STATE OF THE ART REVIEW OF METHODOLOGIES FOR DISPUTE AVOIDANCE AND RESOLUTION IN LARGE SCALE ENGINEERING SYSTEMS

by

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Submitted to the Department of Civil and Environmental Engineering in partial fulfillment of the requirements for a Degree of Master of Science in Civil and Environmental Engineering

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

May 1999

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Abstract

Leading construction experts have identified Productivity, Innovation, Cost Control, Safety, and Litigation Expenses as critical areas in need of improvement in the construction industry of the next century. In the United States alone, $60 billion are spent every year on lawsuits, of which the construction industry accounts for nearly $5 billion. The fact that these construction litigation expenditures have increased at an average rate of 10% per year for the past ten years is one of the primary motivations for this research. This reality has generated the need to develop new Dispute Avoidance and Resolution Techniques (DART) with the aim of curving this cost spiral and improving productivity. Fueled by this need, and as projects throughout the world continually achieve higher levels of complexity, the field of construction dispute resolution has exploded with innovative ways to prevent conflict and resolve disagreements. Companies have found that in highly competitive markets, the resolution of disputes has become a key to forging stronger and longer-lasting relationships with their clients. As a result, the construction industry has been in the forefront of the development of DART. This research presents and reviews a significant number of new and innovative ways to promote collaborative environments and resolve disputes in construction, including some practical applications of DART in the construction industry of a number of nations with the aim of providing the reader with data to support the successes or failures of these methodologies in multiple cultures.

Thesis Supervisor: Feniosky Peña-Mora

Title: Assistant Professor of Civil and Environmental Engineering
ACKNOWLEDGMENT

When I returned to MIT in February 1999, my goal was to complete the only requirement I still needed to earn my Master’s Degree: The Thesis. Although I only had one semester to complete this task, I quickly understood that my original research idea would require at least that time to do the review of the literature, before I could begin to write the final project. Fortunately, I was able to redesign the research with Prof. Feniosky Peña-Mora, who not only suggested this very interesting subject, but also supported and encouraged me to achieve my goal within a very limited amount of time. Because of this, I would like to thank Prof. Peña-Mora for helping and collaborating with this effort, which I have finally completed, eight years after I left MIT to start my professional career.

Returning to MIT was not easy; my office in Venezuela and the work we were conducting represented the biggest hurdle. I found myself desperately needing a partner to oversee the operation while I was away at school. My father, with the support of my mother, assumed that role, and gave me again the opportunity to fulfill my academic objectives. All I can say is thank you both.

The MIT Libraries also deserve recognition. The MIT inter-library borrowing program was able to trace and produce copies of over 60 articles in less than two months. This service has been invaluable to this research, considering the limited amount of time available to complete it.

Another team that supported this endeavor and helped me through endless nights of editing is my sister Daniela and her husband Fabio. Both provided invaluable assistance and commentary during the editing and organization of this work, giving up their limited free time to support me.

Finally, I have to acknowledge and appreciate the support and patience of my wife Cristina. Throughout this race against time, Cristina has been both an inspiration and a challenging voice that has kept me going, even at times when I felt that the objective was unattainable.
DEDICATION

I wish to dedicate this effort to my family, including those who will hopefully be joining us in the near future.

Thank you for always being there for me.
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CHAPTER 1

INTRODUCTION

1.1 Overview

In a report entitled "Access to Justice," Lord Woolf (Coates, 1997) concluded that the judicial system in the United Kingdom had reached a level of over-saturation. He called for a significant change in the litigation culture that dominates the legal scene in that country. Woolf summarized the problems of the British judicial system as follows:

- "It is too expensive, in that costs often exceed the value of the claim.
- It is too slow.
- There is a lack of equality between the powerful wealthy litigant and the under-resourced litigant.
- It is difficult to forecast both the cost and the length of litigation.
- It is incomprehensible to many litigants;
- It is too adversarial, and cases tend to be run by the parties with the rules of court often ignored."

(Coates, 1997; Staniforth et al., 1997)

These problems associated to costs, delays, uncertainty of outcome, complicated rules, and lack of control over the process are affecting the way different industries are dealing and solving their disputes without turning to the judicial system. In the specific field of construction, Gould et al. (1998), identified four factors that have influenced the
traditional dispute resolution procedures of this industry in the UK, moving it away from litigation:

1. Delays in litigation resulting from the apparent overloading of the existing court system.
2. General dissatisfaction with arbitration.
3. An increase in the number of conflicts and disputes within the construction industry.
4. International influence reflected in the worldwide movement towards alternative dispute resolution methods.

These challenges faced by the construction industry of the UK have been equally found in the United States. In a recent speech on the future of the construction industry, Henry Michel, chairman emeritus of Parsons Brinckerhoff Inc., described the current state of the American building industry as follows:

"We are members of the largest productive industry in this country and in the world, and we are members of an ailing industry, a troubled industry. Consider the following:

- The construction industry's share of the gross domestic product [in the US] has declined 20% in the past 20 years.
- Construction costs [in the US] have increased 60% more than inflation in the past 10 years.
- We account [in the US] for 26% of the nation's fatal accidents.
- Litigation expenditures [in the US] are increasing at 10% per year [for the past ten years]." (Michel, 1998)

For Michel (1998), productivity, innovation, cost savings, safety, and litigation expenses are critical areas for the future of the construction industry, and it is there where the industry must invest the most to advance successfully into the next century. In the United States alone, $60 billion are spent every year on lawsuits, of which the construction industry accounts for nearly $5 billion (Michel, 1998). Michel points out

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1 For example, from 1983 to 1990 the number of construction arbitration cases filed with the AAA grew from 2,675 to 5,440 (MacManamy, 1994), or approximately at an average 15% per year. From 1994 to 1996, the number of cases filed with the AAA grew at an average of 8% per year (Fenn et al., 1998).

2 Thomas (1998) reports that litigation is discouraging engineering innovation and technological advancement in construction projects. Consulting engineering firms are unwilling to recommend creative designs "...out of fear of litigation-frenzied attorneys."
that for every $1 billion saved on litigation in construction the industry could generate 40,000 new jobs, with the direct benefit of reducing legal expenses for all parties.

The fact that litigation expenditures continue to increase year after year is one of the primary motivations for this research. This problem of excessive litigation costs is confirmed in a paper written by Bristow et al. (1995), where an estimate of the legal costs associated with a hypothetical lawsuit between a contractor and an owner are calculated and compared to the initial claim amount. Bristow et al. (1995) included in their cost analysis, based on the Canadian legal system, three basic items: lawyer’s fees, trial costs (i.e., filing fees and expert witnesses), and opportunity costs (i.e., time spent by key personnel in the litigation process). The results of these calculations show that the cost of the procedure for the contractor surpasses by almost 100% the original amount being claimed. The authors (Bristow et al., 1995) conclude that the industry is “...being hampered by the tremendous amount of resources being utilized in the litigation of claims” (Bristow et al., 1995).

This exercise shows how the judicial system is no longer the most suitable and cost effective way to resolve construction disputes. Fueled by this reality, together with the fact that projects have become more complex and competition has increased, the construction industry has been forced to develop and experiment with alternatives to litigation in order to find cheaper and more effective ways to solve disputes (Stipanowich, 1996; Zack a, 1997). Thus, new approaches have been designed to overcome the rigid and adversarial attitudes and contract forms normally used in construction, to prevent the development of conflicts during the execution of the project, and to help companies forge longer lasting relationships with clients, designers, and subcontractors, while still solving their disagreements. These new and innovative approaches and techniques are known as Dispute Avoidance and Resolution Techniques (DART).
The changes in the construction industry are going beyond the application of an alternative technique to court litigation (i.e., Mini-Trial or Arbitration). While the 80’s saw the construction industry "...turned on itself – [as] each part of the construction team” started indulging in a seemingly unending orgy of risk-shifting, finger pointing, and costly litigation” (ENR, 7/1994), the 1990s have seen a revolution in the field of construction dispute resolution, as the construction “team” has understood the negative long-term effects of the approaches of the past decade. The team approach is being redesigned, going from an adversarial system towards a collaborative environment in which the limits are defined, but communication flows without unnecessary barriers. Many project teams have developed radically new philosophies towards achieving the project goals (i.e., Partnering, Total Quality Management, and Risk Sharing). Some industry experts claim that the industry is going back to the “old fashion way of doing business” (Treacy, 1995); when quality, service, and collaboration among parties were the norm, and disagreements “...were settled on the jobsite at an informal meeting between the resident engineer and the contractor on the basis of a handshake” (Treacy, 1995).

In the international arena, the need to improve communication and limit the chances of litigation is even greater. Large engineering endeavors are bringing together companies with diverse cultural backgrounds, legal systems, labor laws, objectives, interests, contractual agreements, competitive conditions, and priorities. Complicated communication arrangements, and changing conditions and requirements are now part of most large jobs. Therefore, in order to avoid having this diversity result in disagreements, channels of communication must be developed, and a collaborative environment for exchanges of information implemented.

The following example demonstrates the levels of complexity in large-scale construction jobs throughout the world today. Companies from six different countries participate at different levels and with different contractual forms to build a Refinery. The
results: a job completed more than one year behind schedule; a major claim and
counterclaim after the completion of the project; parties who have lost the opportunity of
ever working together again, and additional costs due to arbitration proceedings to
"resolve" the claims and counterclaims, expected to increase by at least 12 percent the
original contract price.

Example: Liquid Nitrogen Gas Tanks Project

For the construction of a Refinery in an Island in the Caribbean Sea (see Figure
1), a British energy conglomerate (CLIENT) hired an engineering and construction firm
from California to serve as the construction manager (CM). Among the many contracts
for the Refinery, a Liquid Nitrogen Gas facility had to be designed and built, for which
the CM chose a design firm from England (DESIGNER), and awarded it a two-year fast-
track Design-Build package. This design firm, a subsidiary of a German design and
construction company, kept the design in-house and divided the construction package in
the usual work subdivisions (i.e., site work, foundations, civil, mechanical, electrical, and
specialties). The DESIGNER negotiated and awarded the contract for the foundations to
an Italian contractor with past experience in similar projects, and the civil works contract
4 to a medium size company from Venezuela. This Venezuelan company had been
recommended by the Italians due to positive past experiences in large-scale projects. The
total scheduled duration for these two contracts was 18 months: ten months for the
foundations and twelve for the civil works, with a four-month overlap.

Because of sub-contractor approval and bonding requirements imposed by the
CM, the British DESIGNER, and the Italian and Venezuelan contractors agreed to have

---

3 Based on work conducted by the author for one of the parties in this example. The names of the
companies and the specific location of the project have been omitted because of confidentiality
requirements.

4 This contract included all sub-base preparation, concrete, reinforcing and formwork to be completed
above grade for the two tanks (i.e. pile caps, gravel sub-base, slab-on-grade, tank walls, and post-tensioning
system).
the foundations and civil works packages lumped as one contract to be awarded to the Italians (GC-civil). The latter in turn would subcontract out the civil portion to the Venezuelan contractor (SUB-civil). The contracts were drawn up following this arrangement; nevertheless, communications lines were established as if the Venezuelan SUB-civil was working directly for the British DESIGNER.

![Diagram of Parties and Relationships for the LNG Tanks Project.](image)

In this project, both communication and contractual arrangements were complex. On one hand, bid issues and technical problems were handled directly by the SUB’s personnel with the DESIGNER’s representatives on-site. On the other, contractual exchanges and financial matters where channeled from Italy to London via the home offices of the three companies (see Figure 2). After the job got under way, these separate communication and contractual arrangements resulted in total chaos. For example, the civil works contract between the British DESIGNER and the Italian GC was never
signed, a "detail" that became apparent only 2 years later when lawyers began compiling the original documentation in preparation for a claim. Presumably, the contract had been misplaced between Venezuela and Italy; hence, it was never returned to the DESIGNER for signature.

Moreover, halfway into the job neither party had a complete assessment of the status of the design and the work completed. In fact, numerous design changes had been incorporated into the job without the proper documentation; the SUB had invoiced 55% of the contract through the GC, but only 30% was in placed; major cash-flow problems were affecting the job, and cost overruns were evident in every work item. At that point, the DESIGNER took over the GC responsibilities, by forcing the Italian GC and the Venezuelan SUB into takeover agreement. This agreement gave the DESIGNER the right to use all the material purchased for the job and all the manpower and equipment the
SUB had on site at that time. In addition, the GC and the SUB agreed to a provision that made them responsible for all costs going forward concerning the civil works package. Therefore, the DESIGNER effectively assumed total control over the project, without relieving the two contractors from the cost risk of the project. In other words, the DESIGNER could finish the job with whatever resources it considered necessary and charged them to the contract with the Italian GC. Any cost over the original base-contract would still be the responsibility of the contractors. Based on this arrangement, the DESIGNER brought more personnel from England, provided additional financial resources, and finished the civil works one year behind schedule.

Five months after the take over agreement, the Venezuelan SUB and the Italian GC reconciled the job-site and home-office files (formal and informal communications), and proceeded to file a claim against the DESIGNER due to changed site conditions and significant design modifications. This claim amounted in value to 100% of the original contract cost and declared the takeover agreement invalid. The DESIGNER, in turn, filed a counter-claim against the Italian GC for liquidated damages per the original “lumped” contract and for extra costs incurred to finish the job according to the takeover agreement. This counterclaim is worth double the original contract value.

Both claims for this project are scheduled to go to arbitration in New York, as per the contract terms, sometime during the month of August 1999, almost two years after the project was actually finished. So far, the Venezuelan/Italian “team” has spent 3 percent of the original contract in legal and consulting fees, and it expects to spend another 3 to 8 percent before an award through arbitration may be achieved. No information is available from the British side, but the costs should be about the same, since both companies have prepared separate arbitration claims using outside consultants. In other words, both companies have already spent 6 percent of the original contract value, and should expect another 6 to 16 percent in arbitration costs without knowing whether they will ever

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5 World map downloaded from the Internet (Map, 1999).
recover those expenses. These costs are in addition to the economic and professional implications of finishing a job one year behind schedule, with significant overtime costs and added supervision.

This example, although overly simplified for this introduction, provides a snapshot of some of the conditions that are nowadays present in most large engineering and construction projects: multi-party, multi-cultural, complex contractual arrangements, with international arbitration clauses for dispute settlement. It also highlights the need for new and innovative approaches to communication and contractual relationships, including new ways to resolve disagreements without relying solely on arbitration or litigation. In this example, we saw how inefficient communication and complex contractual arrangements can result in poor job performance. Even though previous experiences in other projects brought some of the team members together, their inability to overcome the contractual framework resulted in claims and costs totaling over three times the original contract value. Can these results be avoided? Can attitude changes improve the overall job performance? Could the job have been saved without the costly takeover if the parties had sacrificed a portion of the costs they are now spending on arbitration? Are there mechanisms to improve communication regardless of contract conditions?

Because disputes in this case have reached the arbitration stage, these questions will most likely remain unanswered for this project. However, this research reviews innovative procedures to promote collaborative environments and resolve disputes in construction contracts. It also presents specific uses and applications of DART across different countries, which have implemented these techniques and used them within the reality of their own construction industries. The findings of the research effort represent the state of the art in DART, and they highlight how the industry is coping with some of the problems and project complexities presented above. One of these alternative approaches, or a combination of them, might have resolved the problems in the LNG
project before the takeover agreement. Even now that binding arbitration is about to start, this research has found that there are certain techniques that could improve the chances for a “win-win” resolution of the claims at a lower cost to both parties.

These procedures can be used to answer and deal with some of the questions and issues raised by either the LNG project or any other case throughout the world. Companies, universities, professional associations, private groups, industry think tanks, and government agencies have realized the cost implications of poor communication and litigation in construction. The industry as a whole has realized that if legal costs continue to grow unchallenged, productivity and technological innovation will continue to fall further behind, limiting, as suggested by Michel (1998), the construction industry’s role in the development and improvement of our society.

1.2 Objectives

This thesis pursues the following objectives:

1. To provide a thorough review of the state of the art on DART in the Construction Industry.

2. To present an organizational framework for these techniques based on the nature of construction conflicts and disputes.

3. To develop a basic understanding of the reasons behind construction conflicts and disputes.

4. To identify individuals and organizations conducting research in the field of DART for the Construction Industry.

5. To develop a basic reference list of articles in the field of DART for the Construction Industry.
6. To present examples and data to support successes and/or failures of these methodologies in the international environment.

7. To provide the basis for further research in the area of DART for construction, by highlighting recently completed research in the field and possible areas of future developments.

1.3 Methodology

The research methodology adopted for this thesis focused on a review of the state of the art on Dispute Avoidance and Resolution Techniques (DART) in the construction industry. This research included the following activities to accomplish the objectives outlined in Section 1.2:

a. An extensive search for innovation in alternate dispute resolution in the construction industry.

b. A thorough literature review of publications related to Construction, Law, Arbitration, Project Management, Mediation, and Dispute Resolution, in order to identify new trends and developments within the field, supported whenever possible with project experiences.

c. An analysis and comparison of the literature searching for similarities and differences in the research, in order to identify a common thread across international applications of DART.

d. A visit to the American Arbitrators Association library in New York City.

e. Contacts and written exchanges with professionals, associations, and organizations dedicated to arbitration, mediation, and alternative dispute resolution in different parts of the world.
1.4 Thesis Organization

This thesis is divided in eleven chapters. This introductory chapter describes the overall research problem, the objectives of the Thesis, and the methodology implemented. Chapter 2 provides a theoretical background for the research, and studies the evolution of construction DART. It also presents a brief review of the reasons behind the apparent large number of disputes in the construction industry, and identifies characteristics that make the construction process adversarial in nature. The final section looks at two different proposals for the organization of DART in the construction industry, and selects the concept of the “Dispute Resolution Ladder” (DRL) (Vorster, 1993; Findley, 1997) to organize and present forty six (46) different techniques found in this review of the subject.

Chapters 3 through 9 present the state of the art review of DART in the construction industry following each of the stages of the DRL defined in Chapter 2. For each chapter the author will provide the reader with specific examples of DART that help illustrate the theory being discussed and show the degree to which DART for construction has spread throughout the world. Chapter 3 reviews twenty three (23) techniques in the Prevention Stage with examples of mechanisms that can mitigate and discourage disputes during the construction process. This chapter highlights the role the owner plays in the introduction of dispute avoidance and resolution clauses in construction contracts and as a promoter of honest communications between the parties to the project.

Chapter 4 reviews the concept of Partnering. Although not a Stage in the Dispute Resolution Ladder (DRL), Partnering was developed to change the adversarial approach to the construction process, with the aim to improve job performance and reduce conflict and confrontation. This concept integrates dispute resolution with other communication and collaboration techniques, and has resulted in a significant reduction in the number of
conflicts in those projects in which it is fully implemented. This chapter introduces the essential phases of the system, and its key components.

Chapter 5 examines the Negotiation Stage in the process of dispute resolution in construction. This chapter offers three different approaches to improve the outcomes of negotiations: Structured Negotiations, Step Negotiations, and Facilitated Negotiations/Meetings. The introduction of neutral third parties begins in Chapter 6, with the Standing Neutral Stage; a concept based on the incorporation of an unbiased, knowledgeable party as an instrument to resolve disputes efficiently and effectively as soon as they develop. Chapter 7 examines the Non-Binding Phase of the DRL, covering Mediation, Advisory Opinion, Fact-based Mediation, Minitrial, Summary Jury Trial, and Voluntary Settlement Conference as the available DART techniques. A significant acceptance of non-binding dispute resolution mechanisms is reflected in the number of variations that have developed, as these procedures represent the last stage of the DRL in which the parties have control over the outcome of the dispute.

Chapter 8 examines approaches where a third party issues a final award to settle the dispute. These approaches correspond to the Binding Dispute Resolution Stage in the DRL. Arbitration, the most common form of binding resolution procedure, is reviewed, together with three other developments that can prove advantageous to a project that might be inclined to minimize arbitration. Finally, as part of this review of DART in construction, Chapter 9 looks at Litigation as the last Stage in the DRL. This Stage corresponds to a dispute resolution procedure of “last-resort,” and is examined together with three techniques that can help reduce the amount of resources spent on court proceedings (i.e., time and money).

A review of the increasing importance of the Internet across the different stages of the dispute resolution (i.e., communication, negotiation, and information), will be addressed in Chapter 10. Finally, Chapter 11 gathers the conclusions of the thesis. First, it
summarizes the findings of the research in regards to DART. Second, it highlights the importance of alternative dispute resolution in construction worldwide and how cultural conditions have affected the selection of the DART, based on the examples presented throughout this review. Finally, this chapter suggests areas for future research in the field of construction conflict, dispute avoidance, and alternative resolution methodologies.
CHAPTER 2

BACKGROUND FOR THE REVIEW OF DART

As outlined in the introduction, the construction industry is suffering from an acute disposition to conflict and litigation. In fact, Barrie et al. (1992) concluded that "...claims are becoming a way of life" in construction, as disputes appear as an inevitable and indispensable part of modern contract systems (Vidogah et al., 1997). Litigation expenses have become a significant cost item for many projects, affecting productivity and damaging business relationships. Professor Justin Sweet, of the University of California at Berkeley, has summarized this situation by saying:

"...a dispute-prone process such as construction will have the propensity to call on the legal system to enforce contracts or obtain compensation for losses. Participants...must do all they can to avoid disputes, to seek to settle those that do develop, and to be aware of the role law plays in the process."

(Sweet, 1994; cited by Findley, 1997)

Based on this reality the construction industry has developed, during the past fifteen years, a number of different mechanisms and methodologies to prevent, manage, and resolve disputes without recurring to litigation. Furthermore, parties involved in construction are continually experimenting with new ones to further mitigate the loses
implied in legal battles. These mechanisms are known as Dispute Avoidance and Resolution Techniques\textsuperscript{6}.

This research will present a thorough review of the state of the art in this field of DART for large scale engineering and construction projects, and the present chapter provides the theoretical background to understand the chapters that follow.

Section 2.1 examines current research on the sources of construction disputes. As suggested above by Sweet (1994, cited by Findley, 1997), construction is a dispute-prone process, and it is important to identify the reasons behind this characteristic in order to design possible solutions to the problems it generates. Multiple viewpoints on this subject are discussed as the basis of why and how construction conflicts arise, disputes develop, and litigation occurs. The aim is for parties in a project to be able to design and implement a DART system based on an understanding of the conditions that make their specific project susceptible to conflicts and disputes.

Section 2.2 reviews the traditional two-step dispute resolution system for construction conflicts. This method consists of, first, a non-binding decision by the design professional, followed by binding arbitration or litigation if any party objects to the initial determination. These steps are discussed in detail, with emphasis on their evolution as projects have become larger and more intricate, and disputes have grown in number, value, and complexity. In the case of arbitration, this section presents two examples of early applications of this dispute resolution technique. First, the use of arbitration by the Ancient Greek city-states is discussed, highlighting its importance in the development of democracy in Athens. Second, the notion of “loveday” arbitration in England during the Middle Ages is reviewed, and its evolution from a conciliatory process to a pseudo-judicial system is described. These two examples are reminders of the long standing tradition of alternative dispute resolution techniques in human/business.

\textsuperscript{6} For easier reading Dispute Avoidance and Resolution Techniques will be abbreviated as DART.
relationships. Furthermore, they provide two important lessons with regards to the use of arbitration in construction dispute resolution. First, the Greek example shows how arbitration was used as a dispute resolution system because of the same reasons this technique was adopted in construction. Then, the use of arbitration in the middle ages in England shows how this technique followed a path towards rigidity and formalization as its use increased just like arbitration in construction during the past fifteen years. Finally, this section is concluded with the Confucian ideals of conciliation and compromise, and their importance in defining dispute resolution processes in Asia. These ideals will be used as future reference in the chapters dealing with negotiation and other DART procedures.

In order to illustrate the evolution of the traditional two-step system described in Section 2.2, Section 2.3 succinctly reviews four international examples. First, the section presents Netherlands’ “Frame Contract” for large and long duration construction projects; a delivery system that is based on trust between the contracting parties. Second, the dispute resolution clauses of two of the most widely used international construction contracts are examined: 1) the FIDIC’s Standard Conditions of Contract and 2) the construction contract of the World Bank. Finally, this chapter discusses the dispute resolution approach implemented for the construction of Hong Kong’s Chek Lap Kok Airport. In these examples, the two-step dispute resolution system has been modified by incorporating additional techniques to foster a different and more efficient resolution of disputes. These cases provide a snapshot of the evolution of dispute resolution in construction, and highlight the role the owner and contractor can play in the introduction of DART to improve the efficiency and effectiveness of the two-step system.

Section 2.4 exposes the progress of the traditional dispute resolution procedures in construction, presents data supporting this evolution, and provides a model for the Organization of DART. Two different schemes for the organization of construction DART are reviewed, and the Dispute Resolution Ladder (DRL) is chosen and
implemented for all the techniques found by this research effort. Finally, Section 2.5 presents a summary of all the theories discussed in this chapter, which will serve as a basis for a clearer understanding of the path taken by many in the construction industry to avoid binding approaches (i.e., arbitration and litigation) to solve their disagreements.

2.1 Reasons Behind Disputes in the Construction Industry

A number of research efforts offer much theorizing about the causes of disputes in construction projects (Vorster, 1993; Sykes, 1996; Munns, 1996; Kumaraswamy et al., 1998; Al-Saggaf, 1998; Vidogah et al., 1997; and Chan D., 1997). However, a common problem found by researchers trying to identify patterns in construction disputes is the fact that each project is a one-time experience (Fenn et al., 1997). Even when companies perform projects of a similar nature and for the same client, differing site conditions, regulations, subcontractors, market conditions, and team members modify the development of the contract.

Construction is significantly different from manufacturing, where the same goods are produced a thousand times. Construction does not allow researchers to change one variable while holding the rest fixed in order to study its effects. Furthermore, in any given project, different reasons for a particular dispute will be found depending on who is asked, at what stage of the project the research is conducted, how the survey is administered, or what documentation is available for review. That is why Fenn et al., (1997) argue that analyzing construction projects post-factum adds complexity and makes the concluding task more difficult.

The rationale behind the efforts to identify the sources of disputes in construction has been the premise that if the origins of the "illness" can be identified, ways to "cure" the industry from unnecessary litigation can be developed. In particular, Stipanowich (1996) described the construction industry as the "...spearhead of experimentation with
mechanisms aimed at avoiding disputes by addressing the roots of controversy." Table 1 summarizes seven different research efforts conducted during the present decade, and the sources of disputes in construction projects they have identified.

Table 1 – Research on the Sources of Conflicts and Disputes in the Construction Industry (adopted from Fenn et al., 1997)

<table>
<thead>
<tr>
<th>Research Author</th>
<th>Sources of Conflicts and Disputes in Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristow et al., 1995</td>
<td><strong>Six Areas</strong>: unrealistic expectations; contract documents; communications; lack of team spirit; and changes.</td>
</tr>
<tr>
<td>Conlin et al., 1996</td>
<td><strong>Six Areas</strong>: payment; performance; delay; negligence; quality; and administration.</td>
</tr>
<tr>
<td>Heath et al., 1994</td>
<td><strong>Seven Areas</strong>: contract terms; payment; variations; time; nomination; renomination; and information.</td>
</tr>
<tr>
<td>Hewit, 1991</td>
<td><strong>Six Areas</strong>: change of scope; change conditions; delay; disruption; acceleration; and termination.</td>
</tr>
<tr>
<td>Rhys Jones, 1994</td>
<td><strong>Ten Areas</strong>: management; culture; communications; design; economics; tendering pressures; law; unrealistic expectations; contracts; and workmanship.</td>
</tr>
<tr>
<td>Semple et al., 1996</td>
<td><strong>Four Areas</strong>: acceleration; access; weather; and changes.</td>
</tr>
<tr>
<td>Sykes, 1996</td>
<td><strong>Two Areas</strong>: misunderstandings; and unpredictability.</td>
</tr>
</tbody>
</table>

What these results show is a problem of "terminology and causation" (Fenn et al., 1997) in the organization of what appears at first sight as vast sources of construction conflicts and disputes. This problem requires a set of labels or headings to facilitate the comprehension of the reasons behind construction conflicts and disputes. On this account, Howell et al. (1988 cited by Vorster, 1993) proposed a nomenclature of elements that summarize four causes behind conflict in the construction environment: incomplete scope definition, inappropriate contract type, poor communication, and uncertainty.
Howell et al.'s (1988 cited by Vorster, 1993) classification is further simplified by Diekman et al. (1994), who reduced from four to three the number of characteristics of construction projects that become the "underlying sources of dispute" in the industry (Table 2). This arrangement gathers most of the information presented in Table 1 and Howell et al.'s model, yet it permits a simpler cataloging of the 'genesis' of construction disputes.

Table 2 – Characteristics of Construction Projects and Sources of Disputes

<table>
<thead>
<tr>
<th>Construction Project's Characteristic</th>
<th>Source of Disputes (from Table 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project uncertainty</td>
<td>change, variations, economics, weather, incomplete scope definition, errors in design, uncertainty and unpredictability.</td>
</tr>
<tr>
<td>Process problems</td>
<td>contract documents, contract terms, performance, quality, tendering pressures, law, payment, inappropriate contract type, delays, disruption, acceleration, tendering pressures, administration, and poor communication.</td>
</tr>
<tr>
<td>People issues</td>
<td>Misunderstandings, unrealistic expectations, culture, language, communications, management, negligence, workmanship, and lack of team spirit.</td>
</tr>
</tbody>
</table>

Diekman et al.'s (1994) characterization has the additional contribution of supporting Fenn et al.'s (1997) notion that "conflict is pandemic," meaning that it simply exists anywhere there is an incompatibility of objectives and interests (also endorsed by Sykes, 1996 and Groton, 1997). This fact helps link "people issues" with "process problems," for when the parties' intents (i.e., objectives and interests) are not compatible their interpretations of contract documents, terms and conditions can be divergent leading to discrepancies and conflicts. In short, conflicting objectives will always lead to disagreements, and specially in a time-constrained environment like construction.
Confirming this notion of a relationship between objectives and disagreements, Howard et al. (1997) also support the apparent conflict-prone nature of construction projects on the incompatibility of the parties’ initial intents. Howard et al. (1997) study shed light into the fact that each construction party starts with a different set of goals, correlating this information to the high tendency to conflict in this industry. Howard et al. (1997) argued that incompatible objectives are responsible for the frequent disagreements on how to approach and complete a project, leading to adversarial attitudes. Table 3 illustrates the results collected by Howard et al. (1997), when they asked owners and contractors to identify what constituted business success for their companies in construction projects.

Table 3 – Owner-Contractor Objective Alignment (adopted from Howard et al., 1997)

<table>
<thead>
<tr>
<th>CONTRACTORS' OBJECTIVES</th>
<th>OWNERS OBJECTIVES</th>
<th>CONTRACTORS' AND OWNERS' OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Achieve profit other financial gains.</td>
<td>• Meet return on investment goal.</td>
<td>• Complete project within budget.</td>
</tr>
<tr>
<td>• Satisfy client and generate repeat business.</td>
<td>• Minimize plant operating and maintenance costs.</td>
<td>• Complete project within schedule.</td>
</tr>
<tr>
<td>• Manage cash flow.</td>
<td>• Minimize plant downtime and outages.</td>
<td>• Maintain a high level of quality.</td>
</tr>
<tr>
<td>• Limit long-term liability.</td>
<td>• Achieve high product quality.</td>
<td>• Execute the project safely, without wasted time or accidents.</td>
</tr>
<tr>
<td>• Develop employees and create satisfaction.</td>
<td>• Achieve product throughput capacity goals.</td>
<td>• Minimize claims and litigation.</td>
</tr>
<tr>
<td>• Optimize employment level within contractor organization.</td>
<td>• Provide design flexibility to meet future demands.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Minimize disruptions to existing operations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Avoid negative impact on environment and community.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduce project cycle time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Exceed internal customer’s expectations.</td>
<td></td>
</tr>
</tbody>
</table>

As shown, only in a few responses owner and contractor shared a set of objectives. On the one hand, “the owner wishes to obtain maximum quality, functionality, and capacity at a minimum cost.” On the other, “the contractor ...must achieve financial goals that are advanced by expending the minimum resources required to meet a
minimum scope of work” (Howard et al., 1997). This limited alignment of objectives fosters the development of conflicts and disputes.

After reviewing the reasons behind disputes in the construction, it appears that conflict is an intrinsic aspect of this industry, as each project has its own set of “uncertainties, process problems, and people issues” and parties enter the contract with significantly different goals and objectives. These conditions also make each project unique and impossible to replicate, making the development of a unique theory on the sources of conflict and dispute in construction a very difficult task. Therefore, as it will be shown in the following sections, it remains the responsibility of each project team the assessment of their specific project characteristics to develop a joint, creative, and effective approach to deal with and resolve conflicts before they can lead to disputes.

2.2 Traditional Dispute Resolution in Construction

According to Stipanowich (1996), not so long ago dispute resolution had two possible meanings for organizations involved in construction. On the one hand, it was considered a non-binding determination by the design professional; on the other, it was simply a binding arbitration. These were the only real options, other than litigation, available to construction teams to unravel disagreements during the execution of the project. Negotiations were used by all parties to fill the gap between these tools; however, they were mostly performed on the basis of experience, business savvy, and opportunity, without any formal procedure that could promote both a faster and more equitable settlement of the dispute. Litigation was considered too expensive and time consuming, so arbitration became the industry standard as the alternative binding procedure. Figure 3
shows the traditional two-step Dispute Resolution “Ladder”\(^7\) (DRL) with the two resolution tools.

In this ladder, the design professional (i.e., architect or engineer) played the role of a first step in the process of resolving disputes. The contractor submitted inquiries and disagreements to the design professional representing the owner, and then expected prompt, knowledgeable, and unbiased answers\(^8\). If the determination of this third party was objected by either owner or contractor, the matter was usually escalated and left to arbitration. As discussed above, and shown in Figure 3, negotiations were used to fill the “gap” between the first and second step in the ladder. Little was done by either the owner or the contractor to formally prevent conflicts and disagreements, except for perhaps attempting to transfer project risks to the opposing party in an effort to limit individual liabilities. Design-Build projects are based in part on this notion of reducing the owner’s

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\(^7\) This idea of a Dispute Resolution “Ladder” is used to organize dispute avoidance and resolution techniques for construction projects, and it is further described in Section 2.4.2.

\(^8\) Section 2.2.1 explores further this role of the Design Professional, and the problems with this approach as projects have become larger, and more complex.
exposure to design problems, by assigning both the design and the construction responsibility to only one party.

The second step in the ladder, Arbitration was the preferred alternative to litigation for the resolution of construction disputes because it offered "...a limited process, a relatively prompt hearing, privacy, informality, and above all, [an] informed judgment" (Stipanowich, 1996). According to Stipanowich (1996), that is how arbitration\(^9\) became a "sine qua non of construction contracting," and gained popularity as a standard clause in most contracts. If the first step of the ladder failed to resolve the dispute, arbitration procedures were usually delayed until the project was completed. A clear example of this procedure is offered by the LNG case discussed in Section 1.1 of the introduction. The two dispute resolution steps of the traditional construction DRL, are discussed in more detail in the following two sections.

2.2.1 Determination by the Design Professional

The resolution of construction disputes has been the responsibility of the project architect/engineer for a long time. It was considered logical that the design professional, who drafted drawings and contract specifications, made determinations with regards to interpretations, and related conflicts between the owner and the contractor (Stipanowich, 1996). The decisions of the architect/engineer were backed by his profound knowledge of the technical considerations of the project, something that gave him the authority to resolve almost any matter related to his ‘creation’. The decisions of the design professional were usually neither final nor binding on the parties, but they provided a fast, knowledge-based, “objective” solution to job-site disputes.

\(^9\) Section 2.2.2 explores Arbitration further, and the problems associated with this procedure, as it has become more rigid.
Nevertheless, as contracts became larger and the technical complexities and the number of parties expanded, the quantity, frequency, and size of project disputes also increased. The dollar amount of contract disagreements became larger and delayed completion time brought additional problems (Stipanowich, 1996). Hence, although it was often assumed by owners that the evaluation of disagreements would always be conducted by their own on-site agent (i.e., engineer, or architect), the changes described eventually undermined the position of the agents, and they were finally considered not in the best position to propose or evaluate the merits of an equitable settlement.

