

## 1 Introduction

Negotiations can be responsible for maintaining a relationship and leading a project towards success or failure, depending on the performance of its manager on dialogue. Negotiation is, at least in some level, about interaction with other people or parties [1].

Therefore, to learn how to negotiate the school of hard knocks way, following the Aristotelian paradigm that "learn by doing what you're supposed to do" can result in disastrous negotiations that can imply in permanent damage to relationships and/or careers, destroying any further possibilities of dialogue and negotiation, and, as unilateral decisions in organizations are becoming increasingly rare, and negotiated agreements become more and more common, negotiation plays an important role in business world.

Thus, professional decision-makers must be well prepared in order to have a competitive advantage when negotiating agreements. Preparation is a key factor in the Negotiation process when it comes to the achievement of optimal agreements. But this preparation is not well obtained if the negotiation concepts are not well trained and assimilated by the negotiator, and, especially, if he does not know himself and his own negotiation profile.

Sections 2 through 4 of this paper present literature review concerning negotiation concepts, experiential e-learning and serious games. Section 5 describes the usage of the web tool and section 6 shows the results obtained so far.

Finally, section 7 shows the conclusions and the references of this work are listed.

## 2 Negotiation concepts

Negotiation is "the ways in which people deal with their differences" [2]. "It is a process in which two or more parties seek an agreement to determine what each one should give or gain, or make and receive in a transaction between them" [3]. It arises out from the need of resolving a conflict in which the outcome may not be immediately the one that is desired, since individuals have different expectations and desires.

Negotiations are often pictured as smiling businessmen handshaking after a mutual advantageous settlement. They are, however, very present in daily life. Negotiation occurs in a dialogue between family members regarding the responsibilities of household chores. Among colleagues in a software project for the definition of fulfilment of tasks related to the system. Between couples when one wants, for example, to go to the movies and the other wants to go out for dinner, but both do not want to give up each other's company. Below, distributive and integrative negotiations, interests versus positions in negotiations and negotiation profiles are discussed.

### 2.1 Distributive and integrative negotiations

Negotiation is a process in which two or more parties share ideas, information and options to achieve a mutually acceptable agreement. Negotiation is a process that involves the exchange of proposals and assurances [4]. However, there is a common perception that negotiation is a "win-lose" process, that is, when one party wins, the other one necessarily loses. From this point of view, negotiation is merely another form of warfare. However, more and more people and organizations are seeking methods to find out solutions for mutual gain [5].

This "win-lose" view is also known as "fixed cake", in which each party supposes that the other party has the same priorities regarding the various issues at stake. This bias can block the trial of finding a "win-win" solution. When both parties fail to recognize the complementarity of their interests, each one thinks the other one's priorities are the same as theirs, not reaching the optimal agreement [6]. This dates back to concepts that define distributive negotiation. In this case, the value at stake is fixed and each side tries to get the largest share –or the bigger slice of the cake –possible. It's like the

division of an apple: The larger the piece one party gets, the less the other party will have [7].

The counterpoint of this is the integrative negotiation, where both parties work to split the value and, at the same time, cooperate to achieve maximum benefits by aligning their interests in an agreement for mutual gains. In this case, it is important that the negotiator knows how to create value and also knows to claim and share the value created. This approach is used when negotiators perceive the opportunity for future relationships and both parties are concerned to achieve the interests of the other party [7]. In this case, one can picture the cake as being leavened, growing up as new values are created.

## 2.2 Interests and positions

Besides of being conducted under distributive or collaborative approaches, negotiations may be described as being conducted under focus on positions or interests.

In position-based negotiations, negotiators discuss positions, ie, a closed and specific proposal for resolving a particular dispute. Moreover, interest-based negotiations open the possibilities of conflict resolution, analyzing each issue involved, ie, each interest separately, seeking creative options to satisfy both parties. Positions are closed specific proposals prepared to meet a set of interests, ie, only one of the parties. Interests, moreover, are the needs, desires and goals that the individual is seeking to fulfill to reach his position. Thus, interests may be satisfied in different ways [4].