Among the major concerns that led this transformation was the possible conflict of interest "...inherent in the design professional’s concurrent roles as agent and contractor of the owner" (Stipanowich, 1996). A contractor seeking compensation from the owner because of a contractual problem involving administration, design, and/or contract interpretation elements was not likely to find an objective decision originating from the agent, since this last was an actual part of the condition being claimed (Stipanowich, 1996). Furthermore, in disputes regarding errors or omissions in the contract, the design professionals frequently became a defendant, so their role as an ‘unbiased third party resolver’ of disputes lost credibility. At that point the owner was left to face what often were disputes that could not be settled by the people he/she had assumed would be responsible of doing so during the project (Hoctor, 1989).

In conclusion, the role of the design professionals as the first step in the DRL has lost significance10, specially in large, complex projects where their decisions can be challenged in other forms of binding adjudication, or where they can become a part of the dispute. Still, the benefits of having an unbiased, knowledgeable third party involved in the resolution of construction disputes is still recognized by the industry (i.e., objectivity, speed, decisions backed by technical know-how, and an understanding of the project) as it will be demonstrated in further examples of third-party ADR techniques. Thus, it can
be argued that the concepts of Neutral Advisors (Section 6.1) and Dispute Review Boards (Section 6.3) have been developed by the construction industry as substitutions and improvements of the role played by the design professional in the traditional DRL.

2.2.2 Arbitration

This section presents two examples of early applications of arbitration as a dispute resolution technique, together with the use of arbitration in the construction industry. The two examples provide two important lessons for the use of arbitration in construction dispute resolution. First, the Greek example shows how arbitration was used as a dispute resolution system because of the same reasons this technique was adopted in construction. Then, the use of arbitration in the middle ages in England shows how this technique followed a path towards rigidity and formalization as its use increased just like arbitration in construction during the past fifteen years.

i) Arbitration Experiences in Greece

In an article published in the Dispute Resolution Journal, King et al. (1994) described the use of arbitration by the Greek city-states. The authors reported that by 500 BC arbitration had reached almost universal acceptance throughout Greece, where it was often used to resolve commercial problems between citizens, and as a diplomatic resource between city-states. These early uses of arbitration provide an interesting example of how alternative dispute resolution (i.e., arbitration) has been an integral part in the evolution of human relationships. Furthermore, it appears that the reasons behind the development of arbitration in Ancient Greece are also associated with flexibility,

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10 The design professional still remains the primary interpreter of design and specification requirements, but his/her role as a dispute resolution adjudicator has been reduced significantly.
privacy, and economy; the characteristics that allowed arbitration to become a pivotal part of the Traditional DRL. The following example help illustrates these observations.

According to King et al. (1994), the Athenian democracy was rooted in the success of commercial arbitrations conducted by Solon, a well known Athenian lawmaker. At the time, increasing social unrest required a prompt resolution of disputes; something that Solon achieved by proposing knowledge-based, fast, and mutually beneficial resolutions (sometimes the fallback was war). Just like some models in the present time (e.g., expert determination (Section 8.2) and arbitration (Section 8.3)), the decisions of a third party neutral were final and not appealable, as they were considered to be the judgment of city-state appointed to solve the discords. These characteristics which made arbitration the dispute resolution system in ancient Greece are also the same features that fostered its incorporation in the DRL of the construction industry: fast solutions based on knowledge and experience, flexibility, and finality.

ii) Arbitration in Old England (602-1698)

Another example of ancient applications of arbitration is found in the history of Old England from the Dark Ages to the end of the Middle Ages, where arbitration was a conciliatory process used as a true alternative to litigation. According to Hurt (1995), arbitration's function was to reconcile the parties and allow them to sustain long-lasting business relationships. Arbitration was embodied in the medieval institution of the “loveday,” and was essentially a form of mediation (Hurt, 1995).

Beresford (1998) describes this early arbitration system as follows:

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11 Solon’s legacy is the codification of the laws which defined Athens’s democratic assembly (King et al., 1994).
12 The term “loveday” was used “...because the Quiet and Tranquillity that should follow the ending of the controversy” (Hurt, 1995).
“When two merchants found themselves in dispute, they went to a colleague, and agreed to abide by his decision. In many trades, there was no need for enforcement of awards at law. If a man failed to comply with an arbitral award, he faced commercial ruin when his peers were no longer prepared to give him credit or to deal in his goods. Chambers of Commerce and trade associations played an active part in arbitration.”

However, as disputants began to use arbitration as a substitute to court litigation, arbitration acquired some of the characteristics of the legal system; something that gave rise to a pseudo-adjudicative variety of the technique that grew as the commercial community used it more and more. Consequently, from the late Middle Ages through the early modern period, arbitration changed, as potential abuses of the process and evolving notions of community, competition, and individualism contributed to the disappearance of arbitration as a conciliatory process (Hurt, 1995).

In conclusion, this section showed how arbitration evolved from a purely conciliatory process to an adjudicative system, as its use by the business community and the courts increased. This evolution is similar to the one found in the arbitration of construction disputes described in the next section.

iii) Arbitration in the Construction Industry

As it was mentioned earlier in Section 2.2, in the traditional two-step ladder, if the parties failed to reach an agreement with the design professional, the only alternative was binding arbitration (i.e., second step). Arbitration clauses became the standard in agreements between owners, designers, and contractors, functioning as the dispute resolution technique instead of litigation. Standard contract forms issued by professional associations like the American Institute of Architecture (AIA), the Association of General Contractors (AGC), and the Chartered Institute of Builders (CIOB) all incorporated arbitration as their only dispute resolution alternative. International organizations like the
World Bank and the Federation Internationale de Ingenieurs-Conseils (FIDIC) also supported the use of this technique. However, with the increasing acceptance of arbitration as a substitute for litigation, the technique began to develop problems as it became more rigid and costly.

According to Stipanowich (1996), arbitration was "...subjected to the stresses and strains borne by its expanded use." Furthermore, as courts began to accept the system, they proceeded to delegate in arbitrators the "...burden of almost the entire spectrum of civil rights and remedies," creating increasing demands for rules and procedures to accommodate the expanding needs of the final users (Stipanowich, 1996), something surprisingly similar to the extinction of the "loveday" concept in Old England. In response to these demands, arbitration was forced to adopt certain characteristics from civil litigation, such as "extensive discovery, multi-party practice, awards of attorney fees, and written opinions by the arbitrators" (Stipanowich, 1996). Due to these pressures and strains, arbitration lost some of the features that had made it the preferred dispute resolution technique in the construction industry: flexibility, privacy, decisions based on technical know-how, and economy.

The problems experienced by arbitration are reflected in the results of an American Bar Association (ABA) -sponsored survey completed in the mid-1980’s (cited by Stipanowich, 1988). The study reviewed the perceived advantages and disadvantages of arbitration in the resolution of construction disputes, and its respondents -mostly construction attorneys, identified their major concerns with this form of ADR. Table 4 summarizes the ABA results and connects them to what Stipanowich (1996) considers the features responsible for the initial popularity of arbitration in construction.
Table 4 – Problems with Arbitration in ABA Survey 1988 and their connection to the Features of Arbitration identified by Stipanowich (1996)

<table>
<thead>
<tr>
<th>ABA Results</th>
<th>Arbitration Features (Stipanowich, 1996)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problems regarding the speed and efficiency of arbitration in larger cases, which made arbitration expensive.</td>
<td>(economy and flexibility)</td>
</tr>
<tr>
<td>2. Need to consider mechanisms to deal with multi-party disputes.</td>
<td>(flexibility)</td>
</tr>
<tr>
<td>3. Problems regarding the quality of construction arbitrators.</td>
<td>(economy, knowledge-based decisions, and flexibility)</td>
</tr>
<tr>
<td>4. The need to support greater use of preliminary hearings and pre-arbitration orders to organize and expedite the actual procedure.</td>
<td>(economy)</td>
</tr>
<tr>
<td>5. The need to increase the power of the arbitrator to order sanctions for delays and ‘non-cooperation’.</td>
<td>(economy and flexibility)</td>
</tr>
<tr>
<td>6. Objections as to the appropriateness of a written award by the arbitrator explaining the reasons for the decision.</td>
<td>(privacy)</td>
</tr>
</tbody>
</table>

These concerns about arbitration within ABA confirmed that the system had developed some of the inherent problems of litigation due to its excessive use. In fact, the views presented by points 4 and 5 above suggest that arbitration was being abused by the disputants and their legal representatives, just like it happens in litigation. This is exemplified by a study by Flood et al. (1993) on this subject in the UK, which concluded that lawyers had “...essentially ‘juridified’ the field [of arbitration], making the procedures rigid, costly and time consuming, with the many drawbacks attributed to litigation.” Arbitration had become an adversarial procedure.

After reviewing the examples of ancient Greece and England, and how arbitration in construction evolved into a pseudo-adjudicative and adversarial system with many of the features that had made litigation the least preferred dispute resolution technique, in the next section a final journey to ancient history is presented to illustrate how dispute resolution has been carried out in Asia since the fourth century BC as a conciliatory practice focused in maintaining the relationship between parties.
2.2.3 Confucian Philosophy

In the Far East, the concepts of resolving disputes by conciliation date the times of Confucius (511-479 BC). The Chinese base their dispute resolution processes "...on the Confucian view that the optimum resolution of a dispute should be attained by moral persuasion and compromise instead of by sovereign coercion" (Chau, 1992). According to Li (1970, cited by Chan E., 1997), the Chinese preference is to encourage people to settle disputes amicably.

This philosophical approach is based in a common Asian tradition to seek "harmonious" solutions that help maintain relationships over time. Judges and mediators are considered the same in Asia, for what parties seek is a well-known go-between that is also familiar with their disagreement. The idea is that the third party helps them bring an end to their dispute while assisting in reaching a mutually agreeable solution. What they seek is a solution with as little "loss of face" as possible\(^{13}\) (Ragan, 1993).

Under Confucius’ traditions, litigation is viewed as the last resource, and also implies a "loss of face." Consider that China has over 10 million mediators versus only 15,000 lawyers (Pierce, 1994)\(^{14}\). Discussion and compromise are always preferred, and all adjudication procedures where a third party decides the matter are considered adversarial in nature. In contrast, conciliation and mediation are always favored, as informal, person-oriented approaches, unbound by the strict rules of highly structured procedures. It is less important in Confucianism to be accurate in finding the truth. What this philosophy truly considers important is to determine a common ground in which parties can negotiate a settlement without ever disrupting their "harmonious relationship" (Scott, 1995).

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\(^{13}\) Ragan (1993) reports that in Japan, the existence of a dispute may itself cause a "loss of face." Moreover, having to submit a dispute to a third party may represent some sense of failure.

\(^{14}\) Local People’s Mediation Committees, with three to 10 members, mediate 7 million cases a year. They reach agreement in 90% of the cases (Pierce, 1994).
In conclusion, this set of sections (2.2.1, 2.2.2, and 2.2.3) has shown how the two initial steps in the traditional dispute resolution ladder have reached a point in which they no longer can successfully cope with the growing needs and challenges of today’s construction environment. The industry has been forced to look beyond the architects’ determinations and binding arbitration as the sole mechanisms to solve professional and commercial disputes. The new instruments, paradoxically, have tried to incorporate the lessons of ancient Asian philosophies, in a quest for improving their current effectiveness and ultimately their bottom lines when dealing with conflict.

2.3 Modification of the Two-Step ADR approach

As described in Section 2.2 the traditional dispute resolution ladder has experienced some problems as the size and complexity of projects expanded. This section presents four examples that illustrate how the ladder has been gaining “steps” as parties incorporate new ADR techniques to bridge the gap between the design professional’s initial determination and the binding arbitration stage.

2.3.1 Frame Contract Delivery System in the Netherlands

In order to design and build large-scale and time consuming civil engineering projects, the government of the Netherlands developed in the 1970’s a type of project delivery system that is still in use and is known as “Frame Contracts” (Goudsmit, 1985). Under this scheme, parties start with only a very broad definition of the works to be completed and accept to negotiate partial contracts as the design problems emerge and
different solutions are proposed by engineers and architects. According to Goudsmit (1985), "...the philosophy of the frame contract is that whereas a procedure for the negotiation of a price must be incorporated in it, the real execution of the various stages of the works should only necessitate agreement on the specification of such works as well as on the time period within which such work should be completed." In other words, parties agree on how they will negotiate a price for works that will be fully defined in the future, with only a specified maximum duration and some basic performance and quality criteria. The following example from Belgium should clarify this concept and the reasons behind its development and implementation.

"In 1975, the frame contract formula was selected by the Government [of Belgium] for study/design and execution of a seaward expansion of the outer port of Zeebrugge. The decision was influenced by the success on similar maritime projects in the Netherlands. Dutch experience has proved that it is almost impossible to formulate in advance a 'cut and dried' study for projects which extend far beyond the coastline....It is also difficult to pre-determine the effects of such projects on the behavior of beaches and seabed. ...the preparatory study was directed towards obtaining the fullest possible information about the known or assumed behavior of the sea and the seabed. But surprises always occur because not all of the sea's reactions can be predicted in advance....This requires rapid adaptations of the design and execution plans during the construction period without incurring costly delays or protracted discussions on claims. The frame contract which defines general but strict rules and limits for quality control, timing and prices, makes constant consultation possible between the Government and contractors responsible for design. Accordingly, studies and construction plans can be either amended or even changed as and when the need arises during the course of the project to ensure the utmost efficiency and completion on schedule." (Ir R. Simoen, cited by Goudsmit, 1985).

What this case demonstrates is that through the use of the Frame Contract parties in construction have been able to effectively introduce the concepts of objective alignment, risk allocation, trust, and long-term commitments to enhance efficiency and reduce conflict in large scale engineering projects. By understanding the difference between "static agreements" (like the sale of a house) and "relational contracts" such as

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15 The total scope of work for a 10-year project to design and build a facility to control floods in a region in the Netherlands under a Frame Contract System stated the following: "The execution of works for the realization of the storm surge barrier in the mouth of the Eastern Scheldt between the islands of Schuwen Duiteland and Noord Beveland, with additional works in the municipalities of..." (Goudsmit, 1985).
construction projects (Overcash, 1998); and by following Overcash’s (1998) advise to concentrate more on the dynamics of the process than on its fixed elements, the Frame Contract creates a resourceful environment to manage uncertainty while designing and building large-scale projects. The benefits of this approach are not limited to the cases in which environmental uncertainties create a time-related concern (a typical worry in Nordic countries concerning the sea). Rather, they simply facilitate the task of dealing with the unexpected by effectively acknowledging it as a natural part of construction (an idea introduced with Diekman et al. (1994) in Section 2.1).

Among the most common delivery systems for construction projects, Design-Build is the closest one to a Frame Contract. However, there are significant differences between the two with regards to key aspects of the contract and the criteria for the selection of the contractor. Table 5 summarizes these differences.
<table>
<thead>
<tr>
<th>ASPECT OF THE CONTRACT</th>
<th>FRAME CONTRACT</th>
<th>DESIGN BUILD CONTRACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Value</td>
<td>Only roughly defined. The owner usually has a rough estimate, but the design is not even schematic to allow for the development of a budget. Prices are negotiated as the design is completed and the work is ready to be executed.</td>
<td>The total value of the contract is known, at least in the form of a firm budget.</td>
</tr>
<tr>
<td>Schedule</td>
<td>Only certain key dates are specified, usually by stages. The contract will set a limit for the latest acceptable finish date. Beyond that, the schedule specifics are developed as the project is defined.</td>
<td>Usually the owner sets the maximum duration and some key milestones that must be met by the contractors. In the proposals, contractors include a schedule to perform each phase of the project.</td>
</tr>
<tr>
<td>Design Parameters</td>
<td>Only a broad definition of the problem exists, and a general description of the works to be performed is included in the contract.</td>
<td>Some form of schematic or conceptual design is provided by the owner. The contractors include in their proposals their initial interpretation of those parameters.</td>
</tr>
<tr>
<td>Design Performance</td>
<td>Only a broad definition of how the works are to function and perform is included. Contractor know-how, new technologies, and design decisions will determine the final performance criteria for the project.</td>
<td>Specific owner requirements and performance criteria is detailed in the tender documents and therefore in the contract.</td>
</tr>
<tr>
<td>Terms and Conditions</td>
<td>Contract focuses on the relationship. Because there is little definition at the award stage, the contract sets limits that will help guide the relationship and the future definition of the project. Special emphasis is given to the procedure to negotiate a reasonable price for the works as the design develops.</td>
<td>Varies from contract to contract, but it is usually more formal.</td>
</tr>
<tr>
<td>Risk Allocation</td>
<td>A balance allocation of risk is incorporated in the contract in order to manage the high degree of uncertainty at the beginning of the project.</td>
<td>Varies from case to case, but one of the basic premises of design build contracts was that most of the risks were assumed by the contractor.</td>
</tr>
<tr>
<td>Dispute Resolution Clauses</td>
<td>The contract clearly defines procedures to ensure that negotiations are completed and issues are resolved. Alternatives are given to avoid disruptions because of a failure to agree on a certain issue. Arbitration is the alternative of last resort.</td>
<td>Each owner will define the dispute resolution mechanism, but many fail to do so assuming that by awarding a Design Build contract all project risks have been assigned to the contractor and therefore problems will be solved within the contractors scope of work.</td>
</tr>
<tr>
<td>Partial Contracts</td>
<td>As the project develops and parts of it are defined, the owner can negotiate and issue partial contracts to the Frame contractor. The owner can also incorporate new subcontractors if negotiations fail or certain technical expertise is required.</td>
<td>The Design Build contractor has control over 100% of the works under its scope of work. Some contracts might require subcontractor approval by the owner, but no separate partial contracts are issued as the design develops.</td>
</tr>
<tr>
<td>Selection Criteria</td>
<td>Trust, previous experience, quality of previous work, state of the art technology, financial stability, willingness to assume risk, and reliability.</td>
<td>Price, proposed solution, schedule, experience and usually price again.</td>
</tr>
</tbody>
</table>

What the table again shows is that more flexibility is granted to the parties under the Frame Contract, allowing them to tailor decision-making to the specific situations that emerge as the project progresses. In the description of the Frame Contract the reader will
find words like rough, certain, broad, and general, which demonstrates its openness to change and constant adaptation.

2.3.2 FIDIC’s ADR Contract Conditions

The most frequently used form of international contract conditions for civil engineering and construction projects comes from the Federation Internationale de Ingenieurs-Conseils (FIDIC) - the *Conditions of Contract for Works of Civil Engineering Construction* (Molineaux, 1995), also known as the “Red Book.” Until recently, this standard contract was drafted under the assumption that construction claims should be set aside during the work, and then resolved at the end of the project (Molineaux, 1995). Arbitration was the only alternative to litigation if parties failed to agree with the architects/engineer’s determination, but it could only be initiated after final completion of the project. Clearly, what the FIDIC was using was the two-step traditional DRL described in Section 2.2.

According to Molineaux (1995), the first edition of the Red Book in 1957 included a dispute resolution clause stating that “...the arbitrator’s shall not enter on the reference [dispute] until after the completion or alleged completion of the works unless the parties otherwise agree.” Claims, and the process to resolve them, were considered a distraction to the construction, confirming the notion that the job came first, and that claims should be put aside until the end of the project. More recently, however, there has been a trend to address and resolve claims as early as possible. Molineaux (1995) suggests two important reasons behind this new approach from the viewpoint of the owner:

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16 Apparently, this has been the general thought among drafters of contracts and construction law, since in every country reviewed as part of this research arbitration was found to be the standard for construction
1) "To avoid or lessen the origin of the claim, by taking the necessary actions in response to the problem; for example, a design change to meet new subsurface conditions; and
2) To monitor the alleged extra costs being incurred by the contractor for future review and possible negotiation."

Additionally, an early treatment of claims also means that owners can attempt to isolate troubles from the rest of the project, which enhances flexibility and reduces their effect on other activities. The 1987 Edition of the FIDIC contract had already taken into consideration these developments, and addressed the need to resolve disputes during the execution of the works by means other than arbitration. This Edition included a requirement to attempt an "Amicable Settlement" before arbitration could actually start.

Clause 67.2 of the Red Book stated:

"Amicable Settlement – Where notice of intention to commence arbitration of a dispute has been given in accordance with Sub-Clause 67.1, arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which the notice of intention to commence arbitration of such dispute was given, whether or not any attempt at amicable settlement thereof has been made" (cited by Hollands, 1989).

This clause is an encouragement for parties to resolve the dispute without recurring to arbitration by making them wait considerably before arbitration can begin. This passage is also an acknowledgment that there are other mechanisms available to deal with problems between parties to a contract.

In terms of promoting early resolution of claims, Seppala (1991) maintains that the FIDIC reinforces the claims' notification process. In the 1987' Red Book Edition, contractors are required to notify the engineer within 28 days after the event giving rise to the claim is first noticed. From that date forward, the contractor is required to keep updated files on all costs associated with the claim, and to make the material available to the engineer for review, without requiring from the engineer an acceptance of any dispute resolution. In a number of these countries, the arbitral proceeding was found to be contingent upon the completion of the project.
liability. Failure to comply with these requirements automatically reduces the amount the contractor can claim at a later date (Seppala, 1991).

From his role of Chairman of the FIDIC Committee of Conditions of Contract, Seppala (1991) identified three major advantages of the Federation’s procedure just described:

1. “The engineer can investigate the facts of a claim and its financial consequences while the evidence is still fresh and available;
2. The owner receives a prompt notice of possible adjustment to the contract price; and
3. The earlier claims are identified, the sooner they may be resolved.”

Molineaux (1995) agrees with these advantages and adds that the system makes both parties responsible, and creates an obligation to deal with disputes in a timely and professional manner. In short, by preventing arbitration and encouraging early claim notification the FIDIC has both introduced an ADR system and promoted an expedite process that saves time and resources to the parties involved. Yet, a point that is still missing is clause 67.2’s failure to describe what parties should do during the waiting period before arbitration. Not clearing the article terms might only serve to delay arbitration for almost two months.

2.3.3 World Bank’s ADR Contract Conditions

Whereas the FIDIC has left open the possibility of using some form of alternative to arbitration after the architect/engineer’s decision is rejected, the World Bank has gone a step further and has actually recommended the use of a Dispute Review Board (DRB)\(^\text{17}\) as the method to resolve construction disputes\(^\text{18}\). In its May 1993 Standard Bidding Documents, the World Bank suggests the following:

\(^{17}\) See Chapter 6, Section 6.3.
"In case of major projects, IBRD [World Bank] encourages employers to consider introducing a dispute review board (DRB) into the contractual settlement of dispute procedure... Such a DRB could either replace the engineer under Clause 67... or it could review the decisions made by the Engineer" (cited by Molineaux, 1995).

For smaller contracts, the World Bank has also introduced the concept of an "adjudicator" (see Section 8.2) to function as the first step in the resolution of disputes:

"The adjudicator is the person appointed jointly by the employer and the contractor to resolve disputes in the first instance. The adjudicator is... required to provide a decision within 28 days. If no party submits the adjudicator's decision to arbitration within 28 of receipt the decision is considered final and binding" (Molineaux, 1995).

These two conditions represent a significant improvement over the standard FIDIC contracts in relation to dispute resolution procedures. Not only has the World Bank recognized the existence of alternatives to arbitration - by recommending two options depending on the size of the project, but also it has replaced the role of the designer in small contracts as the first-instance resolver of disputes. In large contracts, the World Bank has incorporated a dispute review board as a new step in the resolution process between the designer and arbitration stages.

2.3.4 Chek Lap Kok Airport’s Dispute Resolution System

As a final example of the modified two-step DRL approach, this section presents an actual case from Hong Kong. In this Asian country, construction contracts with the government usually include a three-step dispute resolution process shown in Figure 4 and cited by Fenn et al. (1998). Just like in the two-step process, the design professional is responsible for the first determination as to any disputes regarding the contract, and arbitration is the final binding mechanism for settlement. However, a Mediation stage (see Section 7.1) is added as an in-between step, if the parties disagree with the design

18 Under this procedure, both parties retain the right to submit the decision of the DRB to arbitration.
professional’s decision. In this case, mediation is not mandatory, and the opposing party can refuse to participate in the mediation procedures (Fenn et al., 1998).

In the event mediation fails or one of the parties refuses to participate, the Hong Kong government establishes that the dispute can be referred to arbitration, but only after the conclusion of the project (Fenn et al., 1998). In other words, the contract makes the completion of the works a condition precedent to any final solution of disputes that may occur during construction, just like the 1957 Edition of the FIDIC contract reviewed in Section 2.3.2.

For the construction of the Chek Lap Kok Airport, the government developed a specific, modified dispute resolution system based on the three-step process described above. Fenn et al. (1998) report that during the negotiations between the Airport authority and the local contractors, the latter exerted a great deal of pressure for a faster and more efficient dispute resolution procedure than the one shown in Figure 4. The biggest hurdle in the negotiations was a condition that “arbitration was only possible after the project’s completion” (Fenn et al., 1998), and the contractor insisted on a mechanism that could address the large number of disagreements expected in a project of such complexity. The resulting dispute resolution process is shown in Figure 5.

Figure 4 - Standard Dispute Resolution Process for Government Construction Contracts in Hong Kong
Two methods for dispute resolution were incorporated into the contract to satisfy contractor’s demands regarding dispute resolution (Fenn et al., 1998). Figure 5 shows these two methods, which have been labeled here as A and B to help the reader.

Under method A, parties submitted to the engineer representing the Airport Authority a Notice of Dispute as the first instance for resolution. Mediation followed if the Engineer’s determination was not acceptable to one of the parties. Opposed to the standard dispute resolution procedure (Figure 4), in this case mediation was mandatory and had a time limit of 42 days before the parties escalated the dispute to the adjudication stage. In addition, the Hong Kong government tightened this modified system by requiring from the mediator 1) a final report on the findings\(^{19}\), and 2) specific recommendations to the parties involved.

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\(^{19}\) Requiring a report from the mediator is a departure from the neutral facilitator role normally assigned to this person. The fact that this project was very much under public scrutiny might be the reason for wanting to have a written document explaining the recommendations of the mediator.
If mediation failed, or one of the parties disagreed with the report, the matter was submitted to an Adjudicator for binding determination. According to Fenn et al. (1998), the selection of this adjudicator was handled through the Hong Kong International Arbitration Center (HKIAC) and involved the following steps:

- **i)** Parties submitted to the HKIAC at least three names of people willing and able to act as adjudicators;
- **ii)** The HKIAC combined these lists and returns them to the parties;
- **iii)** Each party ordered the combined list based on their preference, and
- **iv)** The HKIAC then appointed the individual with the highest rating.

Once appointed, the adjudicator had the widest discretion permitted by the law to select the procedure and to ensure a just, expeditious, and economical resolution of the dispute within 28 days. This adjudicator acted as a Single Arbitrator (Section 8.3.1), and was required to provide a written statement identifying the dispute, the reasons for the decision, and any admissions made by the parties during the proceedings (Fenn et al., 1998). The awards of the adjudicator were binding, but could be appealed in arbitration after the completion of the project.

Under method B (see Figure 6 above), the contract incorporated the authority of a Dispute Review Group (DRG), consisting of seven individuals (Fenn et al., 1998). The DRG visited the construction site once every three months and spent there four and a half days reviewing the project and attending Quarterly Meetings between the contracting authority and the different contractors in order to maintain current knowledge of the status of the works.

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20 If parties failed to select an adjudicator the HKIAC could appoint one of its choice, from the list, or from its registered adjudicators (arbitrators).
Figure 6 - Composition of the Dispute Review Group for the Chek Lap Kok Airport Project, Hong Kong

An interesting aspect of the DRG is how it was organized in terms of expertise and representation of each party in the project. Although modeled as a Dispute Review Board (described in Section 6.3) in this case the contractors had no direct representation. Thus, DRG was more like an Agency Review Board (Section 6.2) in which the Convenor provided the legal background to any review and/or decision by the DRG. Arbitrators from China represented the government, and at the same time were the experts in arbitration procedures. The technical expertise to review construction and design issues was provided by professionals from the UK. Although it is unclear how one method was selected over the other for each claim, it appears that the larger contracts (i.e., Airport Terminal Building) used the DRG, or method B.

Under both methods, A and B, arbitration was left as the final stage to resolve disputes, to be used only after the project was completed. Arbitration awards in Hong Kong are usually in writing, are signed by the arbitrator, and in most cases provide the
reasons for the award\textsuperscript{21} (Fenn et al., 1998). Arbitration awards are final and can only be appealed when an issue of law is in question. The awards are enforceable in the same manner as a judgment.

In conclusion, for the construction of the Chek Lap Kok Airport contractors were able to modify the standard dispute resolution clauses of the Government of Hong Kong and develop two alternative approaches to address disputes more efficiently. By combining non-binding techniques -like Mediation and an Owner Review Board, with more binding determinations they were able to expedite processes and better document the project. However, this case did not introduce a change in the requirement to finish the project before being able to submit a claim to final arbitration.

To sum up, the examples presented above have shown how the traditional two-step DRL (Section 2.2) has been modified with new techniques (i.e., Mediation, Dispute Review Board, and Adjudication) added in between the designer’s determination and arbitration. The World Bank contract and the Government of Hong Kong have actually replaced the design professional by introducing the figure of a Standing Neutral to provide the initial evaluation and recommendation on the conflict matter. The following section will present the evolution of the two-step ADR model, portraying its expansion to include a number of new ‘steps’ that offer the parties increased flexibility, reduced costs, and a better chance to preserve their relationship.

\textbf{2.4 Evolution of ADR Methodologies}

As new methodologies have been developed and implemented, the number of approaches, techniques, and philosophies to deal with disputes in construction has grown significantly (Groton, 1997), especially during the past several years. Moreover, because

\textsuperscript{21} The recent American Arbitration Association has incorporated this feature to the new construction rules
of the uniqueness of each project and the differences in international practices, existing models are constantly modified by project teams to suit their specific requirements, creating new and innovative approaches to dispute resolution. According to Groton (1997), "...there has been a veritable explosion in the development and use of new dispute resolution techniques, particularly techniques for resolving disputes at the job site during the course of construction."

2.4.1 Data Supporting the Evolution of ADR

Since the 1976 conference of the American Bar Association – known as the Pound Conference, the growth in the use of ADR in the American court system has been exponential (Ide, 1993). While in 1980 only 18 states had some type of ADR program as part of their court system (Court-Annexed procedures), by 1990 all 50 states and the District of Columbia had incorporated a program, and by 1993 more than 1,200 court-related ADR programs were in place (Ide, 1993). This growth of ADR in the US court system has been fueled by the success of Court-Annexed procedures in the early resolution of disputes. For example, a mandatory ADR program\textsuperscript{22} carried out by the Commercial Division of the New York County Supreme Court achieved settlements in 52% of the cases, and contributed to the resolution of the dispute in another 16% of the cases (Meade, 1997). In other words, the ADR program positively affected 68% of the disputes in this Court.

Further use of ADR in the US is promoted by the Dispute Resolution Act of 1998, which actually instructs Federal district courts to require all litigants in civil cases to consider the use of alternatives to litigation (DRT, 1/1999). According to this bill, courts can direct parties to use ADR at any point during the legal procedures, in an effort to expedite the resolution of the matter and allow greater flexibility. The parties can now

(See Section 8.3).
resort to ADR during litigation, without giving up any advances made at the court level or losing their right to continue with the court proceeding if ADR fails.

At the State level, for example, the Governor of New Jersey signed a bill during the first quarter of 1998 that requires disputes in public construction projects to be submitted to an alternative dispute resolution procedure before court litigation (DRT, 4/1998). The bill recommends various specific ADR options such as mediation (Section 7.1), non-binding arbitration (Section 7.2), or binding arbitration (Section 8.3). In this document, not only has the government of New Jersey identified construction as a major source of civil litigation, but also it has recognized the fact that DART can improve the resolution process, increasing the chances for a faster, more efficient settlement of disputes with less court appearances.

Two surveys by the American Bar Association further confirm the increasing use of DART in construction. The first one, conducted as part of the ABA 1990-91 Forum on the Construction Industry (Stipanowich et al., 1992), found arbitration (Section 8.3) to be the most frequently used form of ADR in disputes with 81.5% of those surveyed having experience with the procedure. Many participants also reported the use of mediation (Section 7.1), with 64.2% of the respondents having some experience with it and 58.3% having mediated a dispute in the last two years. In terms of the success of DART, the results of this survey showed that 57.4% of cases resulted in full settlement, and in 8.4% of the cases a partial settlement resulted. This results are similar to those obtained by the New York Supreme Court reported by Meade (1997) above. The second survey, conducted in 1993 by the ABA Public Contract Law of the Alternative Dispute Resolution Committee, further confirmed the increasing use of DART to resolve construction disputes. Arbitration was still the most familiar method of dispute resolution among those surveyed, but mediation was now rated as the most favorable approach (Stipanowich, 1994).

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22 This program includes mediation before a trial date can be scheduled.
A 1994 study by the US National Transportation Board on dispute resolution methods found that 22% of State transportation departments had incorporated dispute review boards (Section 6.3), 63% used partnering (Chapter 4), 70% “empowered” field personnel to handle disputes (Section 5.2), and 100% were willing to negotiate (Chapter 5) with the contractor (Civil Engineering, 1994). On April 1996, thirty three of the most influential US organizations and federal agencies in the construction industry signed a declaration calling for the end of litigation in project disputes (ENR, 4/1996).

Hence, the numbers demonstrate how in the United States the use and popularity of ADR extends beyond the field of public contracts and construction. An additional survey conducted in 1997 by Price Waterhouse, Cornell University, and PERC\(^\text{23}\), revealed that 528 of the largest corporations in the US reported extensive use of ADR (Lipsky et al., 1997). The results, summarized in Table 6, reflect the opinion of chief litigators, deputy counsels, and corporate counsels of the corporations responding to the survey.

Table 6 - Summary of Results of Survey on the Use of ADR in US Corporations (adopted from Lipsky et al., 1997)

<table>
<thead>
<tr>
<th>ADR METHOD</th>
<th>Percent of Respondents who had experience with this method of ADR</th>
<th>Percent of Respondents who expect to use this method of ADR in the future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediation (Section 7.1)</td>
<td>88%</td>
<td>84%</td>
</tr>
<tr>
<td>Arbitration (Section 8.3)</td>
<td>79%</td>
<td>69%</td>
</tr>
<tr>
<td>Med/Arb (Section 8.1)</td>
<td>41%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mini-trials (Section 7.4)</td>
<td>23%</td>
<td>N/A</td>
</tr>
<tr>
<td>Fact Finding (Section 7.3)</td>
<td>21%</td>
<td>N/A</td>
</tr>
<tr>
<td>Peer Review (Section 6.1)</td>
<td>11%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

N/A: Data not available

\(^{23}\) The Foundation for the Prevention and Early Resolution of Conflict.
As shown above, mediation was the most favored ADR approach in this sample of Corporate America. According to the answers provided, 88% of these corporations had used mediation to resolve disputes in a number of fields (i.e., labor relations, employee termination, drug testing, and lawsuits brought about by customers). Arbitration was the second most favored ADR technique, with 79% claiming experience with this method. Interestingly enough, the technique that combines mediation and arbitration, Med/Arb, was the third most frequently used approach. As discussed in Section 8.1 Med/Arb has encountered some resistance because of the two roles played by the third-party neutral and the type of information that can and should be disclosed during mediation without affecting the possible arbitration process.

In terms of the expected reduction in the use of Mediation and Arbitration shown in Table 6, the survey attributes it to concerns declared by the respondents as to the qualifications of the third parties involved in the procedures. 49% expressed "...a lack of confidence in the arbitrator" (Geddes, 1997) and 29 were worried about the qualifications. With regards to mediators, 30% of responses raised the issue of lack of confidence and 20% the problem with qualifications and experience (Geddes, 1997).24

The higher concerns expressed with regards to the arbitrators can be explained by the fact that their decisions are final and binding, while the mediator do not even offer a solution proposal.

The survey also revealed some other interesting aspects of ADR in American corporations:

- Smaller companies were found to be more inclined to follow adjudicative procedures. They make a very limited use of ADR.
- The selection of ADR methods was found to be related to the type of dispute:

24 This problem of qualifications of the third party has been addressed in the 1996 revision of the American Arbitration Association of the Arbitration Rules for construction disputes.
Mediation is preferred to arbitration in all types of disputes except international cases, where 50% of the respondents said they would use arbitration, while only 43% would attempt mediation (DRT Survey, 1/1999).

In personal injury disputes, 60% have used mediation, but only a third have used arbitration.

In product liability cases, 40% have used mediation, versus only 24% that have used arbitration.

In long-standing relationships and contracts, 92% of the cases were mediated.

These findings show how ADR provides a flexibility to select how disputes will be addressed and resolved that is not found in the court system. Corporations are selecting different ADR methods for each type of dispute, as ADR has allowed them to tailor their approach to each specific case.

In response to this evolution of ADR methods, the construction industry has incorporated to the traditional DRL numerous methodologies to avoid conflict and to resolve disputes more creatively and efficiently. These changes have contributed to the creation of a construction DART model. The author of this thesis identified two models of conceptualization of DART that are presented in the following section.

2.4.2 Two Conceptualization Models of DART

This section provides a model for the organization and implementation of Dispute Avoidance and Resolution Techniques (DART). Two different schemes for the organization of construction DART are reviewed, and the Dispute Resolution Ladder (DRL) has been chosen and implemented in the following chapters for all the techniques found by this thesis. This selection is based on two features of this model; first, the DRL model lends itself to practical applications and second, it gives a significant importance to dispute prevention techniques by placing them as the first step in any successful system of dispute resolution in construction.
i) Fenn et al.'s differentiation between conflicts and disputes

A first model of organization DART is proposed by Fenn et al. (1997) based on a differentiation between conflicts and disputes in construction. Acknowledging the fact that the construction industry exists within an adversarial society ("conflict is pandemic"; Section 2.1), Fenn et al. (1997) argue that since it always will exist, conflict can be managed as any other variable in construction. The goal is to manage the differences between parties (i.e., conflicts) to the point of preventing them from leading to a dispute. The rationale is that organizations can learn from conflict, whereas disputes are not manageable by the parties, and they require some form of final determination. By needing this determination to resolve the dispute, this part of the process lends itself to be aided by the intervention of a third-party (Fenn et al., 1997).

Moore (1989, cited by Fenn et al., 1997) proposed a "conflict continuum," on which Fenn et al. (1997) based the "construction industry conflict continuum" presented in Figure 7.

![Figure 7 - Construction Industry Conflict Continuum (adopted from Fenn et al., 1997)](image)

In this continuum, Fenn et al. (1997) propose a taxonomy that differentiates techniques based on their usage to manage conflict or resolve disputes, also discriminating between non-binding and binding ADR methods (see Figure 8). This classification introduces means to manage Diekman's et al. (1994) "project
"uncertainties, process problems, and people issues" (Section 2.1) without delay, as these features of construction can easily deteriorate and their negative effects can be exponential if conflicts are not timely addressed and they evolve into disputes.

<table>
<thead>
<tr>
<th>Conflict Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-Binding</strong></td>
</tr>
<tr>
<td>Dispute Review Boards</td>
</tr>
<tr>
<td>Dispute Review Advisors</td>
</tr>
<tr>
<td>Negotiation</td>
</tr>
<tr>
<td>Quality Matters</td>
</tr>
<tr>
<td>Total Quality Management</td>
</tr>
<tr>
<td>Coordinated Project Information</td>
</tr>
<tr>
<td>Quality Assurance</td>
</tr>
<tr>
<td>Procurement Systems</td>
</tr>
<tr>
<td>Partnering</td>
</tr>
<tr>
<td><strong>Dispute Resolution</strong></td>
</tr>
<tr>
<td><strong>Non-Binding</strong></td>
</tr>
<tr>
<td>Conciliation</td>
</tr>
<tr>
<td>Executive Tribunal</td>
</tr>
<tr>
<td>Mediation</td>
</tr>
<tr>
<td><strong>Binding</strong></td>
</tr>
<tr>
<td>Adjudication</td>
</tr>
<tr>
<td>Arbitration</td>
</tr>
<tr>
<td>Expert Determination</td>
</tr>
<tr>
<td>Litigation</td>
</tr>
<tr>
<td>Negotiation</td>
</tr>
</tbody>
</table>

Figure 8 - Proposed Taxonomy of ADR Techniques (adopted from Fenn et al., 1997).

Fenn et al's (1997) notions are useful in the sense that they present an organized view of the different steps involved in ADR and the various alternatives available. However, there is a different approach that will prove to be eloquent in explaining the steps to follow.

**ii) Findley's stepped process of dispute resolution (six-step DRL)**

This second categorization of DART uses six distinct stages in the evolution of construction disputes. The stepped approach proposed by the Center for Public Resources (CPR, 1991 cited by Vorster, 1993) and Findley (1997) is shown graphically in Figure 9.
This theory recognizes conflict as an inherent part of construction projects. Based on that, it proposes early mechanisms to prevent the escalation to a dispute. The underlying idea is that the lower stages will facilitate the achievement of mutually-beneficial solutions, for as disagreements climb the stepladder, parties start to lose control over the eventual outcome.

![Dispute Resolution Ladder](image)

Figure 9 – Dispute Resolution Ladder (adopted from Vorster, 1993 and Findley, 1997)

Usually, at the middle stages, (Standing Neutral and Non-Binding) third parties are brought into the process and claims begin to depart from the job site level. The goal of external participants is to help disagreements return to a lower stage in the ladder, by identifying the real issues in dispute, finding a common ground between parties, helping in the analysis of technical problems, and/or assisting parties improve communication. Finally, as the parties get to the upper stages (i.e., binding and litigation), there is decreased participation of those who are really involved in the project, and it becomes less likely to invent alternative mechanisms to amicably solve the dispute, and the process starts to see a dramatic increase in costs and hostility.
The six-step DRL is flexible enough that it allows the development of project-specific DRL, something found in the two contracts of the FIDIC and the World Bank, where the escalation did not include all the steps and allowed the parties to attempt an ADR solution. The literature review also finds international applications of DART, with interesting variations depending on culture.

An example of the diversities in DRL is provided by the Canadian Construction Document Committee contract of 1994 (CCDC 2), a standard form of fixed-price terms and conditions designed for projects with three basic participants: the owner, the design or engineering consultant, and the contractor (i.e., Design-Bid-Build). The CCDC 2 provides a clear application of the modern DRL, recognizing some of the stages of the process and highlighting the benefits an challenges of each one (see Figure 10). In terms of dispute resolution, Bristow et al. (1995) report that the CCDC 2 contains specific provisions that make DART an integral part of the contract.

![Dispute Resolution Ladder](image)

Figure 10: Dispute Resolution “Ladder” established in the CCDC 2 Contract

According to the CCDC 2 contract (Bristow et al., 1995), disputes arising from interpretations of the documents or from the execution of the works are to be referred for determination to the design professional (consultant). The consultant then has a limited
period of time to issue a resolution regarding the dispute or disagreement. Negotiations (Stage 2, Chapter 5) between the disputants are mandated if the decision of the designer/engineer is not acceptable to either party. As part of this stage, the CCDC 2 requires the parties to “...provide, without prejudice, disclosure of relevant facts, information and documents to facilitate the negotiations” (Bristow et al., 1995), delineating the requirement for “Honest” negotiations as discussed in Chapter 5.

As the CCDC 2 escalates, when negotiations fail to provide a settlement within 10 days after they are formally initiated, either party must request the presence of the Mediator. Mediation is a mandatory step before any other binding approach can be initiated, and the parties must mutually select and appoint a mediator within 30 days after the contract is awarded. Disputes must be resolved 10 working days after the mediator is brought. The procedures can be extended by mutual agreement if the parties consider that progress is being made through mediation. If the parties fail to mediate a solution, they can request a confidential written opinion from the mediator (Bristow et al., 1995), similar to a conciliation report (Section 7.1).

This contract form is an important example of the use of different ADR mechanisms to develop a Dispute Resolution Ladder tailored to the job requirements and that assists the disputing parties “reach a joint resolution of their dispute during the course of construction so that the valuable business relationships can be preserved” (Groton, 1997). According to Bristow et al. (1995), the CCDC 2 offers a lot of flexibility to the parties during the first three steps of the ladder, but then sets strict time limits for that encourage the parties to address the disputes and approach a resolution. As the disputes moves up the ladder, the CCDC 2 becomes less flexible and the rules governing the procedures are “explicit and far more comprehensive” (Bristow et al., 1995).
2.5 Summary

Conflicts have existed as long as human beings have interacted with each other. Consequently, for centuries, civilizations have struggled to develop different ways to manage and resolve disputes among its members and with other cultures. For some, conflict resolution meant the difference between peace and war, for others mediation and conciliation have simply become a way of living. A common feature in these approaches to dispute resolution has been a tendency towards a dichotic and polarized way of understanding the possible outcomes. The two alternatives have been an amicable settlement or an openly adversarial approach that usually ended the relationship among parties.

In construction, these modes of conflict resolution were formalized in order to address the conflict prone nature of the industry. Many authors have identified different sources of conflict in construction by studying the causes of specific disputes “post-factum.” Three characteristics of the construction industry attempt to encompass the vast array of dispute triggers found by researchers: project uncertainty, process problems and people issues (Diekman et al., 1994).

From the formalization of ancestral forms of dispute resolution, evolved the traditional two-step resolution ladder, where determination by the design professional and binding arbitration are the two poles of the model. However, as construction projects became larger, multi-cultural, and more complex, the two-step Dispute Resolution Ladder (DRL) has become a limited tool. The traditional model is often unable to meet the needs of the project participants in an effective, timely and cost-efficient manner, without necessarily jeopardizing the relationship between the parties involved.

Stemming from the limitations of the traditional two-step model, new approaches have emerged trying to introduce alternative techniques to use throughout the process of
conflict management. First, this chapter reviewed Fenn et al.'s 'conflict continuum' and the way it served as a useful tool to divide multiple binding and non-binding strategies across this spectrum. Second, the Dispute Resolution Ladder proposed by Findley (1997) and Vorster (1993) was chosen as the guide for the chapters to follow. The selection of this model to organize the dispute avoidance and resolution techniques found by this thesis was based on two characteristics of this model. First, this model has the advantage of lending itself to practical applications, as clearly shown in the CCDC 2 contract discussed in Section 2.4.2 (ii). Second, the DRL emphasizes the important role of prevention techniques in dispute resolution process for construction projects. This prevention stage in the DRL is the focus of Chapter 3, where a series of techniques designed to mitigate some of the common sources of disputes discussed in this chapter are introduced together with some examples of their implementations.
CHAPTER 3

STAGE 1 – PREVENTION

The prevention stage offers the greatest flexibility to design and innovate on ways to improve communication and job performance by minimizing disagreements and helping the project team resolve those problems that arise before they become disputes or claims. The flexibility of this stage comes from the fact that the construction has not actually begun at this time; hence, as Smith (1995) suggests, "...this is the only time the owner has unilateral control over how to work with someone." After the contract is awarded and signed, the owner will have at least one partner in every decision, change, or interpretation regarding the project (i.e., architect/engineer and/or contractor). According to Smith (1995), prevention of disputes begins with a good design, comprehensive specifications, complete contract documents, risk assessment, and other features of job organization. It includes tight and consistent management of architectural design and engineering, risk sharing, incentive programs, cost and schedule control, peer review, value engineering, and constructability reviews.

As it will be shown in the following sections, this initial stage in the Dispute Resolution Ladder (DRL) offers a vast array of techniques to promote dispute avoidance and encourage conflict resolution during construction. The role of the owner is significant in this stage, since he/she has the responsibility for the design and introduction of a DRL that best fit the characteristics, risks and conditions of the project. The owner must accept
the fact that disagreements will occur, and he/she must incorporate mechanisms in the contract to resolve them as quickly and efficiently as possible as part of the Prevention Stage.

In terms of cost, some of the techniques in this stage represent additional expenses for the owner and/or contractor, but most of them are based on existing practices which are upgraded and adjusted to enhance the interaction between the team members (i.e., people problems) and the exchange of project information (i.e., communication) through collaboration, joint development, and updated project data. According to Findley (1997), the use of dispute prevention techniques will "...yield the harmony with the least cost." As an example, a representative of a major US Public Works owner had this to say about the costs and benefits of prevention techniques in his projects:

"For every $1 you spend on claims management during the front-end of the project, you save at least $20 to $25 in claims during construction."

(Zack a, 1997)

If we consider that fifty percent of all construction claims submitted to the American Arbitration Association (AAA) for resolution fall under the US$50,000 value (Stipanowich, 1997). It follows from the assessment provided above, that on average an owner should spend $2,000 on prevention per dispute; a rather small amount compared to the expenses required to achieve any type of resolution through binding procedures (i.e., arbitration). Therefore, the potential savings that can result from prevention measures should encourage the complete building team (i.e., owner, designer, and contractor) to incorporate them into the project.

This chapter presents twenty three (23) specific mechanisms identified through the research conducted as part of this thesis, which can help prevent disputes in projects. These mechanisms or techniques have been organized by groups based on the underlying principles that allow us to consider them capable of preventing construction disputes. Section 3.1 presents the first group of preventive DART, which address the issue of risk
sharing and a balanced distribution of the project uncertainties among the parties. As highlighted in the previous chapter, project risks and uncertainty are key factors in the development of conflicts and disputes in construction projects. Three different techniques that attempt to improve the allocation of risks and reduce the individual levels of uncertainty for each party are discussed: the Economic Price Adjustment Clause, which specifies and limits the cost escalation risk of the contractor; the Geotechnical Baseline Reports, which defines and shares the uncertainties about the subsurface conditions between the owner and the contractor; and the Third Party Beneficiary Clause, that helps to relieve the owner from the responsibility of delays originated by one of the contractors in the site.

Section 3.2 presents the idea of the Escrow Bid Documents, where parties agree to store under controlled conditions a complete set of tender, pricing, and bidding documents to use as reference during construction. This technique is based on the need to maintain a “clean” source of project and pricing information, which can help analyze and settle differences that might be encountered along the way. Section 3.3, introduces four innovative Project Award and Delivery Systems that can reduce the number of disputes. These systems are based on existing approaches, which have been modified to address specific project issues or problems with their original version. The first system reduces specific project uncertainties during the award phase – Negotiated Compressed Process; the second introduces an incentive for the winning contractor to promote collaboration in the resolution of issues during the construction and to avoid delay claims – A+B Bidding; the third, changes the procurement sequence to incorporate parties with important “know-how” in the engineering process at an early stage – PEPc System; and finally, the fourth system addresses problems of design control and erroneous interpretations of requirements in Design-Build projects to reduce disagreements during the execution of projects using this delivery system – ‘Bridging’ Design-Build.
Section 3.4 discusses the importance of incentive programs, and the positive effects they can have in preventing and discouraging disputes, by helping to align the contractor’s objectives with those of the owner. Results from research by the Construction Industry Institute (CII) are reviewed, together with three different incentive programs, each based on different measures of contractor performance: Cost and Schedule values, Subjective values, and Managerial values. Because a large number of different programs can be designed based on each project’s specific conditions and owner’s objectives. Section 3.5 highlights the importance of good engineering and architectural documentation to reduce uncertainties and therefore prevent disputes. The benefits of a Constructability Analysis is reviewed as a method to improve the technical documentation of the project and reduce misinterpretations and errors during construction.

Section 3.6 reviews nine (9) cost and schedule control techniques that the owner can implement to improve the overall development of the project and the probabilities of getting the job delivered on schedule and within budget. This section shows the important role the owner plays by being pro-active and making parties address schedule and cost issues as they are identified and not at the end of the job. Furthermore, this section introduces the concepts of Forward Price Change Orders, Right of First Refusal to Quote Change Orders, and Sub-contractor Payment Requirements. Each of these approaches is reviewed as a way to improve the relationship and the exchanges of information between the parties and therefore reduce conflict and disruptions during the execution of the project.

Section 3.7 discusses the importance of introducing dispute resolution procedures in construction contracts, based on the realization that conflicts and disagreements are an integral part of the building process. Owners and contractors can go far in terms of preventing those disagreements from becoming disputes and claims, by incorporating
effective and efficient "issue" resolution procedures, which the responsible representatives can use to settle matters preferably at a job-site level.

Section 3.8 discusses the need to provide training to the human resources responsible for conducting negotiations and implementing other forms of ADR techniques. Section 3.9 summarizes the concepts introduced in this chapter regarding the prevention of construction disputes, and the vast array of options available to owners and contractors to improve the construction process. These different techniques confirm the idea introduced in Chapter 2 that conflict in the construction process can be managed to limit its effects on the project and on the relationships between the parties. Therefore, parties should, based on actual project conditions and characteristics, incorporate specific dispute prevention techniques in the contract that will help them identify potential areas of conflict and mitigate their effects on the overall project results.

3.1 Equitable Risk Sharing

Unloading all of the construction risks on the contractor was identified by the Construction Industry Institute (CII) as a trend in construction contracts (Vorster, 1993), "...but also as a practice that is not cost effective" (Findley, 1997). Research by the Center for Public Resources (CPR) in New York, has found that "...many disputes arise when parties are forced to contest the adverse impacts of an unreasonably allocated risk" (Vorster, 1993). As contracts continually force contractors to assume risks that are beyond their control, "...contractors have turned to litigation as a way to resolve this inequality in the long term." (Vorster, 1993)

In a recent study conducted by Shen (1997) on project risks, 85 construction contractors of Hong Kong ranked how different project risks contributed to project
delays. The results, starting with the risk with the largest contribution to delays, were as follows: (Shen, 1997)

1. Insufficient or incorrect design information,
2. Variations in ground and weather conditions,
3. Subcontractors’ manpower shortage,
4. Shortage of materials/plant resources,
5. Poor coordination with subcontractors,
6. Poor accuracy of project program,
7. Shortage of skills/techniques, and
8. Abortive works due to poor workmanship

As shown above, Shen’s study found that contractors included in the top-three contributors of delays (i.e., possible sources of disputes), four conditions that fall beyond their initial control: design problems, site conditions, weather, labor shortages and scarcity of material. So, it is not surprising that change order requests relating to these four conditions are among the most common causes of delays in construction. As presented in Section 2.1, research has identified that project uncertainty in the form of unexpected sub-surface conditions, variations, changes in design, unrealistic expectations, and weather, to name a few, are among the primary sources of disputes in construction projects. This project uncertainty is translated into the risks each parties has to assume, either by choice or by contract, upon becoming a project team member.

In a paper on risk allocation in large infrastructure projects, Olvera (1997) concludes the following:

"The general guiding principle of risk allocation should be that the different parties involved should seek a multi-beneficial distribution of risk. A dominant party that off-loads all project risks onto others is unlikely to enhance the chances for a successful outcome."

Olvera (1997) further points out that a successful risk allocation is based on having the basic concessions and project agreements right and understood by everyone;

---

25 Delays were identified as sources of disputes in construction by Hewit (1991), Conlin et al., (1996), and Heath et al., (1994). See Chapter 2, Table 1.
moreover, it is based on clearly defined DART system (i.e., DRL) from the start (Olvera, 1997).

By distributing the construction risks (i.e., project uncertainty) among the parties in a more balanced manner, owners, designers, and contractors can manage the uncertainties more efficiently. As more team members, with greater overall knowledge and experience, share project risks, contingency costs carried by each party to cover them can be lowered. A project where risks are distributed more justly, also sets the stage for greater communication and interaction among the parties, resulting in more honest and productive negotiations when unforeseen conditions become apparent. An example of the concept of Shared-Risks between the owner and the contractor in a construction contract is summarized in Table 7.

In this table, both parties share external events, which are usually the ones with the greatest uncertainty, as they are not predictable. Contractors share risks that were usually assigned to them exclusively, such as Adverse Weather conditions, but they now also share the risks associated with Acts of Gods, easing some the owner's burden. This type of distribution of risks meets Olvera’s (1997) requirement that uncertainty must be allocated seeking the benefit of all parties and not just an unfair allocation to limit individual liabilities.
Table 7 – Allocation of Project Risks under the Shared-Risk Approach (adopted from Findley, 1997)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RISKS</th>
<th>OWNER’S</th>
<th>CONTRACTOR’S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Risk</td>
<td>Reason</td>
<td>Risk</td>
</tr>
<tr>
<td>PREREQUISITE RISKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Adequacy of Project Financing</td>
<td>X</td>
<td>Owner’s project</td>
</tr>
<tr>
<td>2</td>
<td>Adequacy of Labor</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Permits and Licenses</td>
<td>X</td>
<td>Shared</td>
</tr>
<tr>
<td>4</td>
<td>Site access</td>
<td>X</td>
<td>Shared</td>
</tr>
</tbody>
</table>

| PERFORMANCE-RELATED RISKS | | | |
| 1    | Sufficiency of plans | X       | Bidding process |
| 2    | Underestimation of Costs |   | X       | Estimate part of contract |
| 3    | Owner furnished material | X       | Owner’s choice |
| 4    | Contractor Furnished material |   | X       | Ingredient in contract |
| 5    | Means and methods of construction |   | X       | Area of expertise |
| 6    | Delay in presenting problems | X       | Claiming party |
| 7    | Delay in addressing and solving problems | X       | Party receiving the claim |
| 8    | Subsurface conditions | X       | Owns site |
| 9    | Worker and Site Safety | X       | Controls execution |

| EXTERNAL EVENTS RISKS | | | |
| 1    | Governmental Acts | X       | Shared – not predictable |
| 2    | Adverse Weather | X       | Shared – not predictable |
| 3    | Acts of God | X       | Shared – not predictable |
| 4    | Cost escalation | X       | Shared – not predictable |

Considering the necessity to improve the distribution of risks in construction projects to mitigate conflict, the following three contract clauses and methodologies have been developed.
3.1.1 Economic Price Adjustment

A clause that allows for controlled price escalation during the life of the project, can help reduce the amount of ‘guesswork’ performed by the contractor when pricing the job. When contractors are forced in fixed cost contracts to assume 100% of the cost escalation risk, the owner can be setting the stage for future disputes (Zack a, 1997). In highly competitive markets, when contractors are pressed to offer savings to their clients, contingency amounts are usually the first ones to be taken out during contract negotiations. When price escalation begins to affect the contractors' bottom line, claims tend to follow.

Zack (a, 1997) suggests that on projects over 3 years long or located in countries with unstable economies, owners should provide in the contract methods to evaluate and determine price escalation. By doing so, owners reduce uncertainties and limit the contractor’s liabilities for price adjustment. The contract might set a limit to the price escalation to be carried by the contractor, leaving anything above that number to the owner. If significant increases in costs occur during the life of the project, the contract already has a formula and the conditions to compensate the contractor, eliminating the need for a claim. An agreement, prior to the existence of open conflict, on the level of risk each party will assume and the mechanisms to apply if an unexpected price escalation occurs, will significantly expedite the reviews and approvals, while reducing costs and time implications.

3.1.2 Geotechnical Baseline Report (GBR)

Although research has found (Chan et al., 1997) that unforeseen ground conditions are a primary source of delays in construction projects, most owners only address this issue by transferring this risk (i.e., uncertainty) to the contractor. The
Geotechnical report is provided to the bidders “for information only” with a disclaimer to the effect that contractors may use that information but are completely responsible for any interpretations of the data (Zack a, 1997). On the other hand, most contractors cannot afford to make their own soil borings, nor can they hire a Geotechnical consultant during bidding, so they end up relying solely on the information provided by the owner. When unforeseen soil conditions are found, disagreements and claims are common, as contractors will attempt to shift this risk back to the owner. Because this type of dispute tends to happen at the beginning of the job, they usually have a significant effect on the overall performance of the project, interfering with many future disagreements and negotiations on other matters.

Zack (a, 1997) points out that Geotechnical Baseline Reports (GBR) provide for a new way to present sub-surface soil conditions and to distribute the associated risk. This Geotechnical report has an additional section that includes not only an interpretation of the soil borings and test results but also an outline of the possible subsurface conditions the contractor should expect to find. This information is developed by the owner's consultants and paid by the owner. With this information, the owner can require the contractor to include provisions to deal with any of the possible conditions outlined in the GBR, effectively limiting his risks to anything beyond those provisions. On the other hand, the contractor's uncertainty concerning the sub-surface conditions has now been limited to a set of defined possibilities. The contractor is free to decide how to estimate and price the work more efficiently, confining the risks to decisions within his control.

By making this additional information available to the contractors, the owner improves his/her chances of getting a more competitive bid, and he/she establishes a baseline to evaluate and measure future claims on differing site conditions. By sharing the sub-surface risks with the contractor, the owner reduces the likelihood of disputes on this issue, while at the same time gives the contractor a tool to improve the assessment of the project costs, schedule, and uncertainties.
The following example confirms the advantages that a balanced allocation of risks had in a Canadian construction project, the construction of the Sheppard Subway twin tunnels in Toronto. Skelhorn (1998) reports that the owner, the Toronto Transit Commission (TTC), has been successful in the implementation of the following DART:

1. Risk sharing for cost reductions and schedule acceleration:

- The TTC bought and supplied the two Tunnel Boring Machines (TBM), removing the uncertainty about the type of equipment from the contractor’s proposal. However, the TTC assigned the maintenance responsibility and the operation of the machines to the contractor, and included in the agreement with the TBM supplier a regular service and supervision contract. In addition, the contractor was made responsible for supplying the head dressings for the TBMs. Through the first 3.3 km of tunnels, Skelhorn (1998) reports that “mechanical availability” of both machines has exceeded 90%.

- The tunnel precast concrete liners were bought and supplied by the TTC to the contractor for installation. Although no additional information on the reason for this purchase was provided, based on the type of project and the other DART implemented by the TTC, it can be inferred that this purchase limited the contractors risk as to this large purchase of material, and allowed the owner more direct control over the detailing and fabrication of the precast liners.

- An Geotechnical Baseline Report was supplied to all the parties performing design and/or work for the TTC, and so far the performance of the TBMs has been as expected, as well as the wear of the head dressings supplied by the contractor.

- The TTC assumed the responsibility for surface conditions monitoring, construction insurance, and quality control. However, the TTC made everyone a stakeholder and linked the sensors on the TBMs to the offices of the engineers, the contractor and the TBM supplier, forcing everyone to focus on these critical aspect of the tunneling operation. This real-time data is reported as being a great benefit to all parties, since it provides immediate access to information on the machines for “advisory and troubleshooting”
purposes and for trend and scheduling analysis. This data system has allowed timely responses by the engineer-contractor team to settlement conditions, reducing the effects of ground settlements beyond the set limits to only a few “isolated incidents.”

2. On-site partnering (see Chapter 4) with scheduled off-site retreats to promote communication and collaboration.

3. A Dispute Review Board (see Chapter 6, Section 6.3) to hear and resolve disagreements and conflicts during construction effectively and efficiently, and to assess and provide an opinion on potential areas of dispute.

As a result of the application of the risk sharing techniques, coupled with partnering and the Dispute Review Board, the project is reported on schedule for completion on December, 1999 (Skelhorn, 1998), and the new subway line is scheduled to begin operations in 2002. The Dispute Review Board visits the site every quarter to receive an update on progress and advise on any potential disputes (similar to what happened in Hong Kong – Section 2.3.4). So far, the Board is yet to be asked formally to decide on any disputes. According to Skelhorn (1998), disagreements are being addressed and resolved promptly by the site personnel through partnering, with some level of informal participation by the Dispute Review Board.

3.1.3 Third Party Beneficiary Clause

Almost every construction project involves more than one contractor, and owners tend to become the only responsible party to a number of contracts with different entities. When delays are caused by one contractor, the owner usually becomes the defendant in more than one claim as other contractors, affected by the performance of this one party, move against the owner for relief. Single prime contracts can limit this situation from occurring, but as jobs have become more complex, it is impossible to award the total project to only one party.
In order to reduce this effect, Zack (a, 1997) recommends the use of a Third-Party Beneficiary Clause in construction contracts. With this clause, owners are able to share among all contractors and sub-contractors the risks of delays, by making each company the “intended third-party beneficiary” of all other contracts. Through this clause, owners can avoid claims that are not caused by them, as contractors can seek relief for delays caused by other parties directly. Another benefit of this arrangement is that relationships are less strained, as contractors are not fighting the owner over matters beyond the his/her control, and they can still search for compensation from the third party at fault.

3.2 Escrow Bid Documents

In this form of preventive DART, the project team (owner/contractor) submits to a third party neutral a full set of the documents used by the contractor to prepare the bid, including information regarding pricing, production rates, equipment selection, and any other aspect considered in finalizing the proposal (Zack b, 1997). Confidential information such as mark-ups and fees is not included. The project team reviews the documents before placing them in custody, and agrees on both the procedures to access the information and how the costs of safekeeping the documents will be shared. These documents remain confidential under the escrow agreement, and parties can only access the information to resolve issues in dispute. Changes to the contract can be added to the escrow documents once they are negotiated and signed by the parties, as well as any supplementary conditions that are agreed to after the award.

Zack (b, 1997) explains that by “freezing” the original bid documents, the project team creates a valuable source of information to be accessed only when disagreements arise in issues like productivity, design details, and equipment selection. The advantages of putting the bid documents in escrow are two-fold. First, it provides the basis for the review of any claim regarding how an item was bid, how a detail was interpreted, or what
productivity factors were used. For example, if a change order requires additional excavation and disposal of excess soil, parties can access the escrow documents and review equipment productivity rates, and base costs for equipment rental and for disposal of excess material. Also, parties can review the original quantity take-off performed by the contractor to determine whether that specific excavation was considered or not in the original bid. Once this information is determined and agreed by the parties, the respective mark-ups and fees can be negotiated.

Second, the existence of this 'as-bid' database should deter any unfounded claims from the contractor, since the original documents will not support them. In conclusion, this mechanism can help prevent disputes and provide information to analyze disagreements faster, in accordance with a set of variables that can be reviewed by both parties.

3.3 Project Award and Delivery Mechanism

Four forms of innovative project awards and delivery mechanisms are presented below, which recognize the possibility of disagreements in construction projects, and provide specific tools to manage and deal with some of them more efficiently.

3.3.1 Negotiated Compressed Process

In an effort to reduce the number of interpretations given to contract documents, which is a mayor source of disputes, a new bidding method has been developed for Earthwork and Tunneling jobs (Civil Engineering, 1995). Known as the Negotiated Compress Process, this bidding-selection system divides the contract award in three steps. First, the owner qualifies the contractors based on the type of work to be executed and their experiences. Second, the selected contractors meet with the owner and designers
to decide jointly on the best type of equipment—a key variable in pricing earthwork and tunneling jobs—, and any other issue which might be considered critical to the execution of the project. Finally, each contractor presents its bid, based on the agreed items, and the contract is awarded to the lowest bidder (Zack a, 1997).

According to Zack (a, 1997), this three-step bidding system provides for a more balanced distribution of project risks since some of the uncertainty is reduced (i.e., the selection of the equipment). In addition, the fact that this is a joint decision allows for significant savings, during submittals and start-up, for all parties. Furthermore, it limits problems associated with equipment, productivity, and schedule sequence during construction. The costs associated with the pre-bid meetings are borne by the owner, who should benefit from time/cost savings resulting from this early elimination of certain project uncertainties.

3.3.2 A+B Bidding

Another new approach towards contract award is based on the notion that in general, owners want to finish their projects at the earliest possible date. Some public owners in the United States are including in the bid package a line item referred to as “cost per day.” Contractors are asked to provide, together with the pricing of all line items, the schedule duration in days for the project (also known as time of performance). Then, to obtain the total project cost of each contractor, the owner adds the construction costs (A-term) and the number resulting from multiplying the “cost per day” of the owner by the duration submitted by each contractor (B-term). The award is based on the lowest total project cost (Zack a, 1997).

This award mechanism provides two incentives for contractors that reduce the chances of problems and disputes during construction. First, contractors are forced to review the construction sequence in detail and present the shortest feasible construction
schedule, with the aim of keeping the B-term as low as possible. Second, contractors are encouraged to finish within the time limit in order to realize the full amount of the bonus (B-term); therefore, they should work with the owner and the design professionals to resolve potential problems before they become disputes and delay the job (Zack a, 1997).

According to Zack (a, 1997), more than 100 projects have been bid and built in the US using this system, and all of them have been completed on schedule.

3.3.3 PEpC Delivery System

This innovative delivery system was developed, based on the Engineering-Procurement-Construction model, by the Construction Industry Institute (CII 130-1, 1998). It was designed as a response to the increasing role major suppliers of equipment and material are playing in the construction process. The CII defined this delivery system as:

"PEpC (Procurement, Engineering, procurement, and Construction) is an innovative project delivery system which makes it possible to utilize key supplier expertise in all phases of the project life cycle by developing an advance procurement strategy and by actually reaching a full commercial and contractual agreement with suppliers of strategic procurement item and/or systems prior to the principal engineering activities" (CII 130-1, 1998)

In other words, critical pieces of equipment and materials are negotiated and procured before the actual engineering takes place, based on basic conceptual designs and detailed performance requirements. With the suppliers on-board, the engineering process incorporates their input, special requirements, and experience into the design. Among the benefits this system brings to the construction process, the CII (130-1, 1998) highlights the following:

✓ Improved quality of the detail design.
✓ Improved system and facility performance.
More equitable allocation of risk.
Improved utilization of supplier core competencies.
Reduction or elimination of redundant work.
Reduced need for owners and contractors to maintain non-core competencies that are more effectively maintained and delivered by suppliers.

As reviewed in Chapter 2, these benefits address areas that have been found by researchers to be sources of conflicts in the construction process (i.e., design quality, owner objectives, risk allocation, and cost efficiency). Therefore, by improving these areas, the PEPc delivery method can help prevent disputes from developing during the construction process, or at least it can reduce the levels of uncertainty and risk in projects with highly specialized equipment, systems, and/or technology.

3.3.4 “Bridging” the Design-Build Gap

The use of Design-Build as a delivery system in the construction industry has grown significantly as an owner-favored method, both in private and public sector projects. This system provides the owner with a single-source of project responsibility and a single-point of communication, so as to avoid the “finger-pointing” and “risk shifting” that often takes place in other construction approaches (i.e., Design-Bid-Build). Design-Build projects are generally completed faster, with less administration costs for the owner (Appelbaum, 1998).

However, Design-Build is not a cure for all project delivery difficulties. Appelbaum (1998) has identified the following problems with it:

- Loss of control over design by the owner, as he/she forfeits direct communication with the designer.
- Selection of the design firm based on price rather than on qualifications.
- Less competition in the selection and award phases, as the owner is required to compare “...apples to oranges, to bananas in order to
choose a contractor” (Appelbaum, 1998), since each of the proposals might be different as they represent an interpretation of what is sometimes very basic design and/or performance parameters.

- The final product is a mixture of owner-contractor objectives and interpretations, but might fail to meet the original project criteria.

In other words, by transferring the design to the contractor, the owner generates a “gap” between his/her objectives and the design process, which is responsible for the translation of those objectives into plans and specifications. The owner is often left to choose from three or more completely different proposals, none of which is one hundred percent satisfactory (Appelbaum, 1998). To correct these problems in the Design-Build delivery system, Kluenker (1996) and Appelbaum (1998) propose the concept of “Bridging” to close the gap between the owner and the design process, without loosing the many advantages of the Design-Build system.

Bridging divides the Design-Build process into three phases (Kluenker, 1996). In the first phase, the owner retains a design consultant who is responsible for developing a conceptual design that satisfies the owner’s basic project needs. During this critical stage, the owner has control over how his needs and objectives are translated into a very basic design. Then, competing contractors prepare a proposals based on this conceptual design developed by the owner, complying with the specific requirements set forth in these documents. The problem of having to compare apples to oranges is reduced, and the selection can take into account, in addition to the price, the technical solutions proposed to meet the criteria. Since the information contained in the conceptual design is limited, the overall design responsibility remains with the design-builder.

In stage two, the design-builder completes the design and the drawings of the project, while the design consultant acts as the owner’s representative, serving in a “pure agent capacity” (Appelbaum, 1998). The consultant reviews working drawings to confirm compliance with design requirements. There is no design responsibility overlap. In the
third stage, the contractor builds the project and the bridging consultant inspects work-in-progress as the owner’s construction representative.

This system should overcome the disadvantages of the Design-Build delivery system outlined above as follows:

- **Owner’s loss of control over design**: With the “bridging” consultant owners have control of the portion of design that should be more important to them (i.e., schematic and conceptual design).
- **Owner’s loss of communication with the design professional**: Through the design professional owners maintain direct communication with the design process.
- **Designer selection based on price**: The “bridging” consultant can be selected taking into account his/her qualifications. The conceptual design will benefit from this, as the goals and objectives of the owner will be properly translated.
- **Limitation of bidding and price competition**: The existence of a conceptual design will foster proposals from contractors, which are easier to compare and select taking into account price as well as design, materials, and technical solutions.

In terms of cost, Appelbaum (1998) predicts that the introduction of the “bridging” consultant in the Design-Build equation should be close to zero. First, the cost of design development should be offset by a lower design cost in the Design-Build proposal, as contractors will lower the design fee, now that they have a conceptual design to work from. Second, the cost of the on-site representation should be covered by less change orders and disagreements between the original design conditions developed, by the owner, and design and details of the contractor.