Fisher and Ury [4] propose an approach for principled negotiations:

- Separate the people from the problem: it is also important to note that negotiators are normal human beings, and as such they have emotions and are willing to maintain relationships for the sake of solving a problem. By understanding the emotions and perceptions of the other party, one can note what potential barriers affect a rational discussion, for example.
- Focus on interests, not positions: the authors recommend to observe the real interests of the negotiators. In general, there is little discussion about conflicts of interest, as opposed to discussions about rigid positions. In this case, it is suggested to ask the other party what are their interests in a particular position. By understanding the interests, one can offer more options for mutual gains.
- Invent options for mutual gain: A typical negotiator may think that to take the other party's options into consideration means to waste time or lose "points" in the negotiation. The authors, however, suggest the opposite. Although this may cause the negotiation to take longer, a deal rises faster. In this case, sincere dialogue and / or brainstorming can help

determine creative options that satisfy both sides. The secret is to find out what concessions are easy to give, but have great value to the other party.

- Insist on objective criteria: it is possible to decide the basis for an agreement by an impartial reference. In general, patterns tend to be clearly recognized and understood for both parties. Criteria for other negotiations that can be compared with the current one, in general, are also acceptable.

## 2.3 Negotiation Profiles

As the term suggests, each individual has its own characteristics, personality, ways of act and think about the most diverse situations. Therefore, it is also natural to assume that each negotiator has a personal style in a negotiation. This style is influenced by several factors, such as his dominant skills [8][9], gender [10], culture of origin [11] and even the region of a country [12].

Thomas and Kilmann developed back in 1974 the Thomas-Kilmann Conflict Mode Instrument [13], which measures five conflict-handling profiles based on two basic dimensions: assertiveness, which measures how much one tries to satisfy his own needs and cooperativeness, which measures how much one tries to satisfy the other's needs. Figure 1 shows Thomas-Kilmann two-dimensional model of conflict-handling behaviors. The five profiles that can be extracted from this model are defined below:

- Avoidance (unassertive and uncooperative) – The negotiator does not try to reach his needs nor the other party's ones. He avoids the negotiation. Such attitude can be used to postpone the dialogue or withdraw from an uncomfortable situation.
- Accommodation (unassertive and cooperative) – The negotiator gives up his own interests in order to fulfil the other party's desires. Negotiators may use accommodating moves to try to immediately satisfy the other party, giving up to all the first issues negotiated, in order to use it as an advantage to "win" the next issues.
- Competition (assertive and uncooperative) – It's the complete opposite of accommodation. A competitive negotiator will not give up to any issue in negotiation if it makes impossible for him to completely achieve his concerns. A competitive negotiator often defends his position and uses everything at his power to win.
- Collaboration (assertive and cooperative) – A collaborative negotiator will try to reach his own concerns and the other party's mutually. He will try to find creative alternatives to conflicting issues and to understand the other party's point of view, negotiating by his interests, not positions.

- **Compromise** (moderately assertive and moderately cooperative) – A compromised negotiator is an intermediate between a competitive negotiator and a collaborative one. “Compromised negotiators give up more than competitive ones but less than accommodating ones. Likewise, it addresses an issue more directly than avoiding, but does not explore it in as much depth as collaborating” [13].