Bridging helps ensure that owners using the Design-Build method receive a project that meets their needs. This reduces the chances of job upsets, rework, and claims. Furthermore, Bridging should also expedite the submittal and design approval, as the design-builder will have to perform less guess-work to interpret the project requirements.
3.4 Incentive Programs

According to Findley (1997), "Performance awards [incentive programs] strengthen the project team members' commitment to speed the project along." In addition, Howard et al. (1997) concluded that incentive programs can facilitate the process of aligning the contractors' motivation and performance with the owner's objectives. As identified in Section 2.1, failure to achieve some degree of objective alignment among the parties is one of the sources of conflict and dispute in the construction process; therefore, incentive programs that promote the development of common objectives for all the team members should help prevent and mitigate disputes in projects.

Incentive programs can "...improve contractor performance by focusing efforts on areas important to the owner" (Howard et al., 1997). Nevertheless, in order to benefit from this greater alignment of objectives, the owner has to define attainable yet challenging goals for the construction team (Vorster, 1993). More importantly, the owner must continually evaluate the performance of the contractor against the set goals, with the purpose of determining, first, if the contractor has earned the incentive, and second, if the goals will be achieved based on the progress made up to that point.

Three incentive approaches that encourage the alignment of the objectives of the different parties and promote collaboration and cooperation during the execution of the project are presented below. The first two incentive programs were identified by the Construction Industry Institute (CII 114-1. 1998) during a recent study conducted by the organization, and reported by Howard et al. (1997). The third program comes from an article by Zack (a, 1997).
3.4.1 Cost/Schedule Incentive Matrix

In order to align owner and contractor objectives to improve timely completion of the project within the stipulated budget allocation, owners can develop an incentive program that rewards contractors when they meet cost and/or schedule goals. By addressing the problems of cost overruns and schedule slippage’s through the incentive program the owner increases his/her control over two important sources of disputes in construction, and promotes a collaborative approach among the construction team. The owner profits from meeting his/her planned schedule/cost projections, while the contractor shares part the benefits. The following example shows a successful application of this type of incentive program.

Howard et al. (1997) reports that for a project worth over $100 Million to replace a wastewater drainage system, the owner proposed the contractor a 15% share in the benefits to be obtained from an improvement in the contractor’s performance. The owner developed a value matrix for: “...cost underrun versus budget, dollar value for completion before schedule date, and reduced owner overhead relative to the original plan” (Howard et al., 1997).

As shown on Table 8, the contractor’s objectives can be aligned with those of the owner in the categories defining the incentive, for they represent for the contractor the only way to additional income from the execution of this project.

<table>
<thead>
<tr>
<th>Owner Objectives (Categories)</th>
<th>Contractor Objectives before Incentive Program</th>
<th>Contractor Objective after Incentive Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete the budget under budget (COST)</td>
<td>Meet cost estimate, cash-flow requirements and projected fee.</td>
<td>Meet cash-flow, fee and maximize cost savings.</td>
</tr>
<tr>
<td>Complete the project ahead of schedule (SCHEDULE)</td>
<td>Meet schedule datelines without additional costs.</td>
<td>Complete project ahead of schedule, even if it represents some additional costs, which would be offset by the bonus.</td>
</tr>
<tr>
<td>Reduce the owner overhead costs (OVERHEAD)</td>
<td>Not concerned as long as owner is able to respond technically and administratively to its demands.</td>
<td>Collaborate with owner in solving technical and administrative problems to reduce overhead.</td>
</tr>
</tbody>
</table>
According to Howard et al. (1997), the construction team was able to surpass the owner’s cost and schedule goals, and the contractor earned an additional $3.5 Million as an incentive (3.5% of original contract amount).

### 3.4.2 Subjective Determination of Fee

In this example of an incentive program, the owner and the contractor agreed to have part of the fee contingent on periodic engineering and/or construction performance evaluations, executed by the owner. In a cost-plus-fee project reported by Howard et al. (1997), the contractor’s fee was divided as follows: 15% of the fee was a fixed amount, 15% was based on actual man-hours in engineering activities, 35% was tied to performance in engineering, and the other 35% to performance in the construction phase. Then, in order to process the request for payments for 70% of the fee, the owner completed quarterly subjective evaluations of the contractor’s performance. A minimum score was set as a payment requirement, and the contractor was able to recuperate any loss income from previous months by exceeding a specified score with superior performance in the following periods. According to Howard et al. (1997), the project was completed ahead of time and under budget.

This incentive program provided benefits to both the owner and the contractor. The owner realized the project within the specified time and budget, while the contractor was paid the full amount of its fee; it was able to adjust and correct any problems during the execution thanks to the quarterly evaluations; it developed and maintained a good relationship with the client during and after the project; and it spent less resources (i.e., field and office overhead staff and equipment rental) by finishing ahead of schedule. Moreover, the owner and the contractor resolved all project disagreements at the site level, without the need for the intervention of any third party.
According to study by the CII (114-1, 1998), subjective evaluations of project performance give the owner the ability to address areas that are not normally covered by the contracts. For example, the CII suggests that the owner can include "customer satisfaction feedback as part of the incentive" package for the contractor. However, the CII warns in the conclusions of this 1998 study, that teams need "specific targets and milestones to aim at throughout the total duration of the project, and an incentive totally dependent on a subjective determination, will most likely result in failures" (CII 114-1, 1998).

3.4.3 Superior Time-Management Allowance

In an attempt to reduce the duration of projects or at least increase the chances of finishing on-time, some public owners in the US have introduced in their construction contracts what is known as a Superior Time-Management Allowance incentive (Zack a, 1997). Under this system, contractors are offered a fixed bonus based on finishing the project before the scheduled completion date, say 30 days ahead of schedule. This amount is added to the contract price.

As the project proceeds, contractors can submit schedule changes and delay claims, but the bonus remains tied to the original early completion date. In other words, if the contractor submits a delay claim for a 30-day extension, the contractor would in effect give up on collecting the bonus allowance. The same thing will happen if the job is finished on or after the original completion date, regardless of any outstanding claims, or any final arbitration awards.

The advantage of this system is that it discourages contractors from submitting time extension claims. Contractors should be more willing to collaborate with the owner in the resolution of problems, without turning them into additional time requests, to
achieve the full bonus amount. This approach works in two ways, first, it is an incentive to finish on time, and second, it is a disincentive to submit delay claims.

### 3.5 Competent Engineering and Documentation

Poor contract documents, changes, and deficient design, are among the most common sources of disputes in the construction industry (i.e., project uncertainty and process problems). In fact, five out the seven papers presented in Section 2.1 (Table 1) found these characteristics to be sources of disagreements and disputes in the industry. Therefore, to reduce this type of uncertainty, owners should improve the documentation by setting higher standards for their engineers and design professionals (Vorster, 1993). The project should benefit in the long run as fewer claims and erroneous interpretations will develop.

#### 3.5.1 Constructability Analysis

One way to reduce disagreements and disputes based on contract ambiguities, is to carry out constructability analysis. This analysis, performed during the planning, design, and procurement phases, can mitigate problems and claims during construction (Vorster, 1993). Moreover, it can identify errors, omissions, and impractical details, which would have been uncovered by the contractor or supplier, resulting in additional costs and delays for the project. In Section 4.4 the application of the concept of constructability analysis is provided when the example of Lean Construction is presented. In this case, the contractor assigns structural engineers to work with the design team in order to improve the construction details of the facility and help expedite getting the structure off the ground.
3.6 Cost and Schedule Control

"On time and within budget" has to be one of the most common clichés in the construction industry. Owners, designers, consultants and contractors commonly see these two variables as the ultimate goals of the project. However, to control the costs and the schedule of a project remains one of the most difficult activities to accomplish in any construction project.

A dispute management technique used by the Public Sector in Italy, illustrates the notion of cost and schedule control in the European continent. This technique is based on the requirement on contractors to report with monthly invoices any claims regarding the performance of the works during that period (Figure 11). Every month, before payment is made by the agency, a report based on the works performed during that month is completed by the on-site representative. This report becomes the monthly progress certificate (SAL), and it is given to the contractor for review and approval (Fenn et al., 1998). If the contractor does not report a claim that has become apparent in that period, the contractor loses its rights to further compensation. In every report, the contractor must report any new claims, as well as any outstanding ones from previous months.

This requirement forces the parties to acknowledge the existence of an outstanding issue every pay-period, and forces them to address the matter. It also encourages an evaluation by the parties as to whether the outstanding claim is affecting any additional parts of the project since it has not been settled.

To further track the development and control the resolution of disputes in Public Works in Italy, Fenn et al. (1998) report that if a claim in the SAL report exceeds 10% of the contract value, the Italian law requires immediate action by the head public official responsible for the project. Within 90 days, the officer must review it with the contractor and submit a proposal for 'amicable settlement'; then the parties have 60 days to
negotiate a solution. If they fail to resolve the matter after the 60 days, either party may proceed with arbitration after final completion.

![Figure 11 - Dispute Management Technique in Italian Public Sector Contracts](image)

With these requirements, the Italian Public Sector has established a procedure and specific time periods for the negotiation of large claims. These claims will go through a process of Structured Negotiations (Section 5.1), before arbitration can be utilized to settle them. Moreover, by requiring that all claims be acknowledged and reported every pay-period, this owner is promoting that the on-site representative and the contractor meet and attempt to settle the claims to eliminate them from every SAL report (this type of incentive to negotiate disputes during construction is reviewed in Section 5.2 under Step Negotiations).
By assuming a pro-active approach like the Italian Public Sector, in the identification, management and negotiation of disputes (i.e., costs and schedule changes), owners have found ways to reduce litigation (Zack a, 1997), encouraging the building team to attain the objectives outlined in the famous cliché. Projects that fall out of schedule and/or miss budget allocations are prone to disputes and confrontation. The following example provides a concrete and successful application of the concept of owner intervention as a strategy for dispute prevention in the Canadian construction industry.

During the construction of the $265-million Air Canada Center, $50 million worth of design and construction changes were introduced after the facility was 45% complete. These changes, however, did not disrupt the original construction schedule, and ENR (2/1999) reports that the facility was to open as planned. A change in ownership of the arena triggered the modifications in the project, and according to the construction manager, "the changes were very, very difficult to implement because they were integrated throughout the entire building and affected the whole fabric." (ENR, 2/15/1999). How come an increase of almost 20% in the amount of work did not affect the schedule? What was done to mitigate potential disputes and delays as the changes were implemented?

The key in the success of the implementation of these changes appears to be the new owner, who took an active role in the process. The goal was to make the changes without modifying the original completion date or "going overboard on cost" (ENR, 2/15/1999). Both the contractor and the designer participated with the owner in the definition of the changes and the procedure to implement them. The changes were not imposed on any team member (ENR, 2/15/1999). So, when the change orders were issued, there was already an agreement as to what and how they were going to be performed. Once the changes were approved, the contractor introduced a separate night-
crew for three months to do the work, minimizing the impact on the rest of the construction (ENR, 2/15/1999).

By involving the complete project team in the decisions regarding the changes, the owner was able to introduced significant changes in a controlled matter. The costs were high, but the facility met the schedule deadline without any disputes as a result of the new work. According to one project manager, "A big help was that once the owner charted a new course, it stood by its decision" (ENR, 2/15/1999), encouraging every member to assume the new responsibilities and negotiating the changes as they were defined, not waiting until completion for a lengthy and troubled review. Although this was not a formally partnered project (Chapter 4), key aspects of this system were introduced through the involvement of the owner (i.e., team building, pro-active problem solving, effective resolution of technical, and financial issues).

The following sections (3.6.1 through 3.6.8) present techniques that can help owners and contractors assume a pro-active approach as described in the Italian and Canadian examples above with regards to cost, schedule and claims control. These techniques highlight the advantage of establishing from the beginning project information and guidelines to analyze and assign real costs to changes and, once again, the importance of owner participation in the management and control of the project's costs and schedule.

3.6.1 Cost Statement Submittal

According to Zack (a, 1997), owners have included as part of the contract a requirement that the contractor submits a certified statement of all costs incurred in the project, before the certificate of final completion is issued. With this information, the owner can evaluate any “after-completion” claims the contractor might submit after receiving the certificate and the retention moneys. More importantly, this requirement
deters unfounded claims by the contractor once he/she is clear from delivering the project.

These after-completion claims can become very complicated as data is scarce and job-site people are no longer involved. Therefore, a certified cost report can provide important information for a more accurate review and faster negotiation of any final settlements.

3.6.2 Certified Payroll Submittal

Owners can use certified payroll submittals by their contractors for two very important aspects of the project. First, by keeping a record of actual labor expenses, owners will be better prepared to analyze and negotiate any claims where labor costs are an issue. Second, by tracking actual labor expenditures against a resource-loaded schedule, owners have an additional tool to assess progress and identify delays. With this information the owner can anticipate delays and approach the contractor with data he/she generated to negotiate a remedial action plan (Zack a, 1997).

3.6.3 Negotiated Equipment and Labor Pricing

Another way to gather information for faster dispute analysis and approval, is for the owners to negotiate with the contractors unit prices for equipment and labor before the contract is awarded. With this information, Zack (a, 1997) suggests that owners can issue change orders and request additional work while knowing the approximate cost implications of their decisions. Moreover, contractors should provide more “honestly priced” change requests, since the information has to be based on this schedule of values (Zack a, 1997).
In addition to equipment and labor prices, owners and contractors can agree on specific unit prices for work items that will be typical for the type of project. For example, in a renovation of an existing facility, both parties can agree on unit prices for items, such as demolition, paint, clean up, and disposal of construction debris. These prices can then be used as the project develops and unforeseen conditions require additional work.

Even though there are many nationally recognized equipment, labor, and work-item rate schedules for costing, each job can vary significantly from the assumed conditions of these sources of pricing information (Hoctor, 1989). Therefore, the parties should agree to this information before hand and include it as part of the contract.

In conclusion, with the rates for equipment, labor, materials, and work items agreed upon before-hand, parties can then concentrate on analyzing, for example, whether the crew-type or equipment used were the most appropriate, whether the time used to complete the work was not affected by other conditions, and whether the production rates used were reasonable. Hence, the surprise factor (i.e., uncertainty) associated with change orders that are priced after being executed can be eliminated.

3.6.4 Joint Project Scheduling

Zack (a, 1997) suggests that "...success is more likely if people become stakeholders." This is especially true for the project schedule, and "...one way to see that all members of the project team become stakeholders in the schedule is to provide for joint project scheduling" (Zack a, 1997).

Instead of having the contractor prepare and submit for approval the schedule, the owner, the contractor, the major subcontractors, and the suppliers participate jointly in the development of the baseline program for the project. This joint development
eliminates any schedule games (i.e., hidden float, change of sequence, front-loading) and forces parties into communication and collaboration during the planning stages (Zack a, 1997).

Once everyone agrees on the joint timetable, and the job begins, updates are prepared by all parties and will represent the consensus of everyone involved in the project. Delays can be identified and negotiated as parties complete the schedule updates jointly, since now they all have a ‘stake’ in what is presented to senior management. Schedule reviews and change order impacts are also performed together, thus reducing the chances of future delay claims and disruption disputes by one of the parties (Zack a, 1997). The following example clarifies the application of this technique and some of the benefits it can generate.

For the construction of an industrial plant in Cagua, Venezuela, the owner Nestle Chocolates, Switzerland, and the contractor retained a scheduling consultant to develop, update and control the schedule for the project. With the help and input of the consultant, the parties generated a Master schedule that took into account both the critical dates of the owner and the resources allocated by the contractor for the construction. As the project began, each parties assigned one engineer to follow the schedule, perform the biweekly updates with the consultant, and present the results in the project meetings. After two months into the job, a weekly joint scheduling meeting was organized to review those areas which were behind schedule and to jointly resolve the problems causing the delays. After each meeting, the consultant issued a report that presented the apparent reasons for the delays and identified the responsible party. Since the schedule had become a joint effort, these reports became a working tool for the team and helped solve a number of problems without any discussions about claims.

26 The author of this thesis was the Project Manager for the contractor in this project.
Although the project had significant problems with regards to costs escalation and design changes required by the home office of Nestle, the joint scheduling effort provided an efficient tool to mitigate some of the effects of these changes. Both parties worked together in analyzing each change and with the scheduling consultant determined the real effects they had on the overall Master schedule. The project was completed one year behind the original completion date, but no delay claims were filed at the end, since each change was evaluated jointly and incorporated into the schedule as it occur. The consultant provided the necessary technical expertise, and gave the owner's team a sense of trust that allowed them to assume with the contractor the responsibility for the schedule. The costs of developing the Master schedule and running the biweekly updates were shared by both parties, even though in the tender documents, the contractor was responsible for this activity.

3.6.5 Schedule Audits

Monthly schedule updates are a common requirement in construction contracts. The contractor presents, usually with the request for payment, a schedule update showing progress made on the project. Two problems, however, can result from this approach. First, schedule updates are reviewed by the owner only once a month, so delays might be identified as much as a month after they had become apparent. Second, the schedule may become just another hurdle towards achieving payment, so it is assigned a secondary role in the management of the project.27

To avoid this, owners should first separate payment request, which can include an updated schedule, from the ‘real’ schedule updates and reviews. Then, Zack (a, 1997)

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27 In a recent project, the author of this thesis found a significant difference between the monthly schedule updates submitted to the owner and the actual as-built schedule kept by the contractor. When questioned, the contractor explained that the submittal was a payment requirement, and that he could not afford to have payments delayed because of a disagreement on the sequence of construction or because it showed delays
recommends that owners request weekly or biweekly schedule updates. Since most contractors generate not only weekly lists of the activities that should be accomplished the following week but also a list of the unfinished activities from the previous week (Zack a, 1997), the requirement can be as simple as to demand a copy of this information, in order to avoid generating additional scheduling expenses for the contractor.

3.6.6 As-Built Schedule Submittal

Following the same logic as the Cost Statement Submittal (Section 3.6.1), owners can request an as-built schedule from the contractor before issuing the certificate of final completion and releasing the retention. As with the certified cost report, the as-built schedule becomes the basis for review of any after-completion claims (Zack a, 1997). By submitting a schedule that reflects the actual construction sequence and total duration, the contractors will be discouraged to submit, at a later date, delay claims that were not previously shown. If the contractor has plans to present any delay claims at the end of the project, he/she will have to address them in the as-built schedule, and he/she will be required to arrive at a settlement prior to receiving the final completion certificate (Zack a, 1997).

3.6.7 Forward-Price Change Orders

Impact or indirect costs like home office overhead, field staffing, or overtime work, that can be associated to change order work beyond hard costs (i.e., labor, equipment, and materials), have been identified by Zack (a, 1997) as an additional source of disagreements in change order pricing. To improve negotiations and reduce the amount of disagreements, owners and contractors can agree beforehand on the guidelines due to design changes. According to the contractor, those problems were going to be addressed at a later date.
and methods to determine and limit these impact costs. Zack (a, 1997) suggests that a set of impact factors can be developed for issues like “timing of changes, number of trades involved, effect on the schedule, effect on office and field staffing, and the cumulative nature of the disruption.”

When change orders are priced and negotiated, owners and contractors will be able to incorporate in the total amount, both hard costs and impact costs, and they will be able to settle on a final adjustment to the contract value. Consequently, no further discussions or claims will be required after these negotiations because the changes will include everything (ENR, 9/1995).

3.6.8 Right of Refusal on Change-Order Cost Quotations

When contractors price change orders, which in most cases is a contract obligation, they usually include “reservation-of-right” language to allow themselves future requests for additional time or money to complete the job (Zack a, 1997). In other words, contractors include a disclaimer such as “…further review is necessary in order to assess the impact this change will have on the schedule’s sequence of activities and the overall project duration”28, with the intention of leaving the door open for future review. In fact, most contractors feel the need to include such provisions in their change order cost proposals, for they have not really completed a total assessment of the time and cost implications of the change requested by the owner.

To overcome this situation, Zack (a, 1997) suggests that owners should allow contractors to refuse to quote the change order if they can not guarantee zero-impact to the project duration. If the contractor sees a possible delay arising from this change order, such delay will have to be identified and negotiated before having the order executed.
This technique has the added benefit of forcing the on-site owner’s representative to deal with delay issues caused by the owner, as they are identified, and change orders are issued for pricing and negotiation.

3.6.9 Sub-Contractor Payment Requirements

In order to guarantee that project funds reach subcontractors performing work for the prime contractor, Zack (a, 1997) has reviewed projects in which the owner includes in the contract special clauses to that effect. Under these clauses, the owner establishes payment provisions for the prime contractor, which require certification that the subcontractors are being paid for the work being invoiced. In addition, if the prime contractor fails to pay the sub’s in a timely and proper manner, owners retain the right to make direct payments to subcontractors and deduct those sums from future disbursements to the prime contractor. Therefore, owners can assess the risk of disruption due to lack of payment to the subcontractors and act to lessen the chances of delays without having any direct contractual relationship with the sub-contractors.

3.7 Dispute Resolution Clauses

As documented throughout Chapter 2, disagreements are a common trait of construction projects, and they can lead to disputes and claims if not handled appropriately. Hence, owners can go a long way towards mitigating their effects, by including specific clauses in the contract documents that identify and describe the way those disagreements will be resolved. Owners have to address this issue of disputes and be prepared to manage them in the most cost-effective way possible. According to Vorster (1993), contracts that leave the dispute resolution process undefined, fail to

28 Taken from a change order letter of a contractor to an owner in a project where the author of this thesis
provide alternatives to litigation. Moreover, they may foster a faster evolution of simple job-site disagreements into complicated disputes. The partnering approach to construction projects, reviewed in Chapter 4, considers as one of its Key Components (Section 4.3) the early definition of a dispute resolution system for these same reasons.

As part of this definition of a project specific DRL, parties should also proceed to select by mutual agreement any third party neutral (i.e., facilitator, mediator, conciliator, advisor, and dispute review board members) to avoid having disagreements affect their ability to choose the best candidate to help them resolve disputes.

In conclusion, by agreeing on the mechanism to resolve their disputes before they arise, parties, first are providing the tools to the construction team to address and resolve disagreements before they develop into disputes, and second, they are setting the stage for a more flexible process, with greater trust, and fewer uncertainties, resulting in better overall job performance (Vorster, 1993).

3.8 Training and Development

Traditionally it was assumed that negotiation skills were “bred in the bone” and that they could not be trained (Boskey, 1993). However, in recent years universities and professionals have begun to examine the negotiation process in detail as described in the introduction of this chapter, developing programs to improve the negotiation skills of individuals in both professional and non-professional contexts.

“People problems” have been already identified as a source of disputes in construction (see Chapter 2). Moreover, Miles (1996) states that although the lower steps in the corporate ladder “…are the best able to make timely, informed decisions, they are
generally not as skilled in interpersonal relationships, negotiation, and dispute resolution.” Thus, it follows that the development of personal skills through formal training in dispute prevention and resolution, communication, and negotiation becomes a key ingredient of any successful ADR program. As this knowledge moves down to the parties responsible of conducting actual negotiations, the overall process will speed up and adversarial and adjudicative approaches will less likely play a part in the resolution of problems.

In addition, new delivery systems like PEPc (Section 3.3.3), and innovative operating philosophies like Partnering (Chapter 4) represent important changes in the mind-set of the people in charge, so they require training (Edelman, 1990, cited by Vorster, 1993). For example under a PEPc contract, important purchases will be based on performance requirements rather than detailed design information, completely changing the standard procurement procedure. With regards to partnering, Larson et al. (1997), identified the lack of understanding of the partnered system as one of the main barriers for its successful implementation. All these new systems and tools must be taught at all levels and understood by key players in order to maximize their benefits. Some of them will even require special, dedicated training (Groton, 1997), before they can be effectively incorporated into the project.

3.9 Summary

Early identification of possible areas of conflict for a specific project is the basic premise of this first stage in the DRL. Prevention is based on the assumption that it is more effective, less expensive, and less time consuming, to prevent conflicts from arising than to solve them once they have progressed and escalated. The prevention stage allows the owner to tailor a Dispute Avoidance and Resolution system, which recognizes the possible sources of disputes of the project and provides procedures to resolve them;
reducing the chances of having disputes escalate to legal battles. Prevention enhances interconnection between team members and increases collaboration throughout the executive phase.

The vast array of dispute prevention mechanisms presented in this chapter confirms the fact that this stage of the Dispute Resolution Ladder provides the greatest flexibility of action to the parties, while in the long run reduces the cost and time required for conflict resolution. This flexibility allows parties to choose among multiple DART, those that best fit the needs and resources of a particular endeavor. Each group of prevention techniques addresses differently many of the sources of conflict in the construction industry, previously defined in Chapter 2.

The importance of appropriately evaluating bids and creating good designs, the benefits of adequate risk and uncertainty sharing, the role of the owner in reducing conflict among parties, the relevance of incorporating mechanisms in the contract to help address areas of possible conflict, and the positive valence of incorporating incentive programs to achieve objective alignment and team building are among the most salient areas addressed by these techniques. Clear and adequate communication among the parties, owner involvement, and alignment of objectives are three crucial variables found to be common denominators of the different prevention techniques.

Still, despite the multiple advantages of the prevention stage, investment on prevention is not always an easy task. Prevention requires the recognition of a potential threat and a commitment to avoid it, even if the negative consequences of the dispute have not yet developed. The fantasy and “naïveté” of the parties involved, combined with inadequate knowledge of the advantages of many prevention techniques, might drive owners and constructors to believe “that the worse will never happen” (i.e., open conflict) to them, thus choosing not to invest resources in this stage and planting the seed for future problems.
Between Prevention and the next stage of the DRL, Negotiation, Chapter 4 reviews the concept of Partnering in construction projects. This system recognizes conflict as an intrinsic aspect of this industry and establishes an approach to prevent it, and to solve those disputes that do occur, strengthening lines of communication and collaboration which foster win/win negotiations. Although Partnering is not a stage in the DRL, its basic premises can be successfully applied to enhance the benefits of many dispute avoidance and resolution techniques along then ladder.
CHAPTER 4

PARTNERING

This chapter provides a review of the concept of Partnering, which developed within the construction industry\textsuperscript{29} as a response to the problems associated with the traditional adversarial approach assumed by most parties in projects (Harpoth, 1999). This adversarial approach results in poor communication and cooperation that leads to cost and schedule problems and possibly arbitration or litigation (Wilson \textit{et al.}, 1995).

Partnering is a complete system of operation in the construction environment (Larson, \textit{et al.}, 1997; Cowan \textit{et al.}, 1992); hence, it is not considered a Stage of the Dispute Resolution Ladder (DRL). However, the introduction of the concept of partnering in this thesis is based on the consideration that many of the key principles of this system of operation are congruent and similar to those principles that support the prevention and negotiation stages\textsuperscript{30}. Partnering promotes open communications and exchanges of information, encourages collaboration, helps develop trust among the parties, forms and supports the project team, aligns the objectives of team members, and

\textsuperscript{29} The first use of partnering dates from the mid-1980's between a large chemical manufacturer and a contractor. The first government agency to adopt partnering was the Army Corps of Engineers in 1988 (Harpoth, 1999).

\textsuperscript{30} To this effect, Groton (1997) concluded that "Partnering is both the overall philosophy for dispute management and one of the tools for avoiding disputes." In this thesis, partnering is being considered as a philosophy.
in general, improves the entire construction process by proposing a new way in which team members interact and communicate at every level of the project relationship. Partnering fractures the common adversarial approach in construction projects by "...replacing deception with open communication, delays with timely decisions, factionalism with synergy, litigation with joint problem-solving, and win/lose with win/win" (Larson et al., 1997). Partnering, as a model of interaction and communication between the parties, provides important additions to the DRL system, which could expand and guide its implementation.

Section 4.1 of this chapter introduces and defines partnering based on research by various institutions and professionals. Four brief examples of successful partnering experiences are presented to clarify the objectives of this approach and some of the benefits it can generate if properly implemented. Sections 4.2 and 4.3 provide further details as to the partnering process and the components of a good partnering plan. Each stage of this approach is described, highlighting its importance in the overall development and implementation of the system.

Section 4.4 presents the theory of the Partnering Continuum (Thompson et al., 1998) to introduce the different levels of partnering available for a construction endeavor. This theory divides partnering in three different stages based on the level of objective alignment achieved by the project team and the amount of resources committed to the system. This continuum can be a tool to help construction teams decide the level of partnering required by their project to maximize available resources. Furthermore, it can also serve as a guide for companies in the development of long-term partnering strategies for themselves and with their clients. Section 4.5 presents a summary of the benefits of using partnering and highlights some of the key aspects of this approach with regards to dispute resolution.

31 See Chapter 5: Negotiation for more on win/lose and win/win negotiations.
4.1 Definition of Partnering

According to the American Arbitration Association, partnering has caught the imagination of the construction industry, and it has been adopted faster than any other improvement process introduced in the industry (AAA, 1996). Partnering has become much more than a Dispute Avoidance and Resolution Technique, by developing into an alternative method of operating a business relationship, a new philosophy in which two or more organizations make long-term commitments to achieve mutual goals by entering into an agreement that requires a team-approach (Gilleland et al., 1998). Partnering is a voluntary, non-binding process, in which groups of people from different organizations come together as a team focused on principles rather than rules (Love, 1997), allowing trust to develop. Studies by the Construction Industry Institute have shown that increased trust results in improved productivity (AAA, 1996), which in turn reduces cost and schedule problems that lead to litigation. Partnering changes the cultural and business framework in which parties interact to complete a project.

Multiple definitions of partnering have been developed throughout the years by researchers and industry organization. The Construction Industry Institute defines partnering as follows: (CII, 1991; cited by Gilleland et al., 1998)

"A long term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. This relationship is based on trust, dedication to common goals and an understanding of each other's individual expectations and values."

By developing common goals and an understanding of each parties' needs and individual objectives, parties to a project address some of the reasons behind construction disputes identified in Chapter 2 (i.e., lack of objective alignment, unrealistic expectations,
poor communication, misunderstandings, and lack of team spirit). Larson’s (1995) definition of partnering, based on work by Cowan (1992), also stresses the importance of aligning the objectives, but adds the requirement for dispute resolution mechanisms as a key in the partnering model:

"[Partnering is] a method of transforming contractual relationships into a cohesive, project team with a single set of goals and established procedures for resolving disputes in timely and effective manner."

In this definition, the importance of addressing procedures to resolve disputes focuses on one of the “process problems” identified by Diekman et al. (1994), as a characteristic that makes the construction industry prone to disputes (Chapter 2). The development of procedures to manage and resolve dispute from the . The need to develop one set of goals for the entire building team, focuses on the problem of objective alignment reviewed in Chapter 2 as another source of conflict and dispute among members of a project.

The review of these definitions of partnering brings about the similarity between this system and the prevention stage in the DRL. Alignment of objectives, clear communication, integration among team members, and incorporation of DART as part of the relationship, are among others, core components of Partnering as well as of Prevention.

The following excerpt from a sample Partnering specification suggested by Groton (1997), shows the level of commitment demanded from the parties, and the working environment being pursued by this approach:

a. Each party will function within the laws and statutes applicable to their duties and responsibilities;
b. Each party will assist in the other’s performance;

32 For more information on partnering see AGCA, 1991; Cowan et al., 1992; Harback et al., 1994; Mosley et al., 1991; Weston et al., 1993; Pinnel, 1999; CII 102-11, 1996.
c. Each party will avoid hindering the order’s performance;
d. Each party will proceed to fulfill its obligations diligently;
e. Each party will cooperate in the common endeavor of the contract.

This commitment to a common endeavor, cooperation, and assistance between parties is allowing the introduction of new concrete technology in Canada. A partnership between Bouygues SA, the University of Sherbrooke, Quebec, and the US Army Corps of Engineers has proposed the use of a 50,000 p.s.i. concrete mix known as Reactive Powder Concrete (RPC) in a Canadian footbridge over the Magog River in Sherbrooke, Quebec (ENR, 9/1996). Bouygues of France, developed RPC, and has used it in beams and pipes in Europe, so far achieving 29,000-p.s.i. compressive strength. The Army Corps of Engineers has used RPC in pipes, poles, beams, precast piles, and girders. Nevertheless, according to ENR (9/1996), its use in the Canadian footbridge would be the first application in a complete structure. The partners have agreed to a three-year study to determine RPC’s conformity to codes, to lower the costs of the mix, now at about 10 times that of normal strength concrete, and to increase its use throughout the industry.

In this example, partnering is going beyond a single-project method for improving relationships and communication. This partnering alliance is promoting technological innovation in the field, as parties are sharing the risks associated with introducing the RPC state of the art concrete technology in projects. Furthermore, this example shows a long-term international association of private, public, and academic organizations with significantly different objectives that through partnering are working together to develop this technology.

The following three examples further confirm the benefits of partnering in construction projects.

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33 See Thomas (1998) for an example of how the adversarial approach in the construction industry has affected the introduction of new technologies in the field.
Example 1: A recent study conducted by Gilleland et al. (1998) compared partnered and non-partnered projects within the multi-billion dollar Central Artery and Tunnel Project in Boston. The survey found that partnered projects outperformed non-partnered ones in each of the following performance categories: Cost Growth, Schedule Growth, Number of Change Orders, and Value Engineering Savings. When team members for these projects were surveyed, 100% of Area Managers considered partnering to be beneficial, 75% of Resident Engineers rated communication in their contracts as 'excellent to good', and 80% of the Project Managers described the resolution of issues as satisfactory. Team members in the partnered projects considered that partnering led to fewer written exchanges and more verbal agreements, which were honored by the parties (i.e., "old way of doing business" Treacy, 1995). In addition, communication was rated to be "excellent to good" by most respondents from various sides (i.e., contracting agency, construction manager, and contractor).

Example 2: In the construction of the New Bus Garage in East Cleveland, Ohio, for the Regional Transit Authority (RTA), partnering had similar results (DRT, 1998). Richard Mayer, project manager for the job, stated that 98% of the problems in the RTA project that could have resulted in arbitration or litigation were resolved at the lowest possible level with the help of partnering (DRT, 1998). This shows how one of the direct results of partnering is a reduction in litigation. Problems are resolved at the jobsite level without the need of third party binding decisions (i.e., arbitration and litigation).

Example 3: In a 21-story facility in Down Town San Diego, partnering has allowed the tenant of the facility to participate in all aspects of construction and provide important input that should reduce rework and last minute change orders at the end of the project (DRT, 1997/1998). The facility is being built under the supervision of the final user (i.e., tenant) thanks to partnering between the State agency managing the project and the main contractor. No special contracts were required to incorporate the tenant in the construction process, as both the manager and the builder are benefiting from its input.
Both the Canadian example and the three US projects represent a few of the many successful experiences of partnering in construction projects. The common themes in all of them are improved communication, objective alignment, cooperation, and trust. The following sections reviews the partnering approach in further detail presenting the phases of its implementation, as well as its key components.

4.2 The Partnering Process

The phases of a successful partnering process can be summarized as follows, based on recommendations by the American Arbitration Association (AAA, 1996):

**Phase One** – A Long Term Strategy: Senior management defines a long-term vision with supporting strategies and measurable goals and objectives. Resources are allocated towards achieving the goals, and leadership, planning, and partnering sessions are conducted to prepare the organization for the cultural change. This phase also defines the level of commitment by senior management to the partnering process. Failure of top-management to endorse and support this long-term strategy has been identified as a barrier for successful partnering by Larson et al., (1997).

**Phase Two** – Training: Project participants receive specific training on partnering and learn the strategy developed and set forth in the previous phase. Each participant must clearly understand the role played within the partnership and how his/her performance will influence the results of the efforts. Lack of understanding of the strategy and the partnering process may result in parties returning to the usual adversarial stance when relationships are strained due to normal project disagreements (Larson, 1995).

**Phase Three** – Team Building: workshops and meetings are scheduled at a neutral site to begin the team building process to develop trust and open channels of communication. As part of this phase, participants develop the Project Charter and the Issue Resolution Process, together with mechanisms and procedures for continuous review. In this phase, the project team develops common objectives (i.e., alignment). This phase
should happen at the beginning of the project, and should involve all key personnel.

Phase Four – On-site Implementation: Partnering activities reach a peak during this phase. Key activities of this phase are:
- Regular partnering meetings.
- Biweekly or monthly assessment evaluation and feedback using the Project Charter as the basis, to monitor the relationship and the level of objective alignment.
- Use of the Issue Resolution Process to solve technical and financial issues, adjusting it to meet new conditions that might develop through project implementation.
- Promotion of innovation and creative problem solving.