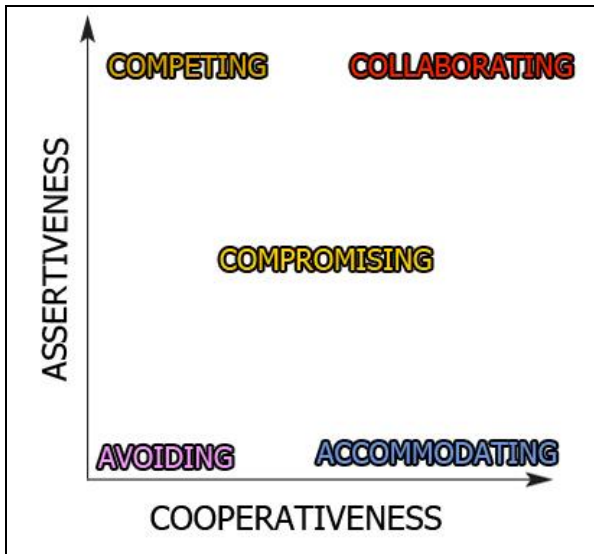


Figure 1. Thomas-Kilmann two-dimensional model of conflict-handling behaviors. Adapted from [13].

### 3 Serious Games

Man's relationship with games merges with human culture itself, and is perhaps just as or older than writing. More than 5000 years ago in the ancient Egypt, the oldest known board game was invented. The Senet, "Game of passing" [14], in which two players manipulated pieces of a board in which 30 squares were arranged in three parallel rows of 10 squares each. Ideograms dated from 3300b.C. in Merknera's tomb illustrate the game. In America, the Patolli was reported to the Spanish crown by the conquerors, but traces of its existence date back from 200b.C. [15]

Every human being, starting from a certain age in childhood, has an idea of what a game means. One can immediately think of card games; board games like chess. Computer games and video games; children's games such as hide and seek or hopscotch; sports like football, basketball and volleyball.

All these activities are very different: Some have mostly physical requirements, such as soccer, others have intellectual demands, like chess; they differ in their space requirements – when playing card games, the cards can be placed on any surface. On the other hand, chess requires a board; they demand different resources (balls, pieces, cards, boards) and have different rules. Yet, they are all recognized as games.

This paper presents test results from using a computer tool that aims at helping to create games that offer training in the concepts of a very particular human activity, negotiation. When it comes to computer games, which are software, they inevitably follow the rules of its programming code, and present a finite number of states. So, for the purposes of this study, a game will be defined as an activity with cathartic purposes, practiced by one or more individuals that are decision makers and whose decisions have uncertain outcomes (though within one finite set of possibilities), called players, and that is governed by a limited set of rules, space and time apart from the real world, which provide resources that can be used by players to interact, and that has goals and obstacles to achieving these goals, and in which the players may share the objective or fight over it.

Technological research in games, however, does not affect only the entertainment industry. Corporate and government organizations can also benefit from this technology [16]. Serious games, which attract the interest of various groups of different human activities, offering opportunities for training, simulation and education - technologies like 3D and the idea of interactivity presented in games can be used as representations of real world situations [17].

Cook [17] mentions that one of the main difficulties in defining the concept of Serious Games rests in the fact that a wide variety of groups are interested in such games and each one has a very particular and distinct understanding of what the term means. Some do not even think of "games", but in applications that allow simulating situations that represent their operational business processes. Moreover, there is a strong perception that the words "game" and "serious" are mutually exclusive and their use adjacent to each other is surprising to many [18].

To Michael and Chen [18], serious games are more than mere "edutainment", although it has the same objectives. They argue that, while edutainment aimed primarily at children up to 10 years, using TV characters as pedagogical agents, serious games aim at a larger universe of possibilities in education and job training. Still, these games do not have the fun and enjoyment as primary purpose but aim to educate, inform and train. Zyda [16] adds that serious games are those that add pedagogy to play.

Military applications stand out as significant share of the market for serious games, and the U.S. military is a major investor. The most famous example of a serious game of military use is America's Army [17][19][20], developed for the U.S. Army as enlistment propaganda, which ended up being used by the soldiers themselves. Core et al [21] present a representation model of virtual humans that interact in verbal conversations and are capable to react and show solidarity or doubt the actions of the player, who must

negotiate with a virtual doctor to move patients from an area of armed conflict.