Phase Five – Project Close-out: When partnering has been carried out correctly, the results can be very beneficial to all parties as in the Central Artery projects described above. At close-out, parties should identify the successes and failures, and the improvements made throughout the process to incorporate these experiences into their individual as well as joint long term visions.

Each of these phases and activities which have been summarized above, are critical in the success of the partnering effort, and therefore of the project. Partnering efforts which are implemented only half way will not achieve the levels of success reported by many partnered projects (Overcash, 1998).

As shown by the first two phases, the partnering process starts even before an actual project is awarded. Partnering requires from participants a long-term commitment to the principles of trust, communication, and collaboration. So companies and agencies are required to establish long-term visions that support this commitment and train their personnel in this new philosophy of operating a construction project. The issue of training and development of human resources for the success of partnering is critical, because of the significant changes this process incorporates into the construction activity. The importance of training is reviewed in Chapter 5, where the Negotiation Stage in the DRL is introduced.
4.3 Key Components of Partnering

The following are the minimum components of any successful partnering approach according to the American Arbitration Association (AAA, 1996), since they provide focus, follow-up, and accountability to the all team members:

**Project Charter:** This is the equivalent of a Mission Statement with a list of common project goals. All parties sign the final version of the Project Charter and the objectives, and it is posted throughout the job site, meeting rooms, and offices. Figure 12 presents an example of an actual Project Charter for a project with the Environmental Protection Agency (EPA) in the US.

**Team Assessment:** Biweekly or monthly meetings are scheduled with all parties to review the status of the partnered relationship and the objectives. Written surveys allow an assessment of the levels of trust, communication, and objective alignment perceived by team members.

**Issue Resolution Process:** Critical in the process of developing the partnering relationship is the definition of the system for “Issue Resolution.” Parties should be committed to identify and resolve problems at the lowest possible levels of the organization. Problems should never become disputes, but if they do, the process to resolve them, and the tools available to the responsible parties should be clearly defined (i.e., Dispute Resolution Ladder).

**Job Close-out:** Once the project is completed and no outstanding issues are pending, parties should proceed with a review of their achievements through the partnering process. The original Project Charter should be compared with the actual results; successes and failures in the relationship should be identified and understood by all parties; and improvement plans should be drafted for implementation in future projects. This after-the-fact review enables the parties to further develop the partnering concept and learn from their mistakes.

As a system, these key components support the partnership as follows: the Charter is the blue-print for the relationship (AAA, 1996); parties become stakeholders of
the joint objectives which they have signed, and decisions and disagreements are always compared and measured against this original set of guidelines and compromises. Through the development of the Charter, parties become aware of each others needs and goals in the project, and common goals are defined. This will allow the building team to conduct any negotiation based on these needs and goals, rather than contractual requirements (See Chapter 5 for Position-Based versus Needs-Based Negotiations).

**“PARTNERING AGREEMENT**

*WE, THE BON FOUSA SUPERFUND PROJECT TEAM, COMMIT TO WORK TOGETHER WITH A SPIRIT OF OPENNESS AND TRUST, AND TO RESPECT THE GOALS AND NEEDS OF THE STAKEHOLDERS.*

**OUR TEAM IS FOUNDED ON PRINCIPLES OF:**

* Teamwork * Mutual Respect * Openness * Honesty * Trust
* Professionalism * Understand One Another’s Positions * “Walking the Talk”

**WITH THE OBJECTIVES OF:**

- Completing the project on schedule
- Completing the project within budget
- Developing and maintaining good community relations by minimizing impact to the community at large and coordinating actions through EPA head
- Pursuing shared savings through value engineering
- Developing and maintaining an awareness of safety – daily throughout the project – in order to achieve zero lost time accidents
- Establishing a forthright approach to modifications and claims in order to avoid litigation
- Remediating the site in accordance with the National Contingency Plan
- Implementing total quality management concepts, specifically in administration, engineering, construction, and operations
- Providing contractors the opportunity to make a reasonable profit
- Enhancing reputations of the stakeholders with respect to public perception of remediation/superfund efforts

*WE, THE UNDERSIGNED, IN AN EFFORT TO ACHIEVE THE INTENT OF THE PARTNERING PROCESS, COMMIT THE ABOVE PRINCIPLES AND OBJECTIVES.”*

Project Charter signed and stamped by each stakeholders

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Figure 12 – Sample Project Charter (adopted from Ellison et al., 1995)
The Team Assessment is both a quality control mechanisms and a quality improvement tool. As the project develops, new objectives can be added and original ones modified through these review sessions. These sessions also foster communication. The meetings and surveys should encourage a greater acceptance of the partnership philosophy, which in turn should translate in greater benefits for the project. These follow-up sessions are the basis for improving the system during the life of the project, and adapt the philosophy to project and team conditions.

The Issue Resolution Process is a tool to help the partnership overcome disagreements and disputes that will still develop during the project. Unresolved issues will undermine the partnership, prevent parties from achieving the common objectives, and foster adversarial positions that will increase the chances litigation (see first example in Section 4.4). Finally, the Job close-out review provides an opportunity for assessing the benefits of partnership, and to develop improvement measures for other projects. During these meetings parties can evaluate future opportunities for collaborative work, and even establish a long term set of objectives towards the execution of that work. This project close-out further strengthens the use of partnering, as parties will learn from their mistakes and improve its implementation.

4.4 The Partnering Continuum

According to a CII report (Thompson et al., 1998), which surveyed more than 1,000 projects associated with this type of relationships, the term “partnering” is being applied to a wide array of management and contractual arrangements. Partnering has grown to include a number of different management approaches and contract relationships, although some fall short of being a real partnered project. Thompson et al. (1998), propose the Partnering Continuum to address the many “shades” of partnering forms found in the field, while Ellison et al. (1995) developed the Synergistic Strategic
Partnership Model to present these different levels of partnership. The continuum proposed by Thompson *et al.* (1998) is based on the degree of alignment of the individual objectives of each of the parties involved (Figure 13).

![Partnership Continuum](note: in parenthesis is the equivalent level from the Ellison *et al.*, 1995 model)

The characteristics of these different levels of partnering within the continuum as compared to the standard adversarial approach, together with the improvements introduced by each one, are presented and summarized in Table 9. Both models of the continuum provide a partnering process, and they highlight the importance of objective alignment within the building team.
<table>
<thead>
<tr>
<th>Project Characteristic</th>
<th>COMPETITION (Adversarial)</th>
<th>COOPERATION (Collaboration)</th>
<th>COLLABORATIVE (Value-Added)</th>
<th>COALEScing (Synergistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibilities and Objectives</td>
<td>Each side has well defined objectives and responsibilities. Objectives are not common; might be conflicting.</td>
<td>Common objectives which are specific to the project.</td>
<td>One set of goals for a successful project. Long-term goals beyond single application. Typically includes incentive for exceeding project goals.</td>
<td>Total alignment of objectives. Goals and objectives are shared, including cost information. Increased accountability. One common performance measure. Autonomy in decision making.</td>
</tr>
<tr>
<td>Level of Trust between Parties</td>
<td>Little trust between the parties.</td>
<td>Some degree of trust, in order to work for the common objectives.</td>
<td>High degree of trust.</td>
<td>Very high levels of trust. Transparent interface.</td>
</tr>
<tr>
<td>Level of Communication</td>
<td>Single points of contact within the organizations. Owner supervises contractor.</td>
<td>High degree of communication. Multiple points of contact.</td>
<td>Openness, honesty. Senior level &quot;champions&quot; from both organizations foster communication and remove &quot;barriers.&quot;</td>
<td>Extensive communication, collaboration and commitment from all levels of the organization.</td>
</tr>
<tr>
<td>Type of Relationship</td>
<td>Adversarial. Primary a defensive position. Coercive environment. Short term focus.</td>
<td>Improved interpersonal relationships. Cooperation.</td>
<td>Integrated team of client and contractor personal and resources. Team creates separate organization for the life of the project. Long-term focus multi-project, with shared authority.</td>
<td>Transparent interface. Parties share resources and cultures are integrated to fit the applications.</td>
</tr>
<tr>
<td>Probability of Disputes</td>
<td>Disputes are common; often requires binding dispute resolution methods to solve them (win/lose).</td>
<td>Procedures to address and resolve disputes are established. Solutions are found through some degree of compromise and cooperation (win/win).</td>
<td>Responsibility is shared among the team, so problems and disagreements are solved within the team before becoming disputes.</td>
<td>Problems are addressed as a team and resolved at the expense of neither party.</td>
</tr>
<tr>
<td>Typical Project Results</td>
<td>Cost and schedule overruns. Both sides finish the project without realizing their objectives.</td>
<td>Schedule reduction 10.5%; Cost reduction 16.3%; RFI turn-around 14 days Vs. 30-60 days</td>
<td>40% reduction in job-hours; 17% reduction in overhead; 10% improvement worker utilization rate; 10% project costs; 100% success in meeting budget and schedule; 50% reduction in engineering rework.</td>
<td>15% reduction in equipment and construction costs; 33% reduction in engineering rates; 100% acceptance of risk by the owner with a low fee charged by contractor.</td>
</tr>
</tbody>
</table>

In the Partnering Continuum, each of the three levels (shades) of partnering are based on the degree of objective alignment achieved by the project team. The greater the alignment of objectives and goals is, the more benefits the parties will be able to achieve through improved communication and collaboration, greater trust, risk sharing, and
resolution of disputes within the project team. Both models, by interrelating the different stages of the Partnering continuum with the project characteristics, can serve as a guide for those involved in construction, helping define the nature of the relationship, even if they do not fully implement the Partnering systems. By comparing each level of Partnering with the Competition Stage, in one or a series of projects, parties can determine the level of objective alignment that can help them achieve their own needs. Parties can also compare the expected project benefits versus the resources required to achieve the specific level, in order to select the proper partnering stage. Furthermore, the continuum allows for a clear definition of what to expect at each level of partnering to avoid misunderstandings and erroneous expectations during implementation. The Key Components of Partnering described in Section 4.3 represent the basic stage of partnering (i.e., Cooperation/Collaboration).

The following two examples show both extremes of the Partnering Continuum. In the first example, parties returned to the Competition/Adversarial stage after attempting to develop a partnering agreement. Apparently, their inability to resolve initial problems with site conditions and design errors had an effect on the partnering approach. The second example shows projects in the high-tech arena which have successfully reached the Coalescing Stage.

Example 1: The Tomlinson Bridge project in New Haven, Conn., is an example of a partnering approach that failed victim to a claims battle between the State and the contractor (ENR 5/1998), not being able to overcome the Adversarial/Competition approach. The $87.7 million project to replace a 69-year-old bridge was two years behind schedule, when the article appeared in ENR (5/1998), because of numerous disputes over site conditions, contract drawings, and removal of contaminated material. The Dept. of Transportation conceded that partnering methods failed as the contractor encountered substantial obstructions during demolition and significant errors in the drawings, which had delayed the project and resulted in cost overruns. The issue resolution process (i.e.,
key component of partnering) in the partnering approach apparently failed, and the parties where not able to develop initially some degree of trust. Both parties agreed that communications were "...strained despite the initial attempts at partnering," making progress more difficult (ENR, 5/1998).

Further research on this case is required to establish responsibilities, and learn how the failure in the partnering approach contributed to the development of the claims. In any case, one thing seems clear: the job had significant uncertainties with regards to the site conditions that were not addressed by the owner at time of bid (i.e., risk sharing); the owner knew from the beginning that at least two other structures had been there since the 1800's (ENR, 5/1998); contamination of the soil should have been expected, since one of the reasons behind the project was the need to allow for larger oil tankers to access the many refineries in the area. An unbalanced allocation risk (Section 3.1) by the owner might be behind the failure of this partnering arrangement, and the failure to align the parties’ objectives and develop the necessary trust to resolve the initial problems.

Example 2: this case shows how projects achieve a total alignment of risks and the benefits that result. The design and construction of high-tech production facilities for companies like Intel is an example of complex large-scale engineering systems where partnering has significantly changed the construction process. The Lean Construction Delivery System Model (Miles, 1996; CIOB, 1999) illustrates the ways in which partnering has allowed parties to maximize the resources of each team member. In this model the partnering relationship overcomes the difficulties confronted by the Tomlinson Bridge project, by moving the building team along the partnering continuum to a higher level of integration, such as the one identified by Thompson et al. (1998) as Coalescence, and by Ellison et al. (1995) as Synergistic.

34 A survey on barriers to partnering identified trust between parties as the most critical aspect in the success of the implementation of this approach. Thirty one percent of respondents considered the failure to build a true relationship of trust as a barrier to partnering (Larson et al., 1997).
The structure of one of these projects is shown in Figure 14. This structure is clearly a departure from the typical pyramid shaped organization charts of construction jobs, where each party sits underneath the client with clearly defined responsibilities and contractual boundaries (i.e., LNG Project, Chapter 1). Under this organization, all parties were part of a whole, centered on the project and its objectives. All decisions were based on the ultimate goal: the project. This project delivery system is based on multitasking, multi-discipline, multi-functional working groups and partnering (Miles, 1996). Each working group makes joint decisions on the design based on constructability, achievement of the design criteria, budget, schedule, and quality (CIOB, 1999).

Such high level of integration is exemplified by the fact that from the beginning of the project, the construction team met regularly with the start-up teams and the client's facility operation group. Changes in the design were evaluated early on by the final users of the facility, and their comments, suggestions, and requirements were incorporated into
the process. In addition, suppliers of major equipment and technology participated in the
design development phases in order to incorporate their knowledge and experience into
the final construction documents. Furthermore, a cost control group served as the router
for all exchanges of information, tracking all communications between the design and
construction groups, which allowed them to provide management with real-time cost data
at any given time. With this cost information, the team was able to make informed
decisions on changes, and their implications in the long run with regards to the project
budget.

A company that has successfully implemented this delivery system is Hoffman
Construction Co., Portland, Oregon (Daniels, 5/1996). In 1993 a Hoffman’s construction
team won Intel Corp.’s Pegasus Award for the “breakthrough success” in solving crucial
technical and building issues during the construction of a 435,000-sq-ft, $110 million
chip fabrication plant outside of Portland (Daniels, 5/1996). The plant was built in only
14 months; two months ahead of schedule. When asked about his secret, Hoffman’s
project manager responded: (Daniels, 5/1996)

“To start with, throw the linear approach out the window. We do everything with a
tremendous amount of concurrency. We are driving safety rates to extremely low levels,
even in a highly risky environment. We self-perform a great deal of our work. We
interact with organized and open-shop labor, often on the same site. What we have tried
is to create synergy and bypass institutional barriers that keep [builders] from reaching
their full potential....new techniques come from understanding the design process and the
owner’s needs. [Missing] your client’s technology windows can cost owners billions of
dollars. You have to be dead right – or you’re simply dead.”

Hoffman is a full service construction company, and unlike other contractors who
often contract out most of the work, they have developed in-house capabilities in many
areas to meet project demands. Among the innovative techniques developed by Hoffman,
is the concept of Speed Engineering where the company integrates their in-house

35 This concept of supplier involvement in the engineering process is behind the new PEpC delivery system
developed and proposed by the CII, and reviewed in Section 3.3.3.
36 Hoffman’s Lost Accident Rate per 200,000 works hours since 1994 has been 600% less than the industry
average (Hoffman, 1999).
structural engineers with the owner's design team to develop the fastest solution for bringing the structure off the ground and to meet the owner's need for a faster design and construction process of their facilities. Furthermore, they analyze material availability, structural details for constructability, and building systems for pre-fabrication opportunities (See Section 3.5.1 Constructability Analysis). Hoffman reports that project costs can be lowered through the speed engineering process, but the emphasis is on timely, safe completion (Hoffman, 1999).

In the Lean Construction Model, the basic concepts of Partnering have been fully implemented along Partnering Continuum. The different groups evolve over the life of the project as requirements change (Miles, 1996). The organization is shaped and reshaped according to the project, and from the beginning, parties are able to align their objectives and redesign the total work process. All of the costs associated with this system have been recovered through partnering agreements and outstanding project performance (Miles, 1996). This ultimate stage of partnering, Coalescing (Thompson et al., 1998), has resulted in significant savings in time and costs in the design and construction of a number of projects, helping both owners and contractors achieve higher levels of productivity.

4.5 Summary

Partnering is a complete system of operation in the construction environment; hence, it is not considered a stage in the DRL. However, the introduction of the concept of Partnering was based on the consideration that many of the key principles of this system of operation are congruent with those of the DRL; and thus can enhance the different stages, even if the complete Partnering format is not being implemented.

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37 Tesco Stores has reduced the capital costs of their stores by 40% since 1991; Needahm Co., a construction company from Colorado, has been able to reduced project times and costs by as much as 30%; Pacific Contracting of San Francisco, has increased their annual turnover by 20% in 18 months with the same staff (CIOB, 1999).
Partnering fractures the common adversarial approach in construction projects and replaces it with open communication, timely decisions, synergy, joint problem-solving, and *win/win* philosophy (Larson *et al*., 1997).

Among the multiple advantages of partnering are: reduced exposure to liability through open communication, early problem identification and resolution; risk sharing; increased productivity; better quality of work through the empowerment of workers; lower costs; better cash flow; better decision making and commitment to resolving problems; and better opportunity for a successful project. As Hunter *et al*. (1995) so eloquently said "...an ounce of partnering prevents a pound of problems."

Thompson *et al*. 's (1998) Partnering Continuum establishes a direct relationship between the degree of objective alignment between the parties to a project, and the potential benefits of Partnering, where the Coalescence phase represents the greatest alignment of objectives and offers the greatest benefits. Through the use of this continuum each project can determine the level of objective alignment it has and/or desires, and from this estimate the possible benefits that the system could provide. Nevertheless, despite its many advantages, partnering can experience problems through its implementation associated to: 1) The demand it places on everyone committing to the partnering process; 2) The difficulty participants may have with taking the risk of trusting others, and 3) The tendencies of many people to believe that conflicts can only be solved through the win/lose approach.

The following chapter returns to the Dispute Resolution Ladder and introduces the second stage of the system: Negotiation. The need to improve communication and collaboration among the parties as identified in this chapter, forms the foundations of good negotiations. This next stage represents the most basic tool available to the construction team to address and solve their disagreements with the least amount of wasted resources and without affecting the relationships of the members of a project.
Chapter 5

Stage 2 – Negotiation

This chapter reviews the concept of negotiation as the most important tool available to manage and resolve disputes in construction projects (Groton, 1997). After the Prevention stage (Chapter 3), which assumes that conflicts will arise, and prepares the parties on how to manage them and mitigate their effects, negotiation represents the first stage where an attempt is made to resolve the dispute. Here, parties are required to come together and arrive at an agreeable settlement through communication. A successful negotiation, which implies collaboration, trust, and common objectives (all ancient notions as it is presented in Chapter 2), should result in a solution acceptable to both parties that will not harm their relationship.

Another important benefit of negotiation relates to control over the outcome. When parties resolve their disputes through negotiation, settlements result from a joint agreement, essentially controlled by the parties, and generally inclined towards a win/win outcome (Hollands, 1989). Conversely, when a third party is given the responsibility of establishing the facts and taking a decision, the outcome will most likely be based on the contract, and therefore tend to a win/lose outcome.
A well-planned approach to negotiation should begin with the notions of partnering explained in Chapter 4. From the building of teams to the final stages, parties should attempt to resolve all disagreements through negotiations based on an honest exchange of information (Groton, 1997). This dialogue addresses the underlying needs of each party, so at least some of them are incorporated into the solution (Hollands, 1989). In other words, negotiations should focus on the individual and collective interests of the parties, instead of concentrating on positions. In this way, participants will be more willing to understand both sides of the problem and develop what Boskey (1993) calls a "non-zero sum" solution.

These "needs-based" negotiations look beyond positions to address each party's actual goals without engaging in a positional contest of will. Needs-based negotiations encourage creative searches for alternative means to the real goals, and they do not represent a surrendering of a given position (Fisher, 1994). In this fashion, Hollands (1989) suggests that parties in a construction disputes should not only consider needs or interests that are derived from the contract documents, but also parties should look for alternatives that can solve the disagreements without court intervention. After all, parties usually know and understand the facts better than they can communicate to an arbitrator, judge, or jury. Therefore, they should be able to develop a solution that incorporates and maximizes this knowledge. Hollands (1989) recommends that the following aspects be incorporated into the negotiation:

- "Substantive (e.g., money, time, long-term market);
- Procedural (e.g., confidentiality, protocol, administration);
- Psychological (e.g., need for respect, status, security, recognition)."

(Hollands, 1989)

It must be said that despite this ideal scenario, the most common approach to negotiations in the construction arena is the "positional" bargaining, where each party assumes a position that then seeks to maintain it during negotiations. These positions are chosen to be defended, based on contract language and the law. They have been elected as mere rationalizations and means to an end, but not as the end itself, and are usually
contradictory (Boskey, 1993). Negotiations over positions can degenerate into an attempt from each side to force the other to first abandon its position, turning the negotiation into a purely "win/lose" proposition that inhibits innovation in the search for solutions.

The results of this positional bargaining is a "zero sum" negotiation (Boskey, 1993) in which every benefit received by one party is at the expense of the other. Even if perceived gains do not have to equal perceived losses, any change in the proposed result will provide an advantage to one party and a disadvantage to the other. Recognizing whether a particular negotiation is zero or non-zero sum can be very important in planning for and actually carrying out the negotiation, as dispute negotiations often seen as zero-sum, may have non-zero sum aspects or alternative solutions (Boskey, 1993).

According to Hill (1995) negotiation parties often feel they are involved in a zero-sum situation in which court proceedings are the only solution to the dispute. They believe "there is a fixed-size cake to divide and each party would rather have a bigger slice than a smaller slice" (Hill, 1995). However, statistics from the American Arbitration Association show that few business situations are zero-sum games like territorial wars and that by cooperating, business partners can expand their markets and develop mutual benefits. For example, out of the 3,075 cases that requested AAA mediation (i.e., a form of facilitated negotiations) in 1993, 1,136 were settled, 151 were closed, 293 were withdrawn, 644 were pending, and 851 were in some other status at the end of the year (Langeland, 1995). In other words, over 50% of the cases where closed through this form of aided negotiation where parties develop solutions which are acceptable to both parties (i.e., win/win or non-zero-sum), and only 28% proceeded to another form of dispute resolution (i.e., arbitration).

The following sections review three important techniques designed to improve the negotiation process and correct "people issues and process problems" (Chapter 2) which might interfere with the resolution of disputes at this DRL stage. These techniques are
presented in: Section 5.1 - Structured Negotiations, Section 5.2 - Step Negotiations, and Section 5.3 - Facilitated Negotiations.

This chapter is concluded in Section 5.4, with a summary of the findings surrounding this stage.

5.1 Structured Negotiations

On a recent Florida case cited by Kane (1992), litigation began to threaten a power plant contract dispute in excess of $20 million. The example describes how the Utility and the contractor set up a structured negotiation process that took place over a 12-month period. Upper management accepted an honest, open airing of the facts in dispute with a commitment towards good-faith negotiations. After many meetings, an thorough allocation of resources (i.e., time, money, and people), a settlement was finally reached without a lawsuit being filed. This case was resolved in one third of the time usually needed to conclude a dispute of this magnitude using court proceedings (Kane, 1992).

Hoctor (1989) provides a clear view of the steps involved in the structured approach used in this case:

1) Each side chooses to be represented by a person knowledgeable in the resolution of construction contract disputes. These agents must have the authority to make decisions and accept settlements in order to move the negotiation process along.

2) The items in dispute are given to these agents (i.e., representatives) for the purpose of reaching a final settlement binding on the owner and the contractor.

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38 The average civil case in the state court takes 14 months to reach a conclusion, while at a federal level it takes 7-11 months from filing to disposition. In the US the number of civil cases that are more than 3 years old in district courts had risen in 1992 to over 28,000 cases (Treacy, 1995).
3) Items upon which agents cannot reach an agreement are set aside. For these items, parties may mutually choose a neutral third party to decide the matter (see Chapter 6: Neutral Expert, and Chapter 8: Expert Determination). This person can either adjudicate the item in dispute or choose a fourth person with greater expertise in the area in dispute for a decision.

4) The resolution of each item is documented, and a contract change administered for each. The contractor and owner are both bound by the results of the agreement.

The advantages of a structured negotiation are twofold. On the one hand, negotiations become a formal procedure, in which a centralized structure is created to cope with the dispute. The most important benefit is that people in dispute can control the process. They can establish strict time tables for their agents to reach a settlement before calling for a third party to solve the matter; and the third parties can also be limited as of the time they have to reach a decision. The agents take every issue in dispute from its definition to a resolution that is incorporated into the contract, identifying and leaving aside only those issues in which they cannot come to an agreement.

On the second hand, structured negotiations bring knowledgeable participants to the table; a move that generally produces faster results, since the expert agents can draw from their respective organizations all the legal, technical, and managerial information required to expedite the procedures and guarantee an effective outcome (Hoctor, 1989). Also, by constantly interacting with experts parties reduce the risk of having to escalate the problem to a court, in which a judge or jury will have a questionable ability to comprehend the problems. In short, by understanding underlying interests, managing information, and then allocating time and resources, the experts involved in structured negotiations increase the likeliness to achieve a win/win, non-zero sum solution.
5.2 Step Negotiations

Another way to structure negotiations that encourages the resolution of disagreements at the lowest possible organizational level, is to establish a contract requirement for Step Negotiations (Groton, 1997). Under this approach, problems must be first addressed, within a limited time frame, by the representative of each party directly involved with the issues. If parties fail to settle the dispute in the time stipulated, they must endorse the problem to their immediate superior, who will then attempt an agreeable settlement based on the advancements of the first step. If this level does not succeed either, the matter is raised to a higher echelon in the organization (Figure 15).

![Diagram of Step Negotiations showing Levels and Communication Lines](image)

Figure 15 – Diagram of Step Negotiations showing Levels and Communication Lines

Step negotiations force each level of the firm to use up, within time limits, all the resources available to elucidate the problem without raising the matter to the next step. An example of this type of incentive is found in the Canadian Public Works arena (Section 6.3), where contracts require that before the Agency Review Board can be incorporated into the dispute, the agents must submit the matter to the Minister of Public Works. The Ministry reviews the attempts made to achieve a resolution, and then has the option of settling the case with the contractor. This contract encourages contract
administrators to assume a role in the resolution of disputes, rather than relying exclusively on the Board.

5.3 Facilitated Negotiations/Meetings

Facilitated negotiations assume that parties are not always able to communicate their needs and interests effectively. This inability usually results in parties focusing on positions, and viewing the process as something they will either win or lose. Berman (1995) states that parties on two sides of an issue tend not to be objective and open-minded, therefore becoming adversarial and vague in their interactions. Facilitated negotiations propose a way to improve communications by inviting a neutral third party with knowledge on DART (Hollands, 1989), who concentrates on the issues rather than on reaching a settlement. The facilitator will refrain from making judgments or recommendations, but he/she will play a key role in facilitating a smooth evolution of the sessions.

Since construction disputes are usually technically complex and involve a large number of documents, parties can easily conceal the reality, by adopting a position of "convenient listeners" (Berman, 1995). In other words, parties can be tempted to pay only attention to the things that benefit them. According to Berman (1995), the facilitator can help surpass this barrier by dividing the negotiations into two phases:

1) **Understanding the Issues**: the facilitator concentrates on making sure both parties understand their own claims, as well as those of the opposing party. This clear definition and understanding of issues will prove beneficial when parties engage in the second phase.

2) **Exploring of Alternatives**: With a clear understanding of facts and issues, the facilitator helps the parties develop creative solutions and evaluate the
different implications of potential outcomes. They together explore various settlement strategies in search for a win/win outcome.

If after these two phases a settlement is not achieved, new alternatives are explored until the parties decide to forego negotiation and move to a different level of dispute resolution.

Because of the important role played by the facilitator (i.e., channel of communication and translator of positions into common grounds for settlement) in this form of negotiation, the American Arbitrator Association (AAA, 1996) establishes that agents should have the following attributes:

- A facilitator must be trusted by both parties. He/she must be seen as an impartial, confident viewpoint in the process.
- He/she must have a basic understanding of construction, in order to understand the sometimes complex issues in dispute.
- Strong communication, social, and listening skills will be needed to provide a proper channel for interaction.
- The agent must have solid organizational skills, to help parties understand and manage the large amounts of information usually associated with construction claims.
- Ideally, facilitators should also have some knowledge of ADR and arbitration, to communicate to the parties the implications of not reaching an agreement under his/her supervision.

It is important to note that the AAA offers a roster of facilitators for construction disputes that have been selected based on meeting these conditions.

5.4 Summary

After the Prevention stage, which assumes that conflicts will exist and attempts to minimize them, negotiation is the first stage that directly tries to solve the disputes. As the second stage in the DRL, negotiation is a flexible stage in which parties have a high
degree of control over the possible outcomes. Thus, negotiation is considered the most important tool available to manage and resolve construction disputes, and therefore should be included as a standard resolution technique in contracts. Negotiations may involve a third party facilitator that focuses on communication and development of common grounds. The facilitator concentrates on the needs of each party rather than positions, and attempts to reach a non-zero-sum, win/win outcome that takes into account matters internal and external to the contract, which cannot be considered in the binding stages of the DRL.

Structured, Step, and Facilitated Negotiations are three important techniques that can be used throughout the negotiation process. The first two focus on the importance of organizing and structuring the negotiation process in order to improve its results; the third, focuses on the importance of facilitating the communication process among parties. Structured negotiation offers a formal procedure in which a centralized structure is created to cope with the dispute, while allowing parties to maintain control over it. The introduction of a participant with knowledge in the field, lets structured negotiation produce faster results, preventing disputes from escalating and reaching litigation. Step negotiation establishes a linear process for dispute resolution, assigning time limits to each level of the parties' organizations, moving upward along the hierarchy in the negotiation process. This technique forces each party in a project to use all the resources available to elucidate the problem before raising the matter to the next step. Finally the facilitated negotiation/meeting is based on the notion that parties are not able to communicate, and thus views the role of the facilitator as a vehicle to improve communication in order to achieve an acceptable solution.

Depending on the objectives, strengths, and weaknesses of each particular project, parties can decide which of these strategies to use. If lack of structure is a main weakness of the project, structured and step negotiations might be the most helpful approaches to solve the conflict. If lack of communication and understanding between the parties is the
main obstacle in the dispute resolution process, facilitated negotiation can become a valuable tool. Mediation and conciliation which are reviewed in Chapter 7 are forms of facilitated negotiations.

The following chapter reviews the role neutral third party agents can play in the resolution of the usually complicated disputes in construction projects. Just like the initial determination by the design professional in the traditional DRL provides a fast, objective, and knowledge-based solution, these third party agent techniques can aid solve technical and contractual problems and allow the team to concentrate on completing the project. Decisions suggested by the third party experts can also facilitate negotiations and foster the settlement of disputes.
CHAPTER 6

STAGE 3 - STANDING NEUTRAL

This chapter discusses the Third Stage of the Dispute Resolution Ladder (DRL), in which a third party neutral is incorporated into the project to evaluate and resolve disagreements, when and if they arise. Initially, in the Traditional DRL the design professional was able to provide the owner and contractor with fast, objective, and knowledge-based decisions over disagreements relating to the project. As described in Section 2.2.1, the capacity of the design professional to provide objective and unbiased feedback was undermined by his/her relationship with the owner and as projects became larger and more complex. For this reasons, as projects increased in complexity and conflicts became a common battle in the construction industry, the role of the design professional as a neutral third party was questioned. The Standing Neutral stage in the DRL was introduced to substitute the design architect/engineer, with the aim of providing the parties with the possibility of resolving conflicts with a neutral and unbiased professional.

In the following sections four different types of procedures which involve a third party intervention are presented, highlighting the advantages and/or disadvantages of each one. All of these procedures are based on the benefits of introducing in the dispute resolution process, a third party neutral with construction experience and specific
knowledge about the project in question. Section 6.1 discusses the most simple procedure known as the Neutral Advisor and presents as an example the concept of the Neutral Architect in merchant housing projects; Section 6.2 describes Owner/Agency Review Boards common in large and long duration projects; Section 6.3 looks in detail at the concept of the Dispute Resolution Board, which has become one of the preferred methods to resolve disputes within the industry; and finally, Section 6.4 suggests the use of an On-call Contractor to prevent disputes at the latter stages of the project.

The conclusions of Section 6.5, summarize the Standing Neutral stage and the advantages and disadvantages of incorporating a third party neutral in the process of solving construction disputes.

6.1 Neutral Advisor

The neutral advisor is actually a mediator with technical know-how, hired by the parties to help resolve problems before they escalate to complex disputes. According to the CPR Institute for Dispute Resolution, this advisor is a "pre-selected neutral to serve the parties as a dispute resolver throughout the construction process" (Croain-Harris, 1994; cited by Findley, 1997). The neutral advisor or on-site neutral as it is also known, is jointly chosen by the parties based on his/her experience in the type of construction project.

As the job begins, the neutral advisor becomes familiar with the plans and specifications of the project by reviewing the documents and attending project meetings that take place during the course of the job. When conflicts arise, the on-site neutral can gather the parties to work out solutions. The neutral advisor does not make decisions for the parties or impose final solutions; instead, he/she works with the parties to develop an agreeable settlement for all stakeholders, looking for a win-win solution to the arising
problems. The costs of the on-site neutral are usually shared equally by the major parties to the job, with no changes in the contract price.

The neutral advisor can be understood as a party taking the place of the architect or engineer in the DRL (Section 2.2.1). If properly implemented, the neutral can provide resolution advise with regards to actual disputes, but parties can also use him/her as a consultant for number of activities, such as: analysis of potential problems before they become disputes; guidance in the interpretation of certain contract documents; and in general, advise the parties on any subject for which they require an opinion from a third party to help them arrive at a decision (Zack b, 1997). In his/her role as a consultant, the neutral advisor can help with early identification of possible sources of conflict, serving as an important figure in the prevention of disputes.

The Neutral Architect, a variation of this concept of the Neutral Advisor, has been successfully developed to address post-construction disputes in merchant housing projects (Kemp, 1998). In this type of project, each individual home owner usually identifies problems and what they consider to be defective work in their units after the homes are delivered and requests from the developer their immediate correction. Some of these requests are accepted by the developer as being part of the guarantee or within the scope of work, but others are disputed as being beyond what was “sold” to the home buyer. Additional problems arise when work has to be scheduled and performed inside occupied units. According to Kemp (1998), these conditions make litigation between developers and home owners associations (HOA) a likely outcome. So, in order to centralize, organize, mediate, and resolve all of the requests and disputes over corrective work, Kemp (1998) proposes the use of a Neutral Architect.

This Neutral Architect is selected jointly by the developer and the HOA, once the project is completed and the requests have been collected by the HOA. The costs of this neutral should be covered by both parties to avoid affecting the impartiality of the
process. Kemp (1998) described his role as a Neutral Architect in a 95-unit residential project in California as follows:

"The primary goal ... was to function as an intermediary between the home owners and the developers in much the same way as a music conductor acts to render a symphony to an audience. The written score and lyric represent the scope of work. The orchestra and choir are the builder and subs. The task is to interpret the scope of work so that both the composer and the audience are satisfied with the result, at the same time making sure that the musicians are team players from the beginning to end.”

As the Neutral Advisor described above, this architect learns about the project, the scope of work, and the disputes between the developer and the HOA and provides parties with unbiased and knowledgeable solutions to their disagreements. This allows the corrective work to proceed much faster and, as reported by Kemp (1998), with significant savings for both parties.

Kemp (1998), suggests that the success of this DART approach is based on the fact that the Neutral Architect represents to the parties the “ideals of impartiality and fair dealing.” Impartiality allows this neutral to overcome the limitations that a design professional, working directly for the owner, would normally encounter; thus, moving the negotiation and resolution of the problem beyond the distrust and the adversarial stance which often characterize the relationship between the developer and the home owner.

In reviewing the many positive contributions of the Neutral Advisor to the effective resolution of conflict, parties to the construction must also take into consideration the disadvantages and risks of this procedure, which have been summarized by Zack (b, 1997) as follows:

- The decision are not binding to the parties. Therefore, disputes can continue to affect job performance.
- The neutral might become “too” familiar with the job and the different parties to the point that his decisions will no longer be respected.
- The neutral over time might become partially biased towards one of the parties to the construction team.
6.2 Owner/Agency Review Boards

Zack (b, 1997) reports that some public owners with large and long duration projects, like the Corps of Engineers in the US, have established in-house review boards to hear disputes which can not be resolved at the site level. The Board is usually composed of senior officials of the public agency with authority to make determinations on contract matters. It reviews either unresolved issues with the contractor or appeals of decisions of the contract representatives; moreover, the Board attempts to resolve these issues with the contractor in a simple and informal atmosphere (Zack b, 1997).

Another form of application of this technique has been implemented by the City of New York, which established in 1990 (Treacy, 1995) a City Dispute Review Board to review and settled claims and disputes with contractors working for the city. This Board is composed by three members appointed by the Office of Construction with binding authority to issue settlement for disputes submitted by contractors against the city. This Board functions as a permanent arbitration panel.

As advantages of these Owner Review Boards, experts cite "the ease of obtaining" a second opportunity to review with the owner unfavorable decisions made by the on-site representative, and the low costs imposed on the contractor (Zack b, 1997). With this DART, however, there can be a problem over the impartiality of the Board, since its members are employees of the owner and the contractor has no representation. Due to this problem of impartiality, the New York City Dispute Review Board has been severely criticized by building organizations (Treacy, 1995), which see the binding effect given to the decisions as an unacceptable feature in this application of this technique, considering the composition of the Board.

In the same way that the Neutral Advisor was introduced to ameliorate many of the limitations of the design architect/engineer, the Dispute Review Board discussed in
the following section attempts to solve the limitation of the Owner/Agency Review Board associated with its compromised objectivity.

6.3 Dispute Review Board

Dispute Review Boards (DRBs) play the same role of the individual Neutral Advisor reviewed in Section 6.1, but in the form of a panel which utilizes "...experienced and trusted construction professionals with appropriate technical background to address prevention and resolution of disputes" (ASCE, 1991).

This definition by the ASCE (1991) incorporates two important ideas that are the basis of the success of this DART approach:

1) Since construction disputes are usually technical rather than legal, construction professionals should be involved, and
2) These experts should be involved to prevent as well as resolve disputes.

According to Beresford (1998), the roots of the DRB can be found in the traditional role of the architect/engineer as the owner's representative and in the arbitration panel. As described in Chapter 2, the design professional had been the logical dispute resolution agent for the construction industry. However, because their independence is no longer taken for granted as projects and disputes have become larger and more complex, this notion of an independent and technically qualified board, has developed as an alternative. The idea of having a Board rather than a single individual comes from the arbitration panel, which encourages unbiased recommendations from the experts by providing a system for 'checks and balances'. The inherent objectivity of the DRB reduces the limitation of other DART, such as the design professional and/or the Owner/Agency Review Board.
The DRB comes into existence by agreement of the parties at the beginning of the project and usually the costs are shared equality between the owner and the contractor. Usually, it is composed of at least three members, two of which are chosen by each party to the contract, while the third member is appointed by the first two. During construction, whether or not there are any disputes, the Board visits the site and meets with the site representatives of all parties, owner/employer, main contractor(s), sub-contractor(s) and, if necessary, important suppliers of goods to the project. The Board may also attend monthly job meetings, depending on the initial agreement between the parties and the level of involvement desired.

Through these meetings and regular site visits, the Board develops a good understanding of the project, its progress, and the parties involved in the contract. "This real time knowledge of the project's progress provides, an understanding that is nearly impossible to recreate during arbitration or litigation once the project is finished" (Kane, 1992). So, when an actual dispute arises, the Board convenes very quickly to hear and settle it as soon as possible, based on this real time knowledge of the project. The Board can also advise parties on areas or issues with potential to become disputes, so they are addressed and settled before the actual disagreement takes place.

In terms of the results of this dispute resolution technique, the American Society of Civil Engineers (ASCE) reports "...that a total of $3.2 billion worth of work was completed or under construction in the period 1975 to 1991 [using DRB]. with 81 disputes heard and none taken to litigation" (ASCE, 1991), and according to ENR (8/1991) similar construction projects without DRBs do not exhibit these same levels of performance.

The following example developed by the Canadian government shows an interesting modification of the Dispute Resolution Board technique. According to Bristow et al. (1995) the Ministry of Public Works and Government Services of Canada
established since 1987 the figure of the Contract Advisory Board to handle and resolve contractual disagreement between the Ministry and any contractor/consultant. The Contract Advisory Board is basically DRB with non-binding authority to review and recommend solutions to disputants (Figure 16). This board has three members: one neutral Chairman, one representative of the Ministry, and one member selected by the contractor/consultant. Bristow et al. (1995) report that the success rate in resolving disputes has been 88%, specially for large, multi-party and multi-issue disputes which are common at the Ministry.

Contractor/Consultant requests to the Minister the constitution of a CDAB to review and settle a pending claim

Minister Reviews the request and determines whether it is necessary to form the CDAB

The contractor gets eight weeks to prepare and submit in writing to the Ministry copies of all documents supporting the claim

The Ministry gets four weeks to review the documents and prepare its case

Both parties make their respective presentations to the Board

The Board reviews the information gathered at the presentations and sends a recommendation to the Minister, who then advises the contractor on his/her decision

The contractor can accept the proposal by the Minister, or proceed to submit its claim to arbitration or litigation

**Figure 16 - Contract Dispute Advisory Boards DART Procedure**

Five interesting features of this version of the DRB in the Canadian public works sector are worth highlighting:

1. The request to form the CDAB is received and reviewed by the Minister of Public Works, and it is through that office that the decision
to form the Board is taken. This provides the procedure with the necessary official backing to proceed. Using the Minister, also appears to be a last minute effort to resolve the dispute before choosing to form the Board. Officials are encourage to resolve the dispute before they are submitted to the Minister for review, for the same reasons outlined under the ADR technique of Step Negotiations (Section 5.2).

2. The Board is appointed when a dispute arises, and the Minister chooses to form it. Therefore, the Board only deals with a specific dispute, and it is not part of the whole project.  

3. One person from each side is given the responsibility of presenting the cases.

4. Presentations to the Board are limited to a maximum of two and a half hours for each side. This limitation should expedite the proceedings and limit the amount of evidence presented by the parties. There is no time for expert testimony.

5. There are no formal rules to run the proceedings, and records of the discussions are kept. This adds flexibility to the process and encourages disputants to present all the facts, without fear that they will be used in a binding procedure (i.e., arbitration or litigation) if this step fails to achieve a resolution.

These features suggest that the Ministry of Public Works of Canada has in fact combined two techniques from the DRL in the CDAB system. The CDAB is set up as a DRB but operates more like an Executive Trial or Minitrial (Section 7.4). The time limitations and the involvement of the Minister are characteristics that should encourage a faster evaluation and resolution of matters. The Minister has the authority to evaluate and propose alternative solutions to the contractor that the contract representatives may lack.

Despite successful applications of the DRB technique, the literature suggests that its main disadvantage can be the high cost of implementation, estimated to be between 0.5 and 1 percent of the construction cost (Zack b, 1997). Therefore, the application of
this technique requires an evaluation of the cost implications, for it could represent a considerable investment for both the owner and the contractor. However, in larger-scale and complex projects, this technique has resulted in significant savings in litigation and arbitration costs that surpass the costs of its implementation (ASCE, 1991).

### 6.4 On-call Contractor

Another type of project neutral that can resolve disputes identified by Zack (a, 1997) is the On-call Contractor. As jobs approach the final completion mark, small change orders are often necessary to meet last minute requirements by the user (Zack a, 1997). At that time, the main contractor is usually less willing to perform minor change orders and is only interested in obtaining both the final completion certificate and the release of the retention moneys. If the contractor is “forced” to perform these change orders, delay claims and additional costs can slow the completion and strain the relationships.

As a way to prevent these last minute confrontations, Zack (a, 1997) suggests that owners proceed to hire this “on-call” contractor to perform these additional work orders. The owner and this new contractor can develop a separate schedule to control these activities, leaving the main contractor free to finish the original scope of work. Special attention should be given to this new contractor, so as to avoid any type of interference with the one finishing the job.

Although this option of the on-call contractor has been included here as part of the Standing Neutral Stage, it can also be considered a Dispute Prevention Mechanism (Chapter 3) since this contractor will actually help prevent last-minute disagreements.

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39 This condition makes this type of Board different than a DRB, which is incorporated into the job from the beginning, regardless of whether there are any claims.
between the owner and the main contractor. Furthermore, it will increase the chances for a smooth completion and job close-out process.

6.5 Summary

The Standing Neutral stage is based on a prompt, rational, on-site, and impartial review of disputes by mutually accepted experts. This stage is an attempt to ameliorate the disadvantages of using the design professional, who for years had been used as a neutral and knowledgeable third party. All the techniques proposed in this stage share three common denominators: third party involvement, unbiased decisions, and a knowledgeable expert, all of which promote substantial cost savings and can eliminate wasted time and resources in litigation. Nevertheless, these techniques differ across three different variables: the number of agents involved, the relationship of these agents with the project (i.e., external or internal to the project), and the stage in which they are introduced.

Table 10 - Summary of Characteristics of Different Standing Neutral Techniques

<table>
<thead>
<tr>
<th>Standing Neutral Technique</th>
<th>Neutral Advisor</th>
<th>Owner Review Board</th>
<th>Dispute Review Board</th>
<th>On-Call Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Agents</td>
<td>1</td>
<td>Multiple</td>
<td>Multiple</td>
<td>1 company</td>
</tr>
<tr>
<td>Relationship of the agent with the project</td>
<td>External</td>
<td>Internal</td>
<td>External</td>
<td>External</td>
</tr>
<tr>
<td>Stage in which the agents become involved</td>
<td>From the beginning of the project</td>
<td>When conflicts arise</td>
<td>From the beginning of the project</td>
<td>Towards the end of the project. Before conflicts arise</td>
</tr>
</tbody>
</table>

The different levels of each of these variables offer several advantages and disadvantages. The introduction of only one agent has the advantage of reducing costs and time, while increasing flexibility in the decision process. However, it suffers the disadvantage of having decisions depend on the interpretation of only one person who might fail to understand the multiple and complex issues involved in a dispute. In the
same manner, the introduction of the third party from the beginning of project offers the benefit of an expert who is highly familiar with the project and its multiple facets, who can collaborate not only to resolve disputes but also to address potential areas of problems. This prevention feature of this stage in the Dispute Resolution Ladder is one of its most important benefits. Nevertheless, the third party’s familiarity with the project can result in lost of impartiality over time. This challenge, in combination with the fact that having an expert throughout the project increments the costs of implementation of this technique, represent the main drawbacks of having a third party neutral throughout the complete project.

Finally, the greatest advantage of an external agent is his/her impartiality, which often translates into greater trust from the parties. However, his/her strangeness with the members of the project, specially those not involved in his/her selection, can be a double-edge sword, and result in difficulties establishing trust, and communication among functional project team members; thus, interfering with the possibility of gathering accurate information.

The advantages and disadvantages of the different levels of this stage, and how each of these interact, need to be considered when deciding the most appropriate technique for the specific characteristics of the project. The selection of the standing neutral technique most fitting to the specificity of the project will increase the chances of solving the dispute at this stage or at least promote the clarification of technical issues that will increase the chances of success. This clarification can help parties to return to the negotiation table or proceed to a higher stage in the DRL with some of the issues already resolved. Chapter 7 will review the Non-Binding Dispute Resolution stage, addressing its importance as the last stage in the DRL before Binding procedures.
Chapter 7

Stage 4 - Non-Binding Dispute Resolution

The Non-Binding Dispute Resolution Stage is the last phase in which the parties still have control over the outcome of the dispute and can participate in the development of an agreeable settlement in conjunction with a third, neutral party. In the next two stages, Binding and Litigation, all decisions reached by the third party will be mandatory and will imply strict procedures and rules for their implementation. The non-binding dispute resolution stage has become popular as it facilitates the encounters of the parties, approaching them to a non-zero sum result. Procedures are still flexible, and parties can still enter the proceedings voluntarily and select the third party by mutual consent.

The increasing importance of non-binding dispute resolution methods is supported by a benchmark study of 200 of the top 500 design firms in the US, conducted by the Johnson & Higgins Construction Group with the aid of Arthur Andersen (Schriener, 1996). This study showed that engineering and design firms that use at least one of the three risk management programs: Total Quality Management (TQM), DART (i.e., mediation), or Partnering (Chapter 4) had the lowest professional liability losses and the lowest insurance premiums. Schriener (1999) reports, based on this study, that firms with a TQM program have 31% lower professional liability losses than those that do not.
Those using DART have 19% lower losses, and firms with formal partnering programs have 10% lower losses than those that do not.

These results support the efforts put forward by DPIC Cos. Inc., of Monterey, California, to promote the use of DART among the 7,300 design professionals it insures in the US and Canada (McManamy, 1994). Since 1991, DPIC has been encouraging the use of formal mediation to resolve disputes by offering policyholders a 50% reduction in their deductible for claims resolved using this DART. The rationale behind the offer is that the program will reduce legal and settlement expenses by preventing the “inevitable conflicts which arise [in construction], from becoming claims and lawsuits” (Hunter et al., 1995).

According to McManamy (1994), “Mediation Works!” has been a total success. During its first three years, DPIC reimbursed a total of $4.3 million in deductibles to its clients, yet it was able to lower its average legal expenses per closed claim from $22,000 to less than $18,000, and its average loss per closed claim from $116,000 to $103,600. In 1993 alone, DPIC reimbursed a total of $1.8 million on 236 claims. Simple calculations can help understand the economic benefits of this program for DPIC:

Average savings in legal expenses per claim:

\[
\text{from } \$22,000 \text{ to } \$18,000 = \$4,000
\]

Average savings in losses per claim:

\[
\text{from } \$116,000 \text{ to } \$103,600 = \$12,400
\]

Total average savings by DPIC per claim through mediation:

\[
\text{Total} = \$16,400
\]

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40 The program is called “Mediation Works!” (Hunter et al., 1995).

41 This reduction is capped at $12,500 (McManamy, 1994).

42 Although an attempt was made to contact DPIC directly to update the information from the ENR and Dispute Resolution Journal articles, time constraints did not permit any further investigation. However, the programs for promoting ADR were found throughout DPIC’s website (www.dpic.com) signaling that the effort continues to be successful both for the insurer, as well as for its clients.
Total reimbursement costs of deductibles to clients: (1993)

$ 1.8 million in 236 cases

Total = ($ 7,630)

Average net savings for DPIC per claim = $ 8,770
Average total net savings for DPIC in 1993 = $ 2.0 million

Thus, in 1993 DPIC spent $1.8 million dollars in the implementation of “Mediation Works!,” but was able to save a net average of $2 million dollars in legal and settlement expenses - a 100% return on investment. Although these calculations do not consider any direct costs associated with the implementation of the program, the benefits are large enough to understand its success. Since 1991, the percentage of DPIC clients using mediation in disputes has grown from 10% to 29% in 1995, and some local offices of DPIC report that 40% of their cases are being mediated (Hunter et al., 1995).

After reviewing this program that successfully uses a facilitator in the resolution of construction disputes and illustrates how non-binding procedures can promote win-win solutions for owners, designers, and contractors, this chapter will look at six non-binding DART approaches that are available to the parties in a construction project. Different alternatives are discussed, ranging from the involvement of a facilitator that helps disputants develop an acceptable settlement (Section 7.1) to the so-called Voluntary Settlement Conference (Section 7.6), in which parties present their cases to a retired judge that then recommends settlement options and exposes further possible outcomes. In between, the study also covers Advisory Arbitration (Section 7.2), Fact-Based Mediation (Section 7.3), Minitrial or Executive Trial (Section 7.4), and Summary Jury Trial (Section 7.5). All of these procedures have the following characteristics: the parties enter the proceedings voluntarily, a third party facilitates communication and the arrival at an agreeable solution, the third party is selected by mutual agreement, the results are not binding on the parties, the procedures are flexible, and in general, the costs are equally shared among the disputants. The summary of the findings is presented in Section 7.7.
7.1 Mediation and Conciliation

"I realized that the true function of a lawyer was to unite parties...
A large part of my time during the 20 years of my practice as a lawyer was occupied in bringing about private compromises of hundreds of cases. I lost nothing thereby — not even money, certainly not my soul"

(Gandhi, cited by Ide, 1993).

7.1.1 Mediation

Construction attorneys generally perceive mediation to be the most effective approach for achieving a wide range of goals, such as enhancing parties' understanding of disputes, opening channels of communication between disputants, minimizing future disagreements, and reducing the cost and duration of dispute resolution (Macneil et al., 1994). In fact, mediation typically requires relatively less money and time. The American Arbitration Association (cited by Macneil et al., 1994) stated that nearly half of the mediations reported to them are conducted in two days or less and fewer than 10% take more than six days. More than 50% cost $3,000 or less, and fewer than one tenth cost more than $20,000 (Macneil et al., 1994). The mediator is the figure that aids parties achieve these goals, by promoting an open discussion of the facts that have lead to the disagreement and serving as a guide for clear and honest communication. Such approach is crucial for the mediation process, specially considering that this DART could be the last step prior to the Arbitration or Litigation stages, which often result in a win-lose resolution.

An important aspect of mediation is that parties must be able to understand both sides of the problem to develop a non-zero sum solution (i.e., win-win solution). That is precisely why pre-hearing statements include 1) a narrative of the facts to let the mediator understand the background of the dispute; and 2) a description of each individual dispute with facts, contractual provisions, issues of law, and damages. Procedures then continue with an exchange of statements between parties and the mediator, something that allows sides determine if they are mediating the same dispute.
The exchange of statements usually starts with all parties meeting jointly in a caucus with a mediator. Being a skilled communicator and interpreter, this third party neutral is capable to quickly identify the strengths and weaknesses of the case at hand. During the meeting, each party’s advocate is asked to present a brief summary of their case. The mediator then recaps the presentations and the parties break up for individual meetings with the mediator. The private caucuses have three objectives: 1) they allow parties to reveal things they did not want to state in front of the adversary; 2) they provide a space for the mediator to ‘play devil’s advocate’ and present new scenarios; and 3) they allow each party to realistically assess settlement possibilities and opportunities.

The mediator then goes back and forth between the parties in an effort to develop an acceptable settlement for the dispute. Throughout the process, a mediator plays the role of a facilitator, a translator of the positions each party wants to explore without formally committing to them. In a way, mediation is simply an extension of a negotiated settlement, but one in which confidentiality is maintained throughout the process, and an offer is not such until it is made through the mediator.

The AAA (Guide, 1996) summarizes some of the benefits of mediation as follows:

- "Reduces the hostility between the parties and helps them to engage in a meaningful dialogue on the issues at hand;
- opens discussions into areas not previously considered or... developed;
- communicates positions or proposals in understandable ...terms;
- probes and uncovers additional facts and the real interests of parties;
- helps each party to better understand the other parties’ views and evaluations of a particular issue, without violating confidences;
- narrows the issues and each party’s positions, and deflates extreme demands;
- gauges the receptiveness for a proposal or suggestion;
- explores alternatives and searches solutions;
- identifies what is important and what is expandable;
- prevents regression or raising of surprise issues; and
- structures a settlement to resolve current problems and future parties’ needs."
Another significant and often overlooked aspect of mediation is that not all cases settle for money damages. In mediation parties can agree to numerous social and/or monetary obligations and commitments that can meet the needs and interests of all the parties, opening the door for non-zero sum solutions. For example, a contractor may agree to settle a dispute by performing additional work at cost (i.e., without any overhead or profit). In contrast, courts can only provide limited types of settlements, which often reduce the options available to the parties (e.g., money damages, injunctive relief, and declamatory judgments) (Meyer, 1995).

Mediation is a flexible technique and its only role is to guide parties towards dispute resolution. A mediator has no binding authority to render decision on any matter, and that is why real zero-sum disputes are not to be handled through mediation, and neither should constitutional issues or any case in which legal precedent must be set (Meyer, 1995).

The characteristics of mediation have allowed this technique to gain popularity in the United States as an alternative to arbitration and litigation. The 1997 edition of the American Institute of Architects' construction contract forms recommends mediation to solve disputes before arbitration can be pursued. Similarly, the new standard form of agreement and general conditions between owner and contractor for lump-sum projects of the AGC includes "...a menu of alternative dispute resolution which starts out with direct discussions between the parties and then moves to mediation" (ENR 2/1998). The reasons for this popularity are well founded. Meyer (1995) estimates that timely mediation can save 80% of court and counsel costs, and "...[Construction] industry studies indicate a 90% success rate [for mediation] in resolving disputes" (ENR 2/1998). This is mostly because of the fact that mediation offers a contextual alternative to litigation without compromising any side’s strategy or real interests. This data puts mediation in a competitive advantage against other methods of ADR.
A joint effort by Cornell University, Price Waterhouse, and the Foundation for the Prevention and Early Resolution of Conflict (PERC) established the differences between mediation and arbitration (see Table 11) as ADR mechanisms. The comparison is based on the views expressed in a survey by legal counsels of large US corporations.

Table 11 - Differences between Mediation and Arbitration (adopted from Lipsky et al., 1997)

<table>
<thead>
<tr>
<th>MEDIATION</th>
<th>ARBITRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predominantly triggered by parties.</td>
<td>Predominantly triggered by contract.</td>
</tr>
<tr>
<td>Widespread experience with the process.</td>
<td>Slightly less experience with the process, although still widespread.</td>
</tr>
<tr>
<td>Used in most types of disputes.</td>
<td>Used in a narrow set of disputes.</td>
</tr>
<tr>
<td>Extensive growth expected.</td>
<td>Growth will be limited if at all.</td>
</tr>
<tr>
<td>Parties perceive gain in process control.</td>
<td>Parties uneasy about control of arbitration.</td>
</tr>
<tr>
<td>Wide variety of sources for mediators.</td>
<td>Arbitrators come primarily from private providers.</td>
</tr>
<tr>
<td>Some uneasiness about qualifications of mediators.</td>
<td>Less confidence in arbitrators.</td>
</tr>
<tr>
<td>Used in almost all industries.</td>
<td>Usage in some industries much higher than others.</td>
</tr>
</tbody>
</table>

Despite some obvious benefits like a general applicability to different industries, the international community has only recently began to recognize formal mediation procedures as an important tool for businesses (Coates, 1997). Analyzing the case of the United Kingdom it results evident that their use of mediation is still very limited if compared to the US. The two largest British providers of mediation service (ADR Group and CEDR) each handle between eight and ten mediations per month or a total of 120 per year (Coates, 1997). By contrast, JAMS/Endispute, Inc., the largest US ADR provider, handled 17,000 cases in 1995 (Coates, 1997). Although these results do not specifically relate to construction, they help illustrate the different levels of implementation of mediation in these countries.

In spite of its late-entrant status, the UK does provide a helpful international example of the different applications of mediation in construction. Analyzing British engineering cases, Gould et al.,(1998) identified a varied spectrum of mediation styles
within the UK construction industry. It included informal, facilitative (or facilitated), institutionalized, and evaluative mediation (Figure 17).

![Diagram of Mediation Styles](image)

**Figure 17 - Spectrum of Mediation Styles in use within the Construction Industry in the United Kingdom**

In informal mediation, one of the parties incorporates a third party in an effort to begin/resume the negotiations, or break up a deadlock. This technique is commonly used in many dispute resolution processes, and sometimes the mediator is a common acquaintance or a recognized professional within the industry. Thus, sometimes all that it takes is a telephone call or brief intervention for the “mediator” to reestablish the talks.

In facilitative mediation, the third party mediator helps parties communicate and exchange information, but refrains from issuing an opinion as to the positions or a possible settlement. The mediator is not an arbitrator, and he/she has no power to impose a solution upon the parties. The role of the mediator is simply to promote communication, identify common grounds between the parties, and mediate a settlement.

Institutionalized mediation is in fact a facilitated mediation that is formally administered by an organization dedicated to ADR. With the increasing demand for
mediation in the UK, private organizations like the Center for Dispute Resolution have been established to provide, manage, and organize mediation procedures. An advantage of institutionalized mediations has to do with the expected improvement in the qualifications and expertise of the experts and third party neutrals (Gould et al., 1998).

The last style of mediation in the spectrum identified by Gould et al. (1998), evaluative mediation, occurs when the third party neutral, in addition to developing a common ground for the settlement, also issues an opinion as to possible settlements based on the information developed through the proceedings. In other words, if parties fail to mediate a resolution, the mediator issues a recommendation on the case.

Another illustrative example of international applications of mediation of construction disputes is found in Japan. In this case, the Japanese Construction Business Act requires that construction contracts oblige the parties to address the following issues and include them in writing in all construction contracts (Fenn et al., 1998):

1. "How to deal with changes in construction schedule or contract amount, or sharing and evaluation of loss where construction is changed or postponed or canceled;
2. How to share and evaluate losses in case of Acts of God or other force majeure events;
3. How to address changes in contract amounts or construction scope due to changes in materials or services;
4. Sharing of the liability for damage to third parties;
5. Interest, penalty and other damages in case of delay in performance of contractual obligations and other liabilities; and
6. Method of dispute resolution."

What Japanese authorities have identified is that, in the past, failure to include these elements in a construction contract has usually led to unnecessary disputes (Fenn et al., 1998).

In regards to the Japanese common procedures, both public and private contractual forms in Japan generally include one of two types of dispute resolution
procedures (Figure 18). In procedure A, both parties agree to solve their disputes through a third party intermediary designated in the contract, using either mediation or conciliation. If parties fail to reach a settlement, the dispute is brought to the Construction Disputes Resolution Committee (CDRC), similar to a Dispute Resolution Board. In procedure B, disputes are presented and settled by the CDRC from the beginning of the project, and no party can request arbitration before or during mediation or conciliation, unless there is a joint agreement to that effect (Fenn et al., 1998).

In both procedures, parties can agree to arbitration once the disputes reach the committee. Indeed, the Construction Disputes Resolution Committee was established by the Construction Business Act to provide consultation, mediation and dispute resolution through a number of regional and local committees located throughout the country.

![Diagram of Dispute Resolution Procedures in Standard Japanese Contracts](image)

Figure 18 - Dispute Resolution Procedures in Standard Japanese Contracts

In summary, the British and Japanese examples presented above, in conjunction with the research on the use of mediation in the US, all highlight the multiple benefits of mediation as a tool to reduce the likelihood of advancing towards binding procedures or litigation. Nevertheless, there are some drawbacks to the use of mediation, specifically in relation to the exchange of confidential information, which may expose weak aspects of
each case and reveal possible trial strategies (Macneil et al., 1994). In order to mitigate this problem, parties should include strict limitations on the use of information developed through this non-binding technique in the agreement to mediate. Also, the information provided to the mediator should be classified as confidential or not, to avoid having it disclosed without approval during the proceedings. This way the mediator still receives all the information to attempt to develop common grounds for settlement, but with the condition that a portion of it remains confidential as long as an agreement is not reached. Another risk of mediation results from its increasing use. Many researchers and experts in the topic fear that as mediation becomes the fallback dispute resolution technique for most construction conflicts, it will lose its flexibility and harmonious nature, being at risk of suffering the same destiny of arbitration (Macneil et al., 1994).

7.1.2 Conciliation

Conciliation defers from mediation in that the neutral party evaluates the dispute and then issues proposal for the resolution of the dispute that is presented to the parties for approval or rejection. Conciliation’s non-adversarial nature attempts to improve business relationships, and the AAA reports that 80% of the cases that attempt conciliation prior to litigation are settled (Langeland, 1995).

In the UK, the evaluative form of mediation identified by Gould et al.’s (1998) is in fact a conciliation procedure, as the mediator is expected to provide the parties with a written assessment of the dispute and the possible outcome. Gould et al. (1998) encountered that the engineering side of the construction business has preferred conciliation over mediation, and the Institution of Civil Engineers (ICE) has introduced this technique in their standard form of contract for engineering design work. Moreover, in the most recent Design and Build contract form from ICE, conciliation has been included as a mandatory step in the dispute resolution process.
In other parts of the world conciliation also receives important attention. The concept was already a part of New Zealand’s “Conditions of Contract for Building and Civil Engineering Construction” since 1987 (Hollands, 1989), in a process that followed some standard steps and rules; among them:

- "The process is voluntary;
- The conciliator mediates between the two parties in order to identify common grounds for a settlement;
- All discussions are confidential and information disclosed during the procedures can not be used in other proceedings should conciliation fail to achieve a settlement;
- Each party pays half of the costs of the conciliator;
- The conciliator may provide a non-binding written opinion as to the case and the probable outcome if the case is resolved through arbitration or court litigation."

(Hollands, 1989)

New Zealand’s version of conciliation also added the following adjustments and refinements to the Mediation procedure: (Hollands, 1989)

1) “Parties have ten working days to agree on conciliation, and choose a third party neutral from the date of the request.
2) Once parties agree on using this procedure, and select a conciliator, they have two months to reach a settlement or to have the conciliator issue a determination. After that period, either party is free to proceed with arbitration.
3) The decision of the conciliator becomes binding if ten working days pass and no party notifies the other in writing that it rejects the determination. So the non-binding decision becomes automatically binding and final to the parties after the specified period elapses.
4) A presiding judge may act as a conciliator if both parties agree to submit the case to him/her in that form. If the procedure fails to produce an agreeable solution, the judge remits the case to another judge for hearings and trial proceedings."

Hollands (1998) comments on these older conditions saying they are “...more practical and helpful...” with regards to outlining and defining the DART for the disputants, than the more recent FIDIC provisions for Amicable Settlement discussed in Chapter 2.
7.2 Advisory Arbitration (Non-Binding Arbitration)

In this non-binding dispute resolution procedure, parties select a third neutral player and then jointly and/or separately present the facts of their dispute. The mediator then proceeds to issue a non-binding decision or opinion as to the possible outcome if the dispute were brought before a judge or a jury (Findley, 1997).

The more complete form of this approach follows all the stages of arbitration, but it includes an advisory opinion for the parties as the final award. This procedure is known as Advisory Arbitration or Non-Binding Arbitration, and it can be an efficient way to put the parties in a position to evaluate a likely outcome of binding proceedings and provide them an opportunity to negotiate a settlement.

The procedure is very similar to a Mini-Trial (Section 7.4), with the benefit that the parties have an opinion from a neutral third participant. It could be said that the advisory arbitration is actually an arbitration in every sense, except that it does not bind the parties into accepting the decision of the neutral. Furthermore, the presentations and the procedures are relatively simpler than those for formal arbitration. Thus, this voluntary negotiating tool can be easier to practice and more relaxed than the binding arbitration.

Together with some other DART like mediation and conciliation, this approach can be of great help in complex disputes that combine technical and legal matters. Non-binding arbitration can provide the framework for the fact-finding effort and the exchange of information between the parties, while mediation can provide the communication and cooperation tools required in developing a settlement. Again, because these procedures are not binding, parties have more flexibility in defining and changing the role of the third party based on the specific requirements and characteristics of the dispute. This notion is supported by Beresford (1998), who argued that in order for
success to occur, alternative dispute resolution procedures cannot always be confined to a readily specified task:

"A mediator for example may need to have some ability to ascertain facts and to ascertain them without having to rely entirely upon the parties, whose objectivity is likely to be coloured. A fact finder may need some powers of persuasion. Rigid categories and restrictions may well be an obstacle to a realistic settlement" (Beresford, 1998).

A simpler form of non-binding arbitration is known as the Advisory Opinion. It is very similar to a Neutral Advisor (Section 6.1), except for the fact that the third party is not incorporated into the project from the beginning. In other words, the neutral party only starts to play a role when a dispute arises and parties decide to request an outside opinion. Groton (1997) suggests this arrangement can bring disputes closer to reality, as the neutral view encourages parties to focus on the issues and deal with the disputes before they evolve into something larger with greater mutual implications.

### 7.3 Fact-Based Mediation

This form of DART is a combination of Advisory Opinion and Mediation. When parties agree to use this approach, they select a mediator who proceeds to conduct a complete assessment of the facts and issues in dispute between the parties. The mediator analyzes each party’s point of view and reviews all the evidence and documents generated by the case. Once this information is processed, the mediator issues confidential and detailed reports to each party, where he/she outlines the potential costs of litigation, the probable outcomes of a suggested binding procedure, and a settlement recommendation for the case (Groton, 1997).

Groton (1997) also notes that an interesting feature of this non-binding procedure is that each report given to the parties is different from the other, except for the “bottom-line, dollar recommendation.” The mediator does not provide a unique solution for the
disputes, but he/she explores in each report to the parties possible alternatives for a settlement. The dollar settlement is common for it is part of the mediator’s assessment of the probable outcome if the dispute is taken to a binding procedure.

After this point, the mediator has hopefully been able to identify common grounds for a settlement, and he/she can proceed to mediate the talks between the two parties. The mediator retains the capacity to issue new recommendations and opinions via separate reports as the negotiations move forward. The mediation aspect of this procedure involves the same techniques described in Section 7.1.

7.4 Minitrial or Executive Trial

As all the other DART approaches mentioned in this chapter, the Minitrial is a voluntary, private, non-binding procedure that helps senior management understand the issues in dispute, assess the risks of proceeding with a binding approach, and hopefully negotiate a settlement agreeable to all parties.

In 1991 the American Bar Association defined this DART approach as follows (cited by Stipanowich, 1996):

"Minitrial is a private process in which counsel for the opposing parties present their cases in condensed form in the presence of designated representatives for each side who have authority to settle the dispute. Usually, an independent and impartial third party "advisor" is also present. After the presentation, the parties’ representatives meet to discuss settlement prospects. At some point, the third party advisor may offer certain non-binding conclusions regarding the probable adjudicated outcome of the case and may assist in negotiation."

Groton (1997) also defines the Minitrial as "... a brief presentation of each side’s ‘best case’ arguments in the presence of principal executives of both parties, whose
efforts are usually facilitated by a third party neutral,” offering a simpler explanation to the procedures involved in this non-binding and conciliatory technique.

The advantages of this approach are the achievement of non-binding results, an effective mutual participation, guaranteed privacy, and an overall control over the process (Zack b, 1997). Additionally, this system is relatively cheaper than litigation or arbitration, even though proceedings are carried out as if the case was being presented in front of a court or arbitration panel. This makes possible for managers to assess the strengths and weaknesses of their case and those of the opposing party, facilitating the decision to develop a settlement proposal.

The role of the third party neutral in the Minitrial is critical as in the other cases, since he/she is responsible for providing both parties with a thorough assessment of each case. Only then can she/he truly help the parties develop a solution acting somewhat like a mediator.

A variation to the Minitrial is presented by Findley (1997), who suggests that instead of having company executives as the members of the panel parties, they should include professionals with expertise in the specific field in dispute. This panel would resemble a Dispute Review Board (Section 6.3) in terms of the knowledge and neutrality of its members, with the difference that these would be working in front of representatives of both firms with the capacity to accept or reject a resolution. Moreover, the presentations would take place at a stage in the dispute process in which the next available options are binding arbitration or litigation. This alone should encourage representatives to design and accept a resolution based on the presentations.
7.5 Summary Jury Trial

According to Zack (b, 1997) this alternative dispute resolution method is very similar to a Minitrial, with the difference that a counsel from each party makes presentations in front of a "rented" jury of six people. Zack (b, 1997) describes the Summary Jury Trial as follows:

"Attorneys for both parties are each given 1 hour to summarize their case before a "rented" jury of six people ... After the case summaries have been presented, the [neutral advisor43] provides a short explanation of the law concerning the issues in dispute, and the jury retires to the jury room. The jury tries to reach a consensus opinion on the case. Failing that, individual juror views are presented anonymously."

Among the advantages of this technique, as outlined by Zack (b, 1997), the one-hour limitation on presentations forces attorneys to focus on the issues and leave aside complex legal issues and irrelevant evidence. This time frame also prevents the introduction of excessive evidence or the use of witnesses and experts, which greatly reduces costs when compared to court litigation. The matter is presented, and a decision is reached, in a matter of one or two days at the most. Finally, an important benefit is that decisions are not binding to the parties, yet they provide management with a valuable insight as to the strengths and weaknesses of their respective cases. This insight might result in new approaches to the negotiation and eventually into a satisfactory settlement.

In a nutshell, the results of this procedure provide disputants with an understanding of "how a potential jury will react to the case" (Zack b, 1997) but without actually taking the dispute to court. The non-binding decision of the jury, if reached, can improve the chances for a negotiated settlement to be achieved.

43 The neutral advisor is either a retired judge (rent-a-judge) or a sitting judge in order to guide the jurors in the legal considerations of the dispute (Zack b, 1997).
7.6 Voluntary Settlement Conference (Rent-a-Judge)

In this form of ADR, a retired judge acts as a neutral facilitator/mediator between the two parties during the negotiations. Zack (b, 1997) defines this as a fast and inexpensive approach for parties to reach an agreement under a legal framework, rather than through private negotiations.