The Tactical Language Training System (TLTS), used for tactical training in foreign languages [22], aims to assist the learning of basic communication skills in foreign languages and cultures, in order to support the American military training program DARWARS. In Brazil, the military use simulators based on game technologies, like a flight simulator at the Naval Academy assembled using an adapted PC and Microsoft game Flight Simulator [23].

In health, serious games are present in different specialties, from dentistry, in which [24] present a survey of more than 20 serious games related to oral health in the scientific literature, websites and educational campaigns, to neuroscience, with applications that aim at patients recovery after cardiovascular accidents [25]. In the field of education, the Educational Arcade project [26] aims to develop educational games like Caduceus, a series of casual games that aimed at teaching science to children, and Labyrinth, for teaching concepts of algebra.

There are also serious games that stand out for presenting current themes related to world events, called NewsGames, such as Darfur is Dying [27], launched in 2006, that portrayed the crisis in Darfur, Sudan, since 2003.

## 4 Experiential Learning and E-Learning

Learning is the process of acquiring new knowledge, values, skills, preferences and understandings. According to [28], learning is ubiquitous in human life, not just in the domain of a new skill, but also in the emotional, social and even personality development: One learns to fear, to love, to be polite and intimate. It is the process through which knowledge is created through the transformation of experience [29]. Learning is therefore an integrated process that leads to a qualitative change, altering the set of attitudes, and therefore the individual's behavior, contributing to his development.

The electronic learning, or e-learning, provides educational content via any electronic media [30]. Other authors in the literature support this meaning [31][32][33], adding that e-learning is an individual learning in nature, in which the student sets the pace of instruction, although it does not necessarily eliminate the need for a tutor. E-learning is the natural convergence of knowledge management and talent management and a way of dumping the gap between current and new techniques involved in a business development [30].

Experiential learning is "the process by which an individual builds knowledge, skills and values from direct experience" [34]. It occurs when carefully chosen experiments are supported by reflection, critical analysis and synthesis, being structured to require that the individual who undergoes

the process of learning takes initiative, decisions and be held accountable for the results of those decisions, committing himself to submit questions, investigate, experience, solve problems, take responsibility and be creative. Thus, it is possible to combine experiential learning and e-learning, resulting in the process of building knowledge through direct experience obtained via electronic media.

According to [35], experiential learning emphasizes the nature of experience as being of fundamental importance concerning the education and training. However, the author notes that there are experiences that contribute positively and others that contribute negatively to education. Every experience is continuous, that is, every experience influences future experiments. Thus, it is the responsibility of the teacher to structure and organize experiences that positively influence student's potential future experiences [35], because good experiences serve as motivation, and encourage students in the learning process, while bad experiences can lead them to close themselves off to possible future experiments [36].

Due to its essentially interactive nature, games become appropriate tools for experiential learning, because they assume that the player will take actions that interfere with the game course. The player is necessarily proactive and a decision maker.

## 5 Negotiation Support System Module

This tool was created in order to allow users that do not have technical expertise in software programming to create, manage and publish Negotiation Games and was presented in a previous work [37]. The games explore different aspects of negotiation (from one or two aspects in a simpler game to several of them in a more complex game). The tool is a module integrated into a multilingual interface Negotiation Support System, ENEG [38], which includes, among other features, negotiation planning, risk management, meetings control, negotiation tips and other modules.

Figure 2 depicts the decision tree featured in this module. It represents the many possibilities of the negotiation. Starting from an initial common node, the player can chose one of several possible options, and each one of these options trigger a completely different flow in the tree, changing completely the game from that point on, by exploring different negotiation approaches, changing his options, the other party's and, eventually, the whole interaction. The game as it is displayed to the player is shown on Figure 3.