The judge or magistrate is selected by mutual agreement of both disputants. Parties are free to select a judge with significant experience in the field of construction, both in managing complex cases and in determining and issuing decisions. The judge’s prior experience in construction disputes provides added benefits to this form on non-binding DART. In addition, parties are able to schedule conferences and follow-up meetings with the selected judge without the administrative and/or legal formalities of arbitration or litigation. This characteristic provides for a faster process.

Among the responsibilities of the judge are: 1) running the proceedings very much as a court process; 2) guiding the parties with regards to legal issues in the dispute; 3) suggesting tentative compromises; and 4) issuing advisory settlements subject to approval by the parties (Zack b, 1997). Treacy (1995) reports that in the Eastern District of New York, courts allowed this settlement judge to act as a mediator between the parties, following the procedures described in Section 7.1 to promote communication and develop common grounds in which to build an agreement. In order to maintain confidentiality during these conferences, the information developed through mediation is not allowed in court if a settlement is not reached and the case proceeds to litigation.

Some courts have implemented a similar procedure for pretrial motions and discovery in an effort to shorten the duration of the actual hearings. These court appointees known as Special Masters or Settlement Judges (Zack b, 1997) are appointed by the court to control the discovery process and resolve common pre-trial disputes. In
these proceedings, the court is involved in setting the responsibilities of the Master and reviewing the award. The costs of the Master are determined by the judge, who also determines how they will be shared by the disputants (Treacy, 1995). In the Eastern District of New York, this technique has been used in cases which involved large sums of money and the dispute is very complex (Treacy, 1995). The Master brings into the proceedings experience in the construction field and usually more flexibility in terms of schedule.

### 7.7 Summary

The Non-Binding Dispute Resolution stage is crucial in the DRL, for it is the last voluntary step before the conflict moves to Arbitration and/or Litigation; stages that result in increased use of economic and time resources, and relationship strains. Non-binding procedures are characterized by higher levels of formality when compared to previous stages in the DRL; however, they continue to preserve the flexibility, compared with the stages that follow. This chapter reviewed five important techniques that can be used to effectively and efficiently resolve disputes: Mediation, Conciliation, Advisory Arbitration, Fact-Based Mediation, Minitrial, Summary Jury Trial, and Voluntary Settlement Conference.

Mediation has gained importance in the resolution of disputes in the last few years. It rests in the following principles: the earlier the dispute is resolved, the less damage it causes; the individuals involved in the dispute are the ones most capable of coming up with the best solution to their problems; the parties involved in the dispute can best preserve their future relationships without resorting to an adversarial process; and people issues may impair the ability to communicate to resolve problems. The use of mediation offers the parties multiple benefits, such as: the ability to remain involved in the negotiation (Stage 2, Chapter 5), the chance of having a third party neutral that can
aid them develop solutions they might not have considered otherwise, the possibility of arriving to a settlement faster than in litigation, a significant cost reduction when compared to the litigation process, an increased likelihood of safeguarding the relationship of functional teams, and the opportunity for creative solutions and compromises (i.e., win/win).

Conciliation, another non-binding technique, resembles many of the principles of mediation, with the addition that the third party issues a non-binding recommendation, offering disputants information on the possible outcome if the case continues to arbitration or litigation.

Advisory Arbitration, also known as non-binding arbitration, follows all the standard procedures of Arbitration, yet it includes, as the final award, an advisory opinion as to the possible outcome if the case is presented to an arbitrator. Although this technique pays less attention to helping the parties communicate with one another, the advisory opinion can foster a new stage of negotiation where a settlement can be achieved without proceeding to arbitration. Fact-Based Mediation is a non-binding technique that combines the principles of Advisory Opinion and Mediation. The mediator assesses the facts and issues in dispute and then presents a different report to each party, where he/she outlines the potential costs of litigation, the probable outcomes of a binding procedure, and a settlement recommendation for the case. In Minitrial, each party presents its case to upper management and to a third neutral party. The presentation of the case helps management understand the issues in dispute, assess the risks of proceeding with a binding approach, and hopefully negotiate a settlement. A modification of the Minitrial is the Summary Jury Trial in which the counsel for each party makes presentations to a rented jury. This technique, as well as the Voluntary Settlement Conference (Rent-a-Judge), allows the parties to see how a potential jury or judge would react to the arguments being presented. In both of these two procedures, an advisory settlement is issued for approval and acceptance by the parties.
In the face of dispute, it would be unrealistic and ineffective to try to apply all of the techniques previously described. As discussed in earlier chapters, parties involved in a non-binding conflict resolution process must think about their needs, objectives, relationship with the opposing party, and the facts of the case before choosing the most appropriate technique. The techniques presented in this chapter can be organized in a continuum (Figure 19), beginning from less formality, more emphasis on the parties ability to solve the dispute, and continuous effort to achieve a win-win outcome (i.e., mediation); to increased formality, legal representation, and confrontation between parties (i.e., Summary Jury Trial). This continuum depicts the trajectory that if followed would lead towards the next stages in the DRL: Arbitration and/or Litigation, if conflicts are not effectively resolved in this stage. Chapter 8 introduces the Binding Stage, addressing both its strengths and limitations, as the last step in the DRL, before disputes proceed to Litigation.

![Figure 19 - Continuum of Non-binding Dispute Resolution Techniques](image)

- **Flexibility:** decreases along the continuum, less chances for win-win solutions
- **Formality:** increases as the techniques required more predefined steps
- **Third Party Role:** moves from a facilitator of communications to a judge or jury with only advisory opinion
- **Costs:** expenses should be expected to increase as the procedures become more complex
Chapter 8

STAGE 5 - BINDING DISPUTE RESOLUTION

This chapter describes the resolution procedures available in this stage of the Dispute Resolution Ladder (DRL). Arbitration is the most widely recognized binding ADR procedure and it is presented in Section 8.3 following the American Arbitration Association's (AAA) definition. Two variations of this technique are also discussed in this section: the Single Arbitrator Arbitration and Baseball Arbitration, together with an overview of the 1996 revisions of the AAA’s arbitration rules for building projects that highlight how this technique has been required to change and improve its effectiveness in the resolution of construction disputes.

In addition, the research identifies and discusses three other forms of binding, adjudicative dispute resolution procedures in use today within the construction industry: Med/Arb (Section 8.1), Adjudicator or Expert Determination (Section 8.2), and Shadow Mediation (Section 8.4). Of these alternatives to arbitration, Shadow Mediation represents an interesting possibility for parties in dispute, as it combines the advantages of mediation (Section 7.1) with those of arbitration (Section 8.3). However, the costs associated with this approach might not be significantly different than those of a long and
complex arbitration or litigation proceeding. Section 8.5 provides summary to this chapter.

8.1 Mediation/Arbitration (Med/Arb)

The least adversarial binding DART, Med/Arb, combines non-binding mediation with binding arbitration. In this technique the parties select a mediator and agree that the very same third party neutral will become arbitrator if they fail to reach a mediated settlement within a specific time frame.

However, the picture gets more complicated. As parties engage in Med/Arb negotiations, they need to understand that there are basic differences between traditional mediation and this innovative technique, specially because some conventional benefits of mediation are lost in Med/Arb cases. First, litigants lose the freedom to walk away from the process once they decide to proceed. Each party agrees to a stipulation confirming that if mediation does not succeed, the arbitrator retains jurisdiction to render a final and binding award.

Second, participants will find some problems associated to the disclosure of information during the mediation stage. Since the same third party could eventually become the arbitrator, each side will be careful to divulge confidential information that could later be used against them at the arbitration stage. Hence, parties may withhold information during mediation and limit the effectiveness of this initial stage and the chances for success. More importantly, parties may fail to take advantage of the benefits of mediation because arbitration is just around the corner. If this were the case, the effects would be actually the opposite as how this technique was design to work. That is why Hoellering (1997) states that it is best when mediation and arbitration are used separate, since “...each has its own purpose and ultimate morality.”
The Med/Arb notion is very popular in the East, given the Oriental tendency to seek a “harmonious” solutions that preserves the relationship rather than seeking what is legally “correct” (Ragan, 1993; Scott, 1995). Whereas Westerners seek an unbiased judge with no prior knowledge of the dispute, Asians look for a moderator who will not only end their dispute but also assist them in reaching a mutually agreeable solution. A clear example is found in China, where arbitration is combined with conciliation in the ongoing process of arbitration. An arbitrator hears the evidence and attempts to conciliate the parties, but if it fails immediately turns to arbitration (Chan E., 1997).

In Australia, the Commercial Arbitration Act 1984 contains a special clause which suggests the possibility of a “mediated” settlement between the parties before the arbitration proceeding begins (Hollands, 1989). The Act states:

"Power to seek settlement of disputes otherwise than arbitration. (1) Unless otherwise agreed in writing by the parties to an arbitration agreement, the arbitrator or umpire shall have the power to order the parties to a dispute which has arisen and to which the agreement applies to take such steps as the arbitrator or umpire thinks fit to achieve a settlement of the dispute (including attendance at a conference to be conducted by the arbitrator or umpire) without proceeding to arbitration or (as the case requires) continuing to arbitration.

(2) Where –
   a. an arbitrator or umpire conducts a conference pursuant to subsection (1); and
   b. the conference fails to produce a settlement of the dispute acceptable to the parties to the dispute

no objection shall be taken to the conduct by the arbitrator or umpire of the subsequent arbitration proceedings solely on the ground that the arbitrator or umpire had previously conducted a conference in relation to the dispute."

In other words, arbitrators are authorized by this Act to attempt to resolve the disputes by means other than arbitration. The arbitrator is free to decide on the steps to arrive at a resolution, including pre-trial conferences with the disputants. The parties in the dispute must accept his/her decisions with regards to this stage, but any settlement

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44 This Act is part of the Uniform Commercial Arbitration legislation in force in most States and Territories of Australia (Hollands, 1989).
must be accepted by both disputants. The second part of the clause, allows the “umpire” to proceed with arbitration if the settlement conferences fail to develop an agreeable solution, without having his/her powers affected in any way, because of the initial attempts to reach a agreement.

The arbitrator first attempts to mediate a settlement between the parties. Then, if unsuccessful, proceeds with binding arbitration. The double responsibility assigned to the arbitrator, has also been questioned in Australia (Hollands, 1989). Mr. G. H. Golvan, Barrister, referred to this problem as follows:45

“...to permit an arbitrator to conduct a mediation conference without prejudicing his entitlement to subsequently embark upon arbitration is a serious anomaly in the Act. Arbitrators should be most cautious, if not reluctant, to attempt to act in both capacities”

Hollands (1989) concludes though, that in Australia, this provision should be regarded in a positive way, and that it is unlikely that arbitrators would “...breach the rules of natural justice,” by hearing evidence and settlement proposals, or issuing final opinions on the issues before the arbitration proceedings take place. On the contrary, Holland (1989) argues that this provision encourages arbitrators to incorporate in the pre-trial motions, steps that are likely to promote an early settlement of disputes (i.e., exchanges of written expert testimonies and written summaries of each claim to improve each parties’ assessment of the case in dispute, or deferment of arbitration date to give parties a time to review and maybe attempt negotiation again).

8.2 Adjudicator/Expert Determination

This binding resolution consists on parties agreeing to refer their differences to an expert, and to be bound by the decision of that authority. This expert will make his/her

own inquiries and inspections into the matter, and will not rely upon the parties to select and present evidences to their arguments. According to Beresford (1998) the award by the expert, although binding, will normally be enforced as a contract, without the benefits of the direct enforcement that many countries have available for arbitration awards. The following example exhibits the application of this technique in the context of the UK’s construction industry.

In 1994, a report by Sir Michael Latham (Latham, 1994) on the state of construction procurement and contractual arrangements in the construction industry of the UK suggested the need for “expert adjudicators” with wide ranging powers to review and resolve construction disputes. According to Gould et al. (1998), this recommendation addressed the most important characteristics of a dispute 'resolver' in the construction industry – the need to be fast, decisive, and binding.

As a response to the conclusions issued by the Latham report, legislation in the UK has introduced the concept of the construction adjudicator (Gould et al., 1998). Part II of the Housing Grants, Construction, and Regeneration Act 1996 (Staniforth, et al., 1998) introduced the right for parties to construction contracts to call upon Adjudicators to solve disputes. This Adjudicator combines some of the features of the procedure we have identified as Expert Determination (Section 8.2) with some of Arbitration (Section 8.3). Figure 20, shows the dispute resolution procedure introduced by this Act, and the time-frame in which a resolution of the construction dispute should be expected.

Two interesting features are worth noting about the application of this ADR technique in the UK. First, this procedure is unilateral, so it can be initiated by one of the parties without the consent of the other at any time during settlement negotiations, simply by serving the seven-day notice shown in Figure 20. Once it is requested, the procedure is designed to provide a solution in less than two months. Second, the decision of the adjudicator is binding on the parties, but only for the remaining duration of the project,
and can be reversed through arbitration or litigation once the job is completed\textsuperscript{46}. In other words, adjudication provides an interim decision, which if unacceptable to one of the parties, can be reviewed and appealed in arbitration or court litigation. It would appear that the objective of this ADR approach in the UK is to provide for a fast, but not final, solution to the dispute in order to allow the job to continue without any further delays. Staniforth (1998) suggests that adjudication "...is likely to provide a relatively cheap catalyst for settlement" as parties will be encouraged to address the disputes and reach a settlement, before this procedure is initiated.

\begin{figure}[h]
\centering
\begin{tabular}{c c c}
\textbf{NOTICE OF DISPUTE} & \textbf{APPOINTMENT OF ADJUDICATOR} & \textbf{BINDING DECISION FOR THE REST OF THE PROJECT. It can be submitted to arbitration after final completion.} \\
7 days & 28 days, which can be extended once for another 14 days if the parties agree to do so & \\
\end{tabular}
\caption{Adjudicator Procedure for Dispute Resolution}
\end{figure}

Despite these advantages, the arbitration community has expressed their concerns towards this dispute resolution method which is neither "...a fish nor fowl nor good red herring" (Beresford, 1998). Two problems are inherent in this procedure. First, a reliable and knowledgeable adjudicator has to be found, agreed to, and appointed within seven days. This time frame might be too optimistic, specially since both parties have to agree initially on the person to be appointed. Second, some professionals question the ability of the adjudicator to provide just and reliable answers in less than two months (Staniforth, 1998), considering that construction disputes can be very complex, with many issues and

\textsuperscript{46} According to Gould (1998). However this same author points out that the exact details of the procedure were not yet finalized in 1998 when he wrote the report.
technical evidence that would require from the Adjudicator certain familiarity with the project in question.  

Because the Act has been in effect for less that a year, researchers suggest waiting to see how the industry will respond to this system before issuing a final opinion as to the strengths and weaknesses of Adjudication, but the introduction of this technique into a legal framework is expected to promote the use of this ADR technique. In fact, a 1994 study by Fenn et al. (1994) revealed that this type of dispute resolution mechanism was hardly ever used in the UK, however a similar report conducted in 1998 predicts a significant increase in the use of the adjudicator in the resolution of construction disputes (Gould et al., 1998).

Two additional examples of applications of this concept together with other DART are presented in this thesis. First, the use of an Adjudicator was incorporated in the Dispute Resolution Ladder of the World Bank for small projects in substitution for the design professional (Section 2.3.3). Second the Dispute Resolution Ladder for the Chek Lap Kok airport project in Hong Kong (Section 2.3.4) incorporated this type of third party with binding authority if mediations failed to provide a settlement. In this last application in Hong Kong, the decisions of the adjudicator where binding on the parties only through the duration of the project, and could be overturned by arbitration or litigation once the project was delivered, just like in the UK application described above. No applications of this technique were found in the US.

8.3 Arbitration

According to the American Arbitration Association (AAA Guide, 1996), arbitration is defined as "...a submission of a dispute to one or more impartial persons for

47 Because the Adjudicator is not incorporated in the project from the beginning, he/she will depend on
a final and binding decision. The arbitrators may be attorneys or business persons with expertise in a particular field.” This definition highlights three important characteristics of arbitration, which have made it the most common ADR technique throughout the world and across a wide array of industries:

- Decisions are impartial;
- Decisions are final and binding on the parties; and
- Decisions are issued by knowledgeable experts in the field in dispute.

Observing these characteristics of the proceeding, the AAA Guide (1996) also asserts that arbitrators should be selected based on the following basic attributes:

- Impartiality and objectivity;
- Dispute management skills;
- Experience with arbitration proceedings; and
- A strong academic background and professional or business credentials.

Because of the essential role played by the arbitrator, the issue of qualifications has been raised by a number of arbitration institutions throughout the world (AAA Guide, 1996 and Crowter, 1998). Harold Crowter, Chairman of the Chartered Institute of Arbitrators in the UK, commented on the matter by saying: “The future of arbitration is dependent on a number of factors, probably the most important of which is the quality of the arbitrators available to appoint” (Crowter, 1999). Myers (1994) complements this argument adding that as disputes become more complex, arbitrators will have to assume more active and fundamental role in the proceedings in order to guarantee efficiency and speed in the process, to save time and expenses.

In construction, arbitration is typically conducted by a panel of three arbitrators; one selected by each side and the third by mutual agreement or by the organization administering the proceedings (i.e., AAA). Parties may establish within their own contracts the size and organization of the arbitration panel, as well as any special rules they wish to include as part of their dispute resolution procedure. Parties may also choose information gathered from both parties to assess the issues and make a determination.
before hand the organization that will administer the proceedings (i.e., AAA), the location, and the codes and regulations that will be followed. As discussed in Chapter 2 (Section 2.2.2), arbitration has been the preferred alternative dispute resolution technique after the design professional’s determination in the traditional two-step DRL.

In order to adapt arbitration to the needs of the construction industry for a “speedier and more efficient process than litigation” (Arbittier, 1999), the AAA modified its construction arbitration rules in 1996. These changes originated partly because of the findings of the ABA survey presented in Chapter 2 (Stipanowich, 1996), but also in response to a continuous decline in filings of construction cases in the AAA since 1991. The new organization divided arbitration cases into three possible procedures:

- Fast Track Rules for cases up to $50,000;
- Regular Track Rules for all other cases, and
- Large Complex Track Rules for cases involving in excess of $1,000,000.

These procedures, each with a specific set of rules, are key to illustrate some of the problems experienced with arbitration in the resolution of construction disputes (Chapter 2). A summary of the key aspects of each of these new rules follows (based on Stipanowich, 1996 and Arbittier, 1999). It is instrumental to provide relevant information as to the changes introduced in response to the apparent decline in the use of Arbitration and the concerns expressed by the Bar in the above referenced survey.

**Fast Track Rules:**

With specially designed procedures for small construction cases, these rules apply to two-party disputes where no total claim or counterclaim exceeds $50,000. The

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48 Between 1983 and 1990, the annual number of AAA construction cases grew from 2,675 to 5,440. Since 1991 however, the number of cases continually declined through 1994, when it reached 3,564 cases. Part of the decline was attributed to less construction due to the recession of those years, but AAA also recognized that companies were finding other solutions for their construction disputes (i.e., minitrials, mediation, neutral advisors, or dispute review boards) (ENR, 7/1994).
different features included are supposed to expedite the process and not always require a physical encounter of the parties with the arbitrator. Some fast track rules are:

- Parties select the arbitrator from a list of available professionals supplied by the AAA. Selection must occur within seven days from transmission of the roster.
- The award must be rendered within 60-day time limit from the day the arbitrator is appointed, and seven calendar days from the close of the hearings.
- Preliminary conferences are by telephone or other electronic channel.
- There are strict limits for information exchange and discovery. Also there are limits on changes and extensions to avoid add-on claims and schedule modifications.
- The AAA can also serve notices to the parties by telephone or fax to expedite proceedings.
- For cases where no claim exceeds $10,000, the dispute is resolved with a one-day 'desk arbitration' by submission of documents without hearings, unless the parties or the arbitrator chooses to have them. In this case the arbitrator serves without fee.

Regular Track Rules:

These rules govern all cases not covered by the Fast Track or Large Track Rules. Regular track procedures are very similar to standard arbitration rules for construction projects, but they have been upgraded to improve the procedure in the areas of qualifications of the arbitrators, arbitrators’ authority, and speed of the proceedings.

Regular track rules offer the arbitrator great amount of power to affect the final results of the dispute. Other characteristics of this procedure are:

- Enhanced party input regarding arbitrator qualifications and other needs.
- Parties can change claims and counterclaims before the hearings are completed. After that, any different claim must receive arbitrator approval.
- To decrease administrative costs and expedite the process parties may only strike three names in single arbitrator cases and five names in multi-arbitrator cases from roster of arbitrators.
- The arbitrator has the clear ability to direct the production of information and the identification of any witnesses to be called.
- Arbitrators can control the order of proof, bifurcate proceedings, exclude cumulative or irrelevant testimony, direct parties to focus on relevant information, entertain motions to dispose of all or part of the claim, make preliminary rulings or interlocutory orders, and/or request offers of proof.
- Arbitrators have the explicit authority to make interim protective measures.
- The arbitrator is admonished to provide a ‘concise, written breakdown of the award. If requested, arbitrators can also provide a written explanation of the award.

49 The problems with Arbitration in construction disputes are discussed in Section 2.2.2.
• The arbitrator can correct any clerical, typographical, technical, or computational errors in the award upon the request. However, the merits of the award are final.

Large, complex case rules:

A supplement to the Regular Track Rules, the AAA rules for complex cases allow the parties to tailor the norms to the specific needs of the case in hand. However, the AAA increases its involvement in these cases, and any modification must be made before the selection of the arbitration panel. The $1,000,000 limit for the utilization of Large Case Rules excludes fees, interest, and attorney costs. Some important features of these rules are (Arbittier, 1999):

- Hearings will be scheduled in blocks of days.
- The AAA is required to conduct an administrative conference with the parties to: a) obtain additional information about the dispute; b) review and discuss parties’ views regarding the qualifications of the arbitrators; c) collect each party’s conflict statement in writing; d) introduce the use of mediation or other non-adjudicative methods.
- Arbitrators are required to have a minimum of ten years experience, with a strong reputation for impartiality, patience, good judgment, integrity and attentiveness.
- Three arbitrators are the norm, unless parties agree otherwise.
- Once arbitrators are selected, parties and panel must meet to review various issues such as the scheduling of hearings, extend of discovery, prospective witnesses, undisputed facts, and the possible use of non-adjudicative methods.
- Arbitrators will direct the production of documents and limit discovery.

A common feature of these three sets of rules is that they try to make arbitration more flexible and less costly. In any case, the industry continuous emphasis in the development of alternative methods to simplify the dispute resolution process. The following two sections, Single Arbitrator and Baseball Arbitration, are a good example of these developments.

8.3.1 Single Arbitrator

For small and simple cases, a single arbitrator instead of the panel of three experts proposed in Section 8.3 can be used. Parties follow the same arbitration rules, but save costs by having only one expert presiding over the hearings and deciding on the award.
The obvious disadvantage of single arbitrators is that the analysis and decision making rests on one person. The three-member panel provides a “check and balances” system that is not available here (Zack b, 1997); therefore the savings should be weighed against the risks of not having multiple viewpoints when reviewing questions and issuing the award.

As described in Section 8.3, the AAA has introduced a fast-track, single-arbitrator system to shorten the processing time of small and simple disputes\(^{50}\). A survey conducted by the AAA on over 2,100 projects between 1995 and 1997, to determine if this approach was resulting in actual benefits to the disputants, concluded that the new fast track single-arbitrator procedures had reduced the average number of days to resolve a dispute by 33 days, from a previous average of 159 days (DRT, 1997/1998).\(^{51}\)

### 8.3.2 Baseball Arbitration

In this form of ADR, a single neutral arbitrator is chosen to preside over the dispute. Both parties make a presentation of their cases, and propose their respective “best offer” for a settlement. The arbitrator then selects one of the two proposals, and settles the dispute. This type of ADR is called Baseball arbitration because it originated in the US Major Leagues to resolve contract negotiations between owners and players regarding salary conditions (Fizel, 1994).

The hearings under this approach are usually presentations, in which parties are limited as to the amount of exhibits they can submit and the number of expert witnesses.

\(^{50}\) This system is for disputes worth less than $50,000.00, which encompass 50% of the construction cases filed in AAA for arbitration (Stipanowich, 1996).

\(^{51}\) This survey also found that the average time to appoint an arbitrator from the day the case is filed had increased from 46 to 51 after the implementation of the new system. This delay was associated with the fact that parties have the option of selecting the single arbitrator by mutual consent from a list of candidates, rather than having the AAA impose one as in the old procedures (DRT, 1997/1998).
These characteristics result in a faster process and a binding decision. Furthermore, because the arbitrator can only select one of the two options, parties are encouraged to present "honest and reasonable" settlements (Zack b, 1997) to increase the likelihood that the arbitrator will select their option (AAA, 1994).

The main disadvantages of this approach is that it offers no flexibility and prohibits alternative solutions. The arbitrator is limited to one of the two options presented by the disputing parties (Zack b, 1997). According to Fizel (1994) Baseball arbitration is an imperfect yet viable method for resolving disputes. In the Major Leagues of Baseball this procedure has solved 9 out of 10 cases (Fizel, 1994), without the need of conducting a full arbitration proceeding as outlined in Section 8.3.

**8.4 Shadow Mediation**

In this last form of binding ADR, parties proceed with arbitration but retain a mediator (Section 7.1) who sits through the proceedings and reviews the information submitted to the arbitrators (Zack b, 1997). As the cases are presented before the arbitration panel and issues are defined through the discovery phase, parties can request that parts of the dispute be removed from arbitration, in order to attempt to settle them through mediation. If parties agree, they can actually stop the arbitration and submit the whole case to mediation. In addition, the "shadow mediator" can also recommend possible settlement options or areas of common ground where parties could negotiate a solution faster than through arbitration and possible in better terms for both disputants.

Although this procedure increases the cost of the proceedings by incorporating the mediator, it provides some flexibility to the arbitration process, in that it allows the parties to stop the binding approach and settle the dispute faster through mediation. By having in this system two different parties running each procedure (i.e., arbitration and
mediation), this technique overcomes the problems discussed in Section 8.1 with regards to the dual role assigned to the arbitrator in the Med/Arb technique.

8.5 Summary

Arbitration, the first binding step in the ladder, was initially introduced as an alternative to Litigation, to ameliorate the disadvantages of this procedure associated with high costs, time consumption, and strains in the relationship among the parties. However, as Arbitration became a popular dispute resolution technique, it lost many of the qualities that had supported its success; resembling more and more the litigation procedure, and suffering from many of its limitations: increased formality, cost, and tension between parties; and decreased control by the parties of the project and flexibility of outcome. Arbitration represents a definite move away from the “win-win” approach, and thus involves increased tension among parties, reduced communication, and an adversarial stance. Information exchange becomes significantly compromised, and legal representatives become the filters of such communication.

Nevertheless, despite the great resemblance between this stage and the final stage of litigation, Arbitration continues to preserve some valuable and unique traits. Its main advantage over litigation is the reliance on knowledgeable third party neutrals, with recognized expertise in the construction field. This expertise facilitates his/her understanding of technical and complex construction situations; thus, proving to be more effective than litigation in those disputes that require significant understanding of technical data, rather than in those where legal issues have become the center of the dispute, for which litigation might serve as a more adequate procedure.

Through the years, Arbitration has become one of many Binding procedures, which are often a modification of the initial form of Arbitration in an attempt to solve
some of its limitations, yet by doing so they have introduced a new set of challenges. Four are the techniques presented in this chapter, in addition to Arbitration. Med-Arb introduces mediation as a prior step to arbitration, yet sustains that the same expert will serve as the mediator and the arbitrator throughout the process. This role change has been the focus of concern to those involved in Arbitration. Shadow Mediation follows the same principles of Arbitration with the added figure of a mediator, who witnesses the arbitration process, and identifies possible areas for mediation that can be withdrawn from the arbitration process. The Adjudicator consists of an expert neutral-third-party, who performs a similar role than the Neutral Advisory, with the added attributes of being able to perform fact finding and issue a binding solution. Lastly, in Baseball Arbitration each party presents their “best case” and the arbitrator chooses the final settlement among those two options. The first two techniques represent an attempt to increase mediation during binding procedures, when compared to the traditional arbitration; the last two aim for a rapid closure of the dispute, paying less attention to enhancing the communication among the parties, moving dramatically away from a win-win solution. Chapter 9 will review the final stage in the DRL: Litigation, in which the win-lose approach is the basis of this procedure. This chapter will address a number of techniques that can help reduce the limitation of litigation.
CHAPTER 9

STAGE 6 – LITIGATION

Although not an alternative dispute resolution technique (DART), Litigation has been included as the last stage in the Dispute Resolution Ladder (DRL) for two reasons. First, it is one of the methods available to resolve disputes, although not the most effective and efficient one. Second, to be able to review a number of techniques that have developed within this stage that can lead to faster and more effective trials.

Litigation can be productive if it helps define legal and factual issues, building a foundation for fair and expeditious settlements, but “...the industry is still far from the day when any resolution of a dispute by the courts will leave no one a winner.” (ENR, 2/1999). In other words, the settlement of disputes in this stage will always involve one party losing its case, and another one winning. A court award that results in neither party winning at the expense of the other one (i.e., win/win) is not foreseeable in the near future. In litigation, there is limited flexibility to develop compromises and solutions that can maintain business relationships, and improve job-site productivity. Costs in this stage are high, and the resolution of the disputes can take a significant amount of time and resources. Therefore, litigation should be avoided by implementing one of the many DART reviewed in the previous chapters, or a combination of them in a DRL system.
This chapter reviews three techniques developed in the judicial system for use during court proceedings, which can improve the litigation process: Court Appointed Experts (Section 9.1), Judge Pro-Tem (Section 9.2), and Trial by Reference (Section 9.3). These techniques have been developed by specific courts in an effort to expedite the resolution of civil disputes. They also reinforce the idea that the construction industry must find ways to reduce the cost and time impacts of litigation, even if the court proceeding is already underway. Section 9.4 summarizes the findings of the Chapter.

9.1 Court Appointed Experts

Because in many construction disputes the conflict revolves around a technical question which requires an opinion from a qualified witness, an expert witness appointed by the court can significantly lower the costs for all parties. According to Zack (b, 1997), this approach starts with a definition of the issues that will require expert testimony and a cost-sharing plan to cover these expenses. Then, both parties present two or three possible experts to the court, and the judge selects one per issue. The experts work for the court, but the costs are covered by the disputants.

The benefits of implementing this technique are obvious in terms of costs, since both parties are sharing the expenses of only one expert testimony per issue. In addition, Zack (b, 1997) points out that the duration of the hearings is substantially reduced by making the parties agree before hand on the issues that require expert testimony and by eliminating testimonies from two or more experts from each party that might be conflicting.

The problems of this process are associated with the selection of this common expert (Zack b, 1997). If the judge fails to select the best expert from the proposed options, the overall proceedings will lack the technical depth required to resolve some of the more complicated issues. More importantly though, by having only one testimony,
the outcome may depend on it too much. Therefore, parties most pay close attention to
the pre-selection process of the experts and the presentation of the possible options to the
court.

A variation of this approach is reported by Treacy (1995) in the Eastern District of
New York. This court offers disputants the possibility of reviewing the matter in dispute
with an impartial attorney with expertise in the area in question. This neutral helps parties
organize the issues in dispute, explore possible settlement options, and can provide upon
request an assessment of the likely outcome if the dispute in brought to trial. Treacy
(1995) identifies three benefits of this procedure. First, it helps parties organize and learn
about their respective cause before the trial. Second, it can be less expensive than full
discovery proceedings and pre-hearing motions. An third, the information is kept
confidential, since the court does not participate directly in the proceedings. So, parties
are free to develop an alternative solution with the help of the expert if they so desire
once they have fully understood the case and issues in dispute.

9.2 Judge Pro-Tem

In an effort to expedite getting the dispute to trial, parties may agree to have the
courts appoint a temporary judge to preside over the trial (Zack b, 1997). This judge has
to be an attorney, and he/she gets all the powers of a presiding judge for the specific case.
Litigation then follows all stipulated court proceedings. In the United States, most States
authorize this procedure, and the temporary judge maintains jurisdiction over the case
until a final determination is reached, including any post-trial procedures.

By having a judge who is independent from court schedules, parties can initiate
the proceedings faster and schedule all the other hearings and motions with more
flexibility. This represents an advantage considering that the average court resolution
process in the US takes between 2 to 5 years (Findley, 1997). A disadvantage according
to Zack (b, 1997), at least in the United States, is the need to give up the right to a jury trial in case of disagreements with the award by the temporary judge.

### 9.3 Trial by Reference (Referee)

In this procedure, the court appoints a neutral expert to preside over the complete trial or specific sections of the proceedings. This expert does not have to be a lawyer, and the court upon appointment sets the authority of the expert and the rules of the procedure. The expert presents the legal and technical findings to the court, and the court issues judgment. The expert’s report is binding, but it can be appealed (Zack b, 1997).

This procedure provides for a faster procedure and privacy during discovery. In highly complex cases, it allows the courts to select an expert with the technical knowledge required to understand the issues and provide a faster ruling than that of a judge in a standard court proceeding. The disadvantages are that trial costs are not reduced, since both parties still have to prepare for trial, and the decisions are not final and can result in appeals and re-trials.

In the UK, the Court of the Official Referee (Gould et al., 1998) is an example of this procedure which has been incorporated and developed into a separate and specialized section of the judicial system. Most construction disputes are presented at this court, which is a branch of the Queen’s Bench Division of the High Court. Its purpose is to hear cases which require "...prolonged examination of documents or accounts, or a technical scientific or local investigation..." (Gould et al., 1998). According to Murdoch et al., (1992) around 80 % of the Official Referees’ business is related to construction. Within the Court of the Official Referee, a number of procedures have been developed to manage and expedite the settlement of its cases: (Gould et al., 1998)
• "Holding regular pre-trial summon or meeting with the parties in order to discuss and decide the manner in which the trial will take place.
• The use of timesaving written procedures.
• The use of a high level of computerization in the court to handle information and documentation. In 1996, the "...first 'paperless' trial was conducted before one of the Official Referees using a fully developed case management system."  
• Suggesting to parties to consider ADR before continuing with the court proceeding, if they have not done so yet."

Other examples of court initiatives to promote and use of dispute avoidance and resolution techniques in the UK include: (Gould et al., 1998)

1. Since December 1993, disputants are required to inform the courts during pre-trial meetings whether they have considered using alternative dispute resolution. In addition, since 1995, attorneys are required to file a pre-trial summary stating whether they reviewed with their clients alternative dispute resolution, and whether they considered that all or part of dispute could be addressed through an alternative technique.
2. A 1996 court direction gave judges an active role in the implementation of DART by authorizing them to stop proceedings and encourage the implementation of a DART (i.e., mediation), and to offer neutral evaluations of the case.

These initiatives support the idea that the increase use of DART in the UK is fueled by the court system. Two studies by public authorities, Lord Woolf (Coates, 1997) and Latham (1994), have provided the basis for the evaluation of litigation proceedings, and the introduction of alternative practices, confirms that part of the DART "revolution" in the UK is coming from within the judicial system. On this subject Coates (1997) concludes that "it is the judge-driven change to litigation culture that is likely to lead the breakthrough" in the implementation of DART.

9.4 Summary

Litigation is the final stage in the DRL, and although it is considered a costly, time consuming, and less flexible procedure, it is not an unlikely outcome for many construction projects, coming about when other DART have failed to work, when arbitration clauses are not incorporated in the contract, and/or when the nature of the conflict, characteristics of the dispute, or the relationship between parties, do not allow for intermediate steps; for example, in those situations where legal issues, rather than factual, are the main focus of the dispute. In this Stage of the Dispute Resolution Ladder, the final decision on the dispute is made by a third party.

Considering the many limitations of this stage, this chapter proposes three procedures to attempt to overcome the many challenges of litigation: Court Appointed Experts, Judge Pro-Tem, and Trial by Reference. Although these three options within the litigation process offer the parties in the dispute ways to save money and time, they fail to provide a flexible, cost-effective, and fast option to resolve disputes, for they all happen in a court context. An important advantage shared by the three options described above is the fact that the parties are required to meet, communicate, and agree on certain issues in order to implement any of them. This “forced” communication among the parties in preparation for, and during the court hearings, could open the door to new settlement options, and can stop litigation, or shorten the proceedings.
Chapter 10

Trends in Communication and DART

"The Internet has profoundly changed the way we do business, because it has forever changed the way we communicate. It has broken down traditional barriers within business environments; barriers between employees and managers, and between businesses around the world."

(Tucker, 1999)

10.1 The Internet

As we explore the ongoing evolution of DART, it is equally important to incorporate the advances happening in the communication industry (i.e., Internet), and how these technological advances are impacting, and will continue to impact, the future of DART models in the construction industry. As reviewed throughout this thesis, collaboration (Partnering, Chapter 4), and communication (Chapters 4, 5, 6, and 7) are the basis for many of the DART being used by the industry as part of the DRL (e.g., joint project schedule, cost control, negotiations, mediation, and third party neutrals). Therefore, any improvements that promote collaboration and communication in the construction process should result both in less conflict and in more effective and efficient resolutions of project disputes.

The use of the Internet to foster collaboration and communication in construction projects is reported to be gaining momentum by Engineering News Record (ENR,
According to this industry publication, new technology is providing owners, designers, and contractors with networking tools that should translate into "...impressive productivity gains" (ENR, 7/1998), as companies will be able to overcome communication barriers resulting from projects which are larger, more complex, and with participants distributed across different countries (Framework, 1999). New technology, coupled with the Internet, will allow participants to take project collaboration and communication to a higher level, for constant communication will be possible despite geographical distance between the parties. Web pages allow parties in the construction to "disseminate, find, review, and track information and messages from anywhere in the world" (Framework, 1999).

The Internet offers its users multiple strategic and organizational benefits that can be summarized as follows:

1. The Internet allows for increased contact time between the parties involved, thus preventing information from being disregarded and allowing feedback to be rapidly communicated to the different members of the project. Electronic communication allows for constant interchange of information, and thus reduces the turnaround of team decisions (Framework, 1999).

2. Constant communication translates into a greater integration among the construction team, and results in greater levels of collaboration among participants (Framework, 1999). Project Web Sites allow team members to collaborate and communicate 24 hours a day, thus reducing the chance that unaddressed problems can become future sources of dispute.

3. Greater communication and collaboration among team members reduces the chances that conflict will evolve into legal disputes, by allowing parties to achieve a greater understanding of the responsibilities, objectives, and limitation of each functional team (Framework, 1999).

4. New electronic tools allow for the centralization of information, and enhance the easy access to the data (Framework, 1999). Before Project Web Sites, disorganized flow of information was a major source of disputes (i.e., interference in the communication process).
5. Participants’ equal opportunity to use all the information available on the project promotes objective alignment, favors consensus, and reduces the adversarial nature of the construction process (Framework, 1999).

6. The organization and clear presentation of the flow of information translates into greater efficiency and reduces the time and money needed to complete the project.

Examples of the use of new technologies help illustrate the ongoing revolution in electronic media in the dispute resolution arena. Many court systems now allow counsel to appear at certain arguments by telephone and filings are accepted by fax. Video conference, virtual negotiation rooms and many other communication tools are changing how people interact with each other (Yamshon, 1994). Yamshon (1994) reports a case where he was able to mediate a settlement in which parties were separated by 1,500 miles and had never met. Yamshon (1994) concludes that if mediators keep in mind that their essential task is to get the parties to understand the thinking of the other members of the construction team and communicate with each other, DART and specially mediation, will remain effective and improve with the new technology, even if the traditional face-to-face contact has been substituted.

With these new technologies, participants are able to see progress photos minutes after they are taken; personal schedules are updated automatically as meetings are set; meeting minutes are distributed and corrected much faster than via fax; special forums run simultaneously on issues like RFIs, safety, change orders, payment requests and even partnering (ENR, 12/1995); drawings can be reviewed and corrected on-line, and users viewing or marking up drawings on the screen can review all the discussions and previous changes that have taken place regarding that particular portion of the project or detail. Project information is now available from anywhere in the world, and parties can

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54 California-based Cubus Corp. offers a product called ReviewIt with this feature (ENR, 7/1998).
have an up-to-the-minute project status at any given time. ENR reports that software vendor Bentley Systems Inc. found in a recent survey of architectural principals, that "94%...say collaboration throughout the building process is their primary automation goal over the next five years" (ENR, 7/1998). Bentley also found that owners are requesting architectural firms to integrate engineering data into the owner's data bases as part of the "...complete plant management system of the facility."(ENR, 7/1998)

MPInteractive, Gainesville, Fla., and Framework Technologies, Burlington, Mass., provide project specific websites designed to be the primary setting for communications between all the parties involved in the construction (ENR, 12/1995; Framework, 1999). All of the features described above are available to the users, including a search engine for the entire project database that leads participants to relevant areas of interest and the company is working on a site that would permit partnering sessions to be conducted on-line. From a 1998 survey conducted among users of its websites, MPI claims that companies had been able to reduce communication costs by 60% on average; that time to process Requests for Information (RFIs) was cut by as much as 80%; that employee productivity had increased 75%; and that time spent on administrative work was cut 30% on average (ENR, 7/1998).

MPI's President, Jonathan Antevy sees the Internet as a tool for the construction process that will simplify the way the industry communicates and exchanges information; the faster the information flows through the participants down to the people performing the work, the less money will have to be spent, and therefore the more successful the project will be for everyone (ENR, 12/1995).
10.2 Summary

As conflicts in construction have increased in complexity, and communication among the parties has incremented its importance as a conflict avoidance and resolution tool, it is only logical that the advances in communication technology, experienced in the last five years, will have a tremendous impact over the field of conflict avoidance and resolution in construction. As long as these new communication techniques allow for fast, precise, and multi-level communication exchange, the uncertainties and many of the sources of dispute in construction will be mitigated, and the basic objective of DART maximized. Improved capacity to enhance communication among parties, frequent communication, real time communication, integration of data, access to all project information from anywhere, reduced costs (e.g., lower travel expenses and insurance premiums), greater accountability (e.g., improved record keeping), and better informed decision-making, are among the more significant benefits the Internet will bring to the construction industry.

In this sense, it can be argued that technology and construction are moving in similar direction: finding more effective and less costly and time consuming ways to approach communication, management, and information. The paths of the communication revolution and the construction dispute resolution techniques have crossed, and new efforts are being made to find new ways to incorporate these tools more effectively into the construction process.
Chapter 11

CONCLUSIONS

"If your only tool is a hammer, then every problem will look like a nail. When it comes to construction industry, the main dispute resolution tool remains the lawyer, and every disagreement still looks like a lawsuits."

(ENR, 2/1999)

This review of the State of the Art of Dispute Avoidance and Resolution Techniques (DART) for construction and engineering projects has shown how this industry is reacting to the increasing waste of resources (e.g., monetary, time, and human) associated with the resolution of disputes using the court system, and for that matter arbitration. More importantly, it confirms the notion that the industry has begun to realize that conflict is just one of the many variables in construction. Thus, managing and resolving conflict should be added as a fourth key aspect to any project, together with Material, Labor, and Equipment. An effort has to be made to deal with and manage this additional variable efficiently and effectively. Parties must identify those characteristics that make their own projects prone to disagreements and implement a DART system to attempt to prevent them and/or mitigate their effects. Resources must be assigned to this task just as they are dedicated to scheduling or cost control. Accordingly, a project that efficiently and effectively manages its Material, Labor, Equipment, and Conflict will have much better chances of resulting in a successful venture.
After the review presented in this thesis, it is clear that the parties in the LNG Tank Project presented in Chapter 1 failed to manage disagreements and find alternative ways to resolve disputes. Instead, the Venezuelan SUB, the Italian GC, and the British DESIGNER simply relied on contract terms to address the problems that developed during the project execution. Now, two years after the project was finished, they are still involved in a large legal battle worth many times the original contract amount. Arbitration - the only dispute resolution technique included in the contract, is costing both parties more than 10% of the original contract value, and the final decision is now in the hands of a third party. Furthermore, proceedings are being managed and controlled by an agency external to both sides, located in a foreign country (i.e., US), who sets time frames and rules, and controls information exchanges. Direct negotiations to solve the claims are no longer encouraged, lawyers have taken over the dispute, and there is a significant amount of uncertainty with regards to the potential outcome, at least in the Venezuelan side.

The present work argues that the days of waiting until final completion to resolve disagreements between contractors, design professionals, and owners (like in the LNG case) are ending regardless of the location, type, or complexity of the project. Parties in construction and engineering endeavors are realizing the benefits of assuming a proactive role in dealing with conflicts and disputes. Parties are developing prevention techniques that foster an equitable allocation of risk, communication, improved contracts, and information flow addressing the basic characteristics of the industry which make it prone to disagreements. Court systems have witnessed a trend towards new methods that help overcome the difficulties of pre-trial hearings and motions during litigation. So, even when litigation is underway, the industry and the courts have produced innovative practices (i.e., Court-Annexed Procedures) that can reduce the negative effects of legal actions (e.g., cost, time, resources, and broken relationships). Parties have seen their roles evolve from passivity and reaction to a dynamic, proactive attitude in the pursuit of dispute avoidance and resolution. The benefits of this new approach (e.g., early
identification of problems, control over outcome, cost savings, and maintenance of relationships) far outweigh the ones of the practice of waiting until the project is completed.

The industry has made significant progress over the past decade in developing strategies and techniques to curb the adversarial attitude that had become a standard in most engineering and construction projects. Partnering and alternative dispute resolution methods, such as structured negotiations, mediation, Med-Arb, mini-trials, and dispute review boards have all become part of the industry. The use of these techniques has been pivotal for parties to anticipate potential disagreements and has revolutionized the traditionally defensive approach of the two-step Dispute Resolution Ladder reviewed in Chapter 2.

This ‘quiet revolution’ (Stipanowich, 1996) in dispute resolution has changed the whole scene of conflict in construction. The movement has placed emphasis on effective communication, informality, win/win approaches, and conflict avoidance, overturning the path of formalizing each process and legalizing design, relationships, information disclosure, and even problem solving. This confirms Treacy’s (1995) point that the industry is returning to “the old fashion way of doing business.”

Once understood that there is no unique formula to prevent or discourage disputes, the beauty of DART and every dispute prevention or resolution system is that they can be tailored to meet the specific needs and individual job characteristics of a given project and a given building team. This flexibility is invaluable for the construction industry, where each project is a new experience with new variables and different conditions. Parties can customize procedures and rules to what they consider the weak aspects of the project, helping to mitigate potential problems not covered in contract documents. The six-step Dispute Resolution Ladder (DRL) is the most appropriate model to base and design project actions based on specific project needs. However, this does not
mean that every project requires a six-step DRL. As it was shown in the example of the Hong Kong Chek Lap Kok airport (Section 2.3.4), projects can have a three or a four-step DRL to facilitate the resolution process, and they can even choose to have more than one DRL, based on contract size, disputed amount, type, or source of disagreement.

Among the different stages of the DRL, this thesis considers the prevention stage as an important asset which offers the greatest flexibility to the project, in terms of designing and incorporating dispute avoidance and resolution techniques. Once disagreements are a fact, Negotiation (Stage 2, Chapter 5) is identified as the most effective method to resolve disputes in terms of time, costs, satisfaction, minimization of further disputes, communication, and enhancement of job relationships. Given the definite move away from the adversarial approaches towards conflict avoidance and resolution, negotiation will certainly become the primary tool to deal with disagreements. The fact that Mediation, a form of facilitated negotiation, is becoming a highly favorable approach within the industry, confirms this conclusion.

Just as Negotiation and Mediation, this research concludes that the most efficient and effective ADR approaches utilize non-binding procedures, like Conciliation or Minitrials. These procedures are reinforced by the incorporation of a neutral third party that facilitates communication and/or helps resolve technical issues which might be part of the dispute. The Second, Third and Fourth stages of the DRL are the key sets of techniques available to avoid arbitration or litigation. Although these non-binding techniques might fail to result in a 100% resolution of the dispute, partial settlements are also important in mitigating the costs and time impacts. Furthermore, communication during these phases can help clarify issues and might open the door to new solutions which might have been overlooked during initial negotiations. The more adversarial approaches, Arbitration and Litigation, are ranked last, and considered the most expensive and least efficient in the DRL. The changes in the American Arbitration Association’s (AAA) Construction Arbitration Rules to make the procedure more
flexible and efficient, together with the emergence of binding techniques like Med-Arb and Shadow Mediation, support this movement away from binding adjudicative procedures.

Another important finding of this review relates to the role owners (i.e., agencies, private developers, and corporations) must play in the process of incorporating DART in the construction process. It was demonstrated that owners must expect disagreements during the construction process and should be prepared to manage and resolve them before they become disputes. Owners' participation in dispute prevention is critical. Also, their role acquires relevance in areas like risk assessment and allocation, preparation of documents, dispute resolution clauses, and cost and schedule control during all phases of construction. Contract specifications reviewed as part of this research provide examples as to this new role assigned to the owners (e.g., FIDIC, World Bank, CCDC, and Prevention Stage).

11.1 International DART Use and Applications

In regards to the international scenario, DART is receiving increasing attention worldwide. Examples presented in this thesis ranged from prevention techniques like risk sharing in a tunneling project in Canada to mediation and conciliation experiences in Hong Kong, to the introduction of the 'adjudicator' figure in the British legal system for construction disputes to expedite resolution of conflict. As an additional illustration of this exploding awareness, the AAA now has expanded beyond US borders to provide ADR services throughout the globe. As of today, 53 arbitration and mediation agreements have been reached between the AAA and ADR institutions in other countries (see Appendix A). The organization now arranges training for arbitrators and mediators, and claims to have been instrumental in promoting the spread of ADR, helping other countries develop national arbitration acts and ADR organizations.
The international activities of the AAA, and the growth it has experienced in its foreign caseload support some interesting conclusions:

- Although Arbitration remains the primary dispute resolution technique utilized throughout the world, Alternative Dispute Resolution has achieved worldwide recognition and it is being used more and more by the business community to solve disputes without litigation.
- The inclusion of mediation together with arbitration as the primary ADR services offered by the AAA, confirms the shift towards non-binding procedures for dispute resolution worldwide.
- Agreements of cooperation and collaboration are creating an international standard for ADR, and at the same time a network of organizations that will allow a faster and a more effective resolution of disputes and dissemination of new ADR techniques as they are developed.
- Collaboration between these organizations should encourage international corporations to continue solving their disputes through the implementation of DART.

Also in the international arena, this research demonstrates how cultural and market conditions can affect the type of dispute mechanism preferred by constructors and owners in different countries. The Netherlands' case (i.e., Frame Contract) shows how a pragmatic culture and an organized market discourage parties from engaging in adversarial relationships, letting them rely on trust to guarantee long-term commitments. Countries have favored certain types of ADR over others, as in the case of the Asian nations which have incorporated mediation and conciliation in their standard DRL before more adjudicative procedures. In Japan and Hong Kong, this thesis identified direct implementations of mediation in government agencies which can relate to the cultural background and traditions of 'harmony' and compromise. In the UK, more adversarial approaches such as adjudication have been incorporated into law and are expected to gain more adepts, while mediation has only recently become a recognized technique to resolve construction disputes.
Ultimately, many of the problems associated with construction disputes are not limited to particular geographic location or cultures. Disputes emerge whether the project is conducted in New Jersey, Calcutta, or the Caribbean, and the ‘pandemic’ nature of conflict in construction must be acknowledged to then be properly managed. Cultural differences will have a bearing as to the DRL to use, but the nature of the project and the participants will define the most appropriate system to use. For example, projects where parties come from different cultural backgrounds, including different languages, most address and foster from the beginning clear and continuous communication to reduce problems. Facilitated negotiations with third party neutrals who are familiar with these backgrounds will help overcome ‘people issues’ which can grow from this diversity.

11.2 Areas of Future Research in DART

The following areas of future research and development are recommended based on the findings of this work:

- Review how the changes in the Construction Arbitration Rules of the AAA have affected the procedures and what the response of the industry has been to these revisions.

- Incorporation of new communication technologies into conflict management and dispute resolution systems. New methods of dispute resolution are more and more based on methods of communication between parties and third-party intermediaries. With the advent of the Internet as a revolutionary communication channel, further research will need to shed light into the effects this new tool will have in the future deployment of ADR.

- In-depth review of international applications of DART in construction projects through the rules, conditions and experiences of ADR associations throughout the world, focusing on non-binding procedures like mediation and conciliation, to provide further understandings as to how culture and background can affect the implementation of these techniques.
Throughout the review of the literature, the author found a significant large quantity of applications of alternative dispute resolution in fields other than construction. A review of these applications in Health, Labor, Insurance, and Sports might provide insight as to other techniques which might be applicable to construction.

Little information on partnering experiences was found beyond the US, Canada and the UK. More research could shed light as to the reasons behind this apparent lack of interest towards this project philosophy in other parts of the world. New barriers on the implementation of partnering could be identified.

How the increasing use of mediation as a DART will affect the flexibility and reduce the advantages it has over more binding approaches, such as: Arbitration. The increasing use of this technique might lead to a formalization that could hampered the advantages it currently holds.

By defining the key characteristics and relationships in the most common delivery systems (e.g., Design-Bid-Build, Design-Build, and Build-Operate-Transfer) and the weaknesses of each one, specific dispute avoidance and resolution systems can be designed and proposed as basis for each type of project.

Because third-party interventions appear to be among the key features of ADR in construction, training programs should be developed to guarantee a level of professionalism and to provide these agents with the necessary tools to address and help resolve construction conflicts.

As a final conclusion, it is important to understand that the State of the Art of Construction Dispute Avoidance and Resolution Techniques as described in this Thesis will likely change and evolve as new methodologies are designed and successfully implemented; as new research uncovers techniques already in use, but not reported, and as technology and innovation in communications open the door to more collaborative environments of operation. The fact that researchers are not able to replicate the construction process in order to study different techniques like in manufacturing, adds to
the need for creativity and improvement of methods for each project. However, the following principles remain the same:

- Adversarial approaches can lead to excessive waste of resources and lost relationships.
- The industry has developed a significant quantity of techniques which are alternatives to litigation for the resolution of construction disputes.
- Prevention of disputes is far more efficient than trying to resolve them.
- The nature of construction conflicts and disputes requires flexibility.
- Third party intervention to promote communication and/or resolve technical issues address common sources of conflict in construction and therefore can be highly effective.
- Creativity should take precedence over a prescribed list of accepted procedures. Parties must learn about what techniques are available and choose and modify those that best fit their needs.

In conclusion, in the past decade, dispute resolution in the construction industry has evolved from private adjudication (i.e., arbitration) to voluntary techniques and approaches based on communication and collaboration, aimed primarily at avoiding open conflict and allowing the parties to develop a mutually agreeable settlement. This evolution is common to the construction industries of a number of countries. No longer is the only dispute resolution tool a lawyer. In fact, many DART still make use of this agent (i.e., Minitrial and Settlement Conferences), but in a non-adversarial environment that fosters the resolution of disputes faster, cheaper and without straining the relationships to the point where no further work together is possible.
References


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[Hoffman, 1999] Hoffman Construction, (1999), Downloaded from the web on April 11, [www.hoffmanconstruction.com](http://www.hoffmanconstruction.com)


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Appendix A

The following list provides information regarding individuals, academicians, and organizations throughout the world who are involved with Alternative Dispute Resolution. For each country, the available information is broken into three categories. The category in the first column, provides names of individuals and academicians who have conducted country-specific research in the area of construction ADR. The second column provides contact information for Arbitration Institutions of each country. Because the widespread use of arbitration in the construction industry as an alternative to court litigation, these institutions should be an important source of information for any further research in this field. When the contact information was not found (e.g., address, and telephone), nothing was entered in this column, even though the next column might present the names of Arbitration or ADR organizations in the respective country.

Finally, the third column provides an insight as to the extent arbitration is becoming an integrated and international dispute resolution system. In this column, Cooperation and Arbitration Agreements between the American Arbitration Association (AAA) and ADR Institutions in these countries are presented, specifying the date of the agreement and the type (e.g., cooperation or arbitration). Of the 54 countries identified here, other than the United States, 37 of them have some form of agreements with the AAA, which might suggest a high degree of integration among the different institutions working in this pseudo-judicial system.

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### ARGENTINA

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<th>Individuals and Organizations in the field of ADR research</th>
<th>International Arbitration Institution</th>
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<tr>
<td></td>
<td>Bolsa de Comercio de la ciudad de Buenos Aires. Tribunal de Arbitraje General 25 de Mayo y Sarmiento. Buenos Aires. Tel: (541) 312-5267</td>
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<tr>
<td></td>
<td>Camara Argentina de Comercio. Av. Leonardo N. Alem 36 (1003) Buenos Aires. Tel: (541) 331-8051, Fax: (541) 331-8055</td>
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### AUSTRALIA

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<td>Deepak Bajaj, Faculty of Design, Architecture &amp; Building, Univ. of Technology, Sydney. PO Box 123, Broadway, NSW 2007, Tel: 023308723, Fax: 023308877, Email: <a href="mailto:D.Bajaj@uts.edu.au">D.Bajaj@uts.edu.au</a></td>
<td>Australian Center for International Commercial Arbitration ACICA. 6th floor, Building B World Trade Centre Melbourne Victoria 3005. Tel: (61) (3) 614-2381, Fax: (61) (3) 629-3753 <a href="http://www.acica.com.au">www.acica.com.au</a></td>
<td>C: Australian Center for International Commercial Arbitration, April 18, 1991</td>
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<tr>
<td>Vicky Watts, Dept. of Architecture &amp; Building, Univ. of Melbourne, Parkville 3052. Tel: 033446429</td>
<td>Australian Chamber of Commerce. P.O. Box E139, Queen Victoria Terrace Canberra ACT 2600. Tel: (61) (62) 73-2381, Fax: (61) (62) 73-3646</td>
<td>C: Australian Chamber of Commerce, May 11, 1949</td>
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<tr>
<td>The Australian Institute of Project Management. Tel: 2-9960-0058, Fax: 2-99660-0052</td>
<td>Australian Commercial Disputes Centre ACDC. Level 4, Remington Centre 50 Park St., Sydney N.S.W.2000. Tel: (61) (2) 267-1000, Fax: (61) (2) 267-3125 <a href="http://www.austii.edu.au/au/other/acdc/">www.austii.edu.au/au/other/acdc/</a></td>
<td>C: Australian Commercial Disputes Centre, July 18, 1989</td>
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<td>Dispute Resolution Centre, Bond University, Gold Coast. Tel: 617-55952039 <a href="http://www.bond.edu.au/Bond/Schools/Law/centres/DRC">www.bond.edu.au/Bond/Schools/Law/centres/DRC</a></td>
<td>Institute of Arbitrators Australia lArbA. 6th Floor, Building B World Trade Centre, Melbourne Victoria 3005. Tel: (61) (3) 614-1800, Fax: (61) (3) 629-3753 <a href="http://www.instarb.com.au">www.instarb.com.au</a></td>
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<td></td>
<td>Arbitration Centre of the Federal Economic Chamber, Wiedner Hauptstrasse 63 P.O. Box 190 A-1045 Vienna. Tel: (43) (1) 50105-4398, Fax: (43) (1) 50206-250/270</td>
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<tr>
<td>BELGIUM</td>
<td>Belgian Centre for the Study and the Practice of National and International Arbitration (CEPANI), 8 Rue des Sols 1000 Brussels. Tel: (32) (2) 512-6541, Fax: (32) (2) 515-0999</td>
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<tr>
<td>BRAZIL</td>
<td>Brazilian Centre of Arbitration. Avenida General Justo 307, Piso 4, Rio de Janeiro</td>
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<td>BULGARIA</td>
<td>Bulgarian Chamber of Commerce and Industry Court of Arbitration. 11-A Stamboliisky Blvd. Sofia. Tel: 87-26-31, Fax: 87-32-09</td>
<td>C: Bulgarian Chamber of Commerce and Industry Court of Arbitration, October 22, 1985 T</td>
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<tr>
<td>BURKINA FASO</td>
<td>Chambre de Commerce, d'Industrie et d'Artisan du Burkina Faso. BP 502 Ouagadougou Tel: 306-114/115; 311-266/267, Fax: 306-116</td>
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### CANADA

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<tr>
<td>Mr. Stephen Revay, Revay &amp; Associates Ltd, 4333 St. Catherines St. W, Montreal, Quebec, H3ZIP9, Tel: 514-932-2188</td>
<td>British Columbia International Commercial Arbitration Centre. 670-999 Canada Place, Vancouver BC V6C 2E2. Tel: (604) 684-2821, Fax: (604) 641-1250</td>
<td>C: British Columbia International Commercial Arbitration Centre, February 2, 1987</td>
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<td>Quebec National and International Commercial Arbitration Centre. Centre Edifice La Laurentienne 500 Grande-Alle EST, rez-de-chaussée, Quebec Que G1R 2J7. Tel: (418) 649-1374, Fax: (418) 649-0845</td>
<td>A: Quebec National and International Commercial Arbitration Centre, January 13, 1989</td>
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<td>Alberta Arbitration and Mediation Society. 408 McLeod Building 10136-100 St. Edmonton Alb T5J 0P. Tel: (403) 426-0650; (800) 232-7214 (in Alberta), Fax: (403) 425-4556</td>
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<td>Arbitrators' Institute of Canada. 234 Eglinton Av. East, Suite 602, Toronto Ont M4P 1K5. Tel: (416) 487-4447, Fax: (416) 487-4429</td>
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<td>Canadian Arbitration, Conciliation and Amicable Composition Centre. Univ. of Ottawa c/o Faculty of Law, Civil Law Section, Ottawa Ont K1N 6N5. Tel: (613) 232-1476, Fax: (613) 564-9800</td>
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<td>Chamber of Commerce of Canada. 1080 Beaver Hall Hill, Montreal P.Q.</td>
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<td>Pacific Private Adjudication Inc. c/o Blake, Cassels &amp; Graydon. 1700-1030 West Georgia St., Vancouver BC V6C 2Y3. Tel: (604) 631-3300, Fax: (604) 631-3305</td>
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<td>Vancouver Maritime Arbitrators Association. Room 205, 355 Burrard St., Vancouver B.C. V6C 2G8. Tel: (604) 681-2351, Fax: (604) 681-4364</td>
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### CHILE

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<td>CHINA</td>
<td>China International Economic and Trade Arbitration Commission. 1 Fu Xing Men Wai St., Beijing. Tel: 862966; 866118, Fax: 8011369</td>
<td>C: Beijing Conciliation Centre, May 26, 1992</td>
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<td>China Maritime Arbitration Commission. 1 Fu Xing Men Wai St., Beijing. Tel: 8013344; 866118, Fax: 8011369</td>
<td>C: Republic of China, May 6, 1992</td>
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<td>COLOMBIA</td>
<td>Bogota Chamber of Commerce Commercial Arbitration and Mediation Centre. Carrera 9°, No. 16-21 Piso 4, Bogota. Tel: (57) (1) 243-3474; 334-7900 x274, Fax: (57) (1) 284-7735</td>
<td>C: Bogota Trade Arbitration and Conciliation Centre, September 14, 1992</td>
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<td>CROATIA</td>
<td>Cuban Chamber of Commerce Foreign Trade Arbitration Court. 661 Calle 21 Havana 4. Tel: 30-2643</td>
<td>C: Croatian Chamber of Commerce Permanent Arbitration Court, October 27, 1993</td>
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<td>CZECHOSLOVAKIA</td>
<td>Arbitration Court of the Czechoslovak Chamber of Commerce and Industry. Argentinska 38, 170 05 Prague 7. Tel: (42) (2) 87-5216</td>
<td>C: Czechoslovak Chamber of Commerce and Industry, March 29, 1989 T</td>
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<td><strong>DENMARK</strong></td>
<td>Individual and International Arbitration Institution Cooperation</td>
<td>Danish Committee of International Arbitrators c/o Danish National Committee of the International Chamber of Commerce. <strong>Borsen DK-1217 Copenhagen K.</strong> Tel: (45) 33-91-2323, Fax: (45) 33-15-2266</td>
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<td>Danish Institute of Arbitration (Copenhagen Arbitration). <strong>Frederiksbergade 1,3 DK-1360 Copenhagen K.</strong> Tel: (45) 33-13-3700, Fax: (45) 33-13-0433</td>
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<td><strong>ECUADOR</strong></td>
<td>Individual and International Arbitration Institution Cooperation</td>
<td>Camara de Comercio de Quito. Apartado 202, Avenidas de la Republica y Amazonas. Quito</td>
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<td>Regional Centre for International Commercial Arbitration Cairo. Tel: (20) 340-1335/1336/1337</td>
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<td><strong>EGYPT</strong></td>
<td>Individual and International Arbitration Institution Cooperation</td>
<td>London Court of International Arbitration. 30-32 St., Mary Axe, London EC3A 8ET. Tel: (44) (71) 626-7962, Fax: (44) (71) 621-1445</td>
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<td>Manchester Chamber of Commerce and Industry.Tel: (44) (61) 236-3210</td>
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<td>Chatered Industry of Arbitrators. 24 Angel Gate, City Road, London EC1V 2RS. Tel: (44) (71) 236-8761, Fax: (44) (71) 263-5204</td>
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<td><strong>FINLAND</strong></td>
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<td>Central Chamber of Commerce of Finland Board of Arbitration. Fabianinkatu 14B, P.O. Box 1000 00101 Helsinki. Tel: (358) (0) 65-0133, Fax: (358) (0) 65-0303</td>
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<td>Assoication Francaise de l’Arbitrage. 2 Rue de Harley 75001 Paris. Tel: (33) (14) 563-4570</td>
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<td>Comite Francaise de l’Arbitrage. 5 Rue de Stockholm 75008 Paris. Tel: (33) (14) 239-3130, Fax: (33) (14) 387-0952</td>
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<td>Euro-Arab Conciliation, Arbitration and Expertise System. 91 Rue Lauriston 75116 Paris. Tel: (33) (14) 553-2012</td>
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<td>ICC International Court of Arbitration. 38 Cours Albert 1er 75008 Paris. Tel: (33) (14) 953-2828, Fax: (33) (14) 225-9740</td>
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### GERMANY

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<td>Deutsche Institution für Schiedsgerichtbarkeit. <strong>Schedestrasse 13 5300 Bonn 1. Tel: (49) (228) 21-0023/24, Fax: (49) (228) 21-2275</strong></td>
<td>C: Deutsche Institution für Schiedsgerichtbarkeit, June 15, 1992</td>
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<td>Berlin Court of Arbitration. <strong>Invaliden Strasse 120/121 Postfach 31 O-1040 Berlin. Tel: (49) (30) 281-5026/5036, Fax: (49) (30) 281-6005</strong></td>
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<td>German Maritime Arbitration Association. <strong>Ballindamm 26 D-2000 Hamburg 1. Tel: (49) (40) 32-1783, Fax: (49) (40) 32-7569</strong></td>
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<td>Hamburg Chamber of Commerce Arbitration Court. <strong>Adolphsplatz 1 D-2000 Hamburg 11. Tel: (49) (40) 361-38142, Fax: (49) (40) 361-38401</strong></td>
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<td>Greek Arbitration Association. <strong>102 Solonos St. Athens 10680. Tel: (30) (1) 360-4402, Fax: (30) (1) 363-4814</strong></td>
<td>A: Greek Arbitration Association, December 20, 1887</td>
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### HONG KONG

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<td><strong>Colin Wall, Managing Director, Commercial, Mediation &amp; Arbitration Services Ltd.</strong> Suite 1206, Workingview Commercial Building, 21 Yiu Wa St., Causeway Bay. Tel: 010-852-2575-5667</td>
<td>A: Hong Kong International Arbitration Centre. 1 Arbuthnot Road Central. Tel: (852) (5) 525-2381, Fax: (852) (5) 845-2171</td>
<td>A: Hong Kong International Arbitration Centre, August 26, 1991</td>
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<td>Commercial, Mediation and Arbitration Services. <strong>Suite 1901 Yue Xiu Building 160-174 Lockhart Road Wanchai. Tel: (852) 591-0320</strong></td>
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<td>HUNGARY</td>
<td>Hungarian Chamber of Commerce Arbitration Court. Kossut Lajos ter 6-8 1055 Budapest V</td>
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<td>IRELAND</td>
<td>Dr. N. Bunni, 42 Thomandy Road, Howth, Co, Dublin EIRE</td>
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<td>A: Netherlands Arbitration Institute, Schouwburgplein 30-34, P.O. Box 22105 3003 DC Rotterdam, Tel: (31) (10) 404-2200, Fax: (31) (10) 404-2333</td>
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<td>NEW ZEALAND</td>
<td>John Boon, UNITEC Institute of Technology, Private Bag 92025, Auckland. Tel: 649-815-2901. Email: <a href="mailto:jboon@unitec.ac.nz">jboon@unitec.ac.nz</a></td>
<td>Arbitrators' Institute of New Zealand. 16 Palmer St. P.O. Box 1477 Wellington 1. Tel: (64) (4) 854-178, Fax: (64) (4) 857-224</td>
<td>C: Arbitrators' Institute of New Zealand, December 22, 1992</td>
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<td>NIGERIA</td>
<td>Association of Arbitrators of Nigeria. Gbadel Chambers. 141 Igbosere Road P.O. Box 6624 Lagos. Tel: (234) (1) 820-885; 848-379</td>
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<td>NORWAY</td>
<td>Jan Einar Barbo, Institute of Private Law, University of Oslo, Karl Johansgt 47, 0162, Oslo</td>
<td>Arbitration Institute of The Oslo Chamber of Commerce. Drammensveien 30 0255 Oslo 2. Tel: (47) (2) 557-400, Fax: (47) (2) 558-953</td>
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<td>A: Singapore International Arbitration Centre, May 18, 1992</td>
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<td>Mr. George Tan &amp; Partners, No 1 Colombo Court, #09-26/27 0617. Tel: 3373022, Fax: 3372132 Email: <a href="mailto:Chantang@singnet.com.sg">Chantang@singnet.com.sg</a></td>
<td>Mr. Raimond Chan, Chan Tan &amp; Partners, No 1 Colombo Court, #09-26/27 0617. Tel: 3373022, Fax: 3372132 Email: <a href="mailto:Chantang@singnet.com.sg">Chantang@singnet.com.sg</a></td>
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<td>SOUTH AFRICA</td>
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<td>Rob Pearl, Dept. of Construction Economics, Univ. of Natal, King George V, Natal. Tel: 027-31-260-2687, Fax: 027-31-260-1252 Email: <a href="mailto:Peral@superbowl.und.ac.za">Peral@superbowl.und.ac.za</a></td>
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<td>James J Myers, Gadsby and Hannah, John Uff, Center for Construction Law &amp; Management, Kings College, London, United Kingdom. (071) 873-2446</td>
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<td>Peter Fenn, Department of Building Engineering, UMIST Manchester M60 1QD United Kingdom 061-200-4233</td>
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<td>American Consulting Engineers Council, Tel: 212-484-4000. (Partnering)</td>
<td>Center for Public Resources, 366 Madison Avenue, New York, NY 10017 (212) 949-6490, (212) 949-8859</td>
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<td>American Society of Quality Control, Design, and Construction Division, Tel: 800-248-1946. (Quality Connection)</td>
<td>Construction Industry Institute, 3208 Red River, Suite 300, Austin, TX 78705 (512) 471-4319, (512) 499-8101</td>
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<td>American Society of Civil Engineers, Tel: 212-705-7496 (Partnering)</td>
<td>Business Roundtable, 200 Park Avenue, New York, NY 10166-0097 (212) 682-6370</td>
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<td>American Subcontractors Association, Tel: 703-684-3450 (Partnering)</td>
<td>Construction Industry Presidents Forum, 345 Warwick Ave., Douglaston, NY 11363 (718) 631-0827</td>
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<td>Associated General Contractors, Tel: 703-684-3450 (Partnering)</td>
<td>American Society of Civil Engineers, 345 East, 47th Street, 3rd floor, New York, NY 10017 (212) 705-7391, (212) 980-4681</td>
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<td>Construction Industry Institute, Tel: 512-471-4319 (Numerous Videos and Publications on Partnering)</td>
<td>National Construction Dispute Resolution Committee, 140 West 51st st 9th floor, New York, NY 10020-1203 (212) 484-4000, (212) 307-4387</td>
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<td>DPIC Companies, Tel: 408-649-5522 (Communique Newsletter)</td>
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<td>FMI, Tel: 303-377-4740 (Partnering)</td>
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<td>John Wiley &amp; Sons, Tel: 800-225-5945 (Partnering)</td>
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<td>U.S. Army Corps of Engineers, Tel: 202-761-0018 (Numerous Publications on Partnering)</td>
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