The dynamics of the game is simple: The counterpart of negotiation will begin the dialogue and the player selects one of the options available to respond to the argument of the counterpart. Each of these options has internal attributes that measure the value of assertiveness and cooperation of the answer, as well as an approach label. At the end of the game, these can be summed and a diagnostic regarding the player's

negotiation style begins to be drawn. Figure 4 shows how these values and approach labels are assigned to the arguments of the player in a game scene.

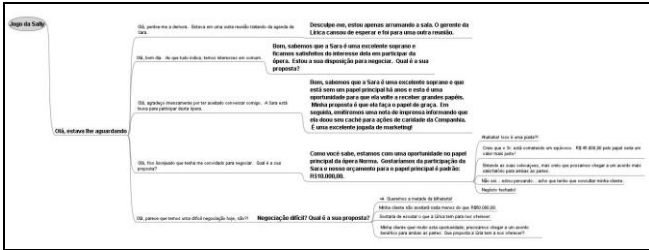


Figure 2. Decision tree of the negotiation.

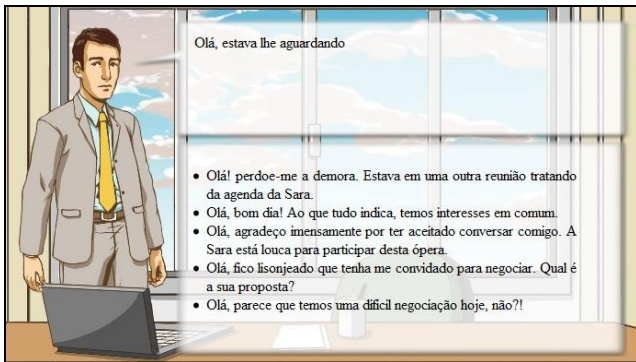


Figure 3. The game as it is displayed to the player.

<b>COUNTERPART ARGUMENT:</b>
The maximum value we can offer, due to budget restrictions, is \$10,000. But your client will receive VIP treatment at the play.
<b>PLAYER'S OPTIONS:</b>
My client cannot accept less than \$15,000.
+1 ASSERTIVENESS -1 COOPERATION (COMPETITIVE)
I don't know... Maybe we need to talk more about it...
-1 ASSERTIVENESS -1 COOPERATION (AVOIDING)
We have an agreement with a television network that is willing to cover the event. We can split the values of the transmission if the lyric house agrees to be responsible for providing the entire infrastructure. What do you think?
+1 ASSERTIVENESS +1 COOPERATION (COLLABORATIVE)
It's a deal! Where do I sign?
-1 ASSERTIVENESS +1 COOPERATION (ACCOMMODATING)

Figure 4. Assertiveness and Cooperation values and an approach label are assigned to the player's options in a game.

As the negotiator plays more games, the system is able to draw a more accurate history of his style, so that his profile can be traced with greater precision. Figure 5 shows a graph of the player's profile history. It must be clarified that a negotiator will not be necessarily 100% competitive or collaborative. To use different approaches over the dialogue may be a strategy, though the games developed to our tests reward the most collaborative approaches. Figure 6 depicts how the player's collaborative approach evolves as he plays

more games. In addition, the diagnostic mode keeps track of all the options chosen by the player, like a replay of the games. When the player revisits his choices, the system shows how the negotiation could have ended with a better result. The goal of the system is to guide the player to more collaborative outcomes for the negotiations, encouraging creativity in generating solutions for the benefit of both parties involved in the negotiation. Figure 7 shows how the diagnostic mode works.

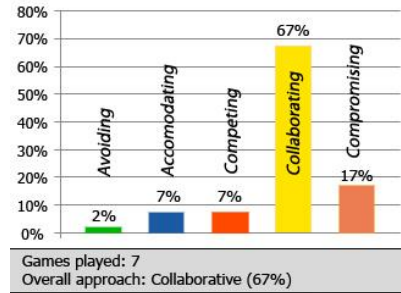


Figure 5. Player's profile history

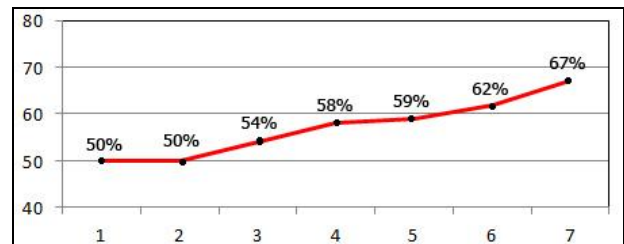


Figure 6. Player's Collaborative negotiation approach style X number of games played.

<b>COUNTERPART ARGUMENT:</b>
The maximum value we can offer, due to budget restrictions, is \$10,000. But your client will receive VIP treatment at the play.
<b>YOUR ARGUMENT:</b>
It's a deal! Where do I sign?
<b>IDEAL ARGUMENT:</b>
<b>We have an agreement with a television network that is willing to cover the event. We can split the values of the transmission if the lyric house agrees to be responsible for providing the entire infrastructure. What do you think?</b>
This argument creates a mutually beneficial option for both parties. As described in the introduction, you had a previous \$10000 agreement with a TV network to broadcast the event if you came to reach an agreement with the Lyric House. As the Lyric House already has the needed infrastructure to allow TV networks broadcasting events, splitting the value would mean getting \$15000 to your client and cause the Lyric House to save \$5000 of her payment.

Figure 7. Diagnostic mode, guiding the player into a more collaborative option in the game.

## 6 Results

The negotiation profile detection feature of this tool has been tested so far with 30 IT professionals. All the subjects played 7 games, all designed to offer the best outcomes when the player takes a collaborative approach in the negotiation, although the players were told only to earn as much as they

could in the negotiation, and the perception that the collaborative approach was the best one was left for them to make when playing, replaying or reviewing their results.

At the end of each game, all the subjects reviewed their games in the diagnostics mode and were offered a chance to replay the game before moving on to the next. However, only the results of the first time playing each game were considered for this report. Table 1 shows how the class history evolved from the first to the last game played. The overall collaborative approach grew 28 percentage points, from 24% to 52%, which means that it has more than doubled. The competitive approach decreased 11 percentage points, from 45% to 34%, and all other approaches have also decreased, with avoiding and accommodation decreasing to very low levels.

We can then conclude that the test subject class understood the proposal of more rewarding collaborative approaches in the negotiations simulated in the games. The results were considered very satisfactory.

Table 1 – Subjects Negotiation Profiles after Playing the Games

Profile	Number of Games Played						
	1	2	3	4	5	6	7
Avoidance	9%	8%	8%	5%	4%	5%	3%
Accommodation	7%	5%	3%	4%	2%	3%	2%
Competition	45%	44%	40%	38%	38%	32%	34%
Collaboration	24%	27%	32%	37%	43%	49%	52%
Compromise	15%	16%	17%	16%	13%	11%	9%

## 7 Conclusions

This work discussed how a web tool developed to allow creation, maintenance and publication of Negotiation Games can be used to discover a negotiator’s negotiation profile, and comprised a theoretical study on the areas of knowledge that related to the tool, such as Negotiation, Serious Games, E-Learning and Experiential Learning.

Although this profile discovery feature is still under development, the NSS which includes this tool is available on the web, allowing its use in several learning environments, including distance learning. The results obtained were considered very satisfactory, as it shown 28 percentage points of increase in the collaborative negotiation approach of the test subject class.

The fact that a bad negotiation in real life can ruin any possibilities of future negotiations or even the definitive end of a relationship is a major difficulty concerning negotiations. Simulation games can help beginners to learn concepts of

negotiation without forcing them to adventure themselves on risky real-life negotiations.

A multiplayer mode for this computer tool is now under development. Students will be able to face each other anonymously on negotiations, preventing that any relationship between players interfere with the exercise. Besides that, new games are being designed in order to provide more results, and new tests will have other objectives than to develop collaborative skills.

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