DISPUTE SETTLEMENT

GENERAL TOPICS

1.1 Preface and Introduction
The **Course on Dispute Settlement in International Trade, Investment and Intellectual Property** consists of forty modules.

The designations employed and the presentation of the material do not imply an expression of any opinion whatsoever on the part of the United Nations concerning the legal status of any country, territory, city or areas or of its authorities, or concerning the delimitations of its frontiers or boundaries. In quotations from the official documents and the jurisprudence of international organizations and tribunals countries are designated as reported.

The United Nations holds copyright to this document. The course is also available in electronic format on the UNCTAD website ([www.unctad.org](http://www.unctad.org)). Copies may be downloaded free of charge on the understanding that they will be used for teaching or study and not for a commercial purpose. Appropriate acknowledgement of the source is requested.

UNCTAD/EDM/Misc.232/Add.30

Copyright © United Nations, 2003
All rights reserved
I. PREFACE TO THE COURSE

During my tenure as Chairman first of the Council and then of the Contracting Parties of the General Agreement on Tariffs and Trade (GATT), I was particularly taken aback by the dramatic asymmetry between developed and developing countries, including those like my own, with a relatively large commercial presence in worldwide markets, in terms of the resources and manpower assigned to negotiations on international trade.

Today, international dispute resolution plays a pivotal role in international trade and commercial relations. Over the last decade, with the establishment and the consolidation of the World Trade Organization (WTO), international commercial exchanges have become increasingly rules-based. International dispute resolution in this field has become more judicial in nature, and is moving away from the traditional diplomatic conflict-solving approaches such as consultation, good offices or mediation.

As a consequence, dispute resolution in economic and trade matters has become the realm of specialists. There is a growing awareness among developing countries, particularly the least developed countries (LDCs), of their special needs in these areas. The UNCTAD Project on Dispute Settlement in International Trade, Investment and Intellectual Property tries to respond to those needs within the context of a rapidly changing global economic and trade environment.

The cornerstone of the Project is the Course on Dispute Settlement, which focuses on dispute settlement according to the rules and the procedures developed by the World Trade Organization (WTO), the International Center for Settlement of Investment Disputes (ICSID), the World Intellectual Property Organization (WIPO) and the United Nations Commission on International Trade Law (UNCITRAL). The Course has 40 modules, which can be used together or independently of each other. They are user-friendly and can be adopted for individual learning, teaching or train-the-trainer efforts or as a reference tool. The Course is designed for young government officials, academics, legal practitioners and corporate lawyers in developing countries wishing to familiarize themselves with the basic rules and the key jurisprudence.

It is my hope that the Course will contribute to the transfer and enhancement of legal expertise and to awareness-raising about the importance of these vital issues for developing countries. In so doing it would be a significant step towards filling the existing expertise gap and establishing a more level playing field for developing countries, and particularly LDCs, as important players in international trade.

Rubens Ricupero
Secretary-General of UNCTAD
March 2003
II. INTRODUCTION TO THE COURSE

The United Nations Conference on Trade and Development (UNCTAD) based in Geneva has, among its activities in support of developing countries and economies in transition, a technical cooperation project on dispute settlement in international trade, investment and intellectual property. The project aims at assisting interested persons from the legal profession, governments, international organizations, academia and business in understanding the basic rules and jurisprudence of dispute settlement in international trade, investment and intellectual property, and at helping to build a permanent capacity in this domain in developing countries and countries with economies in transition.

Training, information sharing and capacity building are the principal activities of the project. This course is the basic training material prepared within the framework of the project. This introduction seeks to explain the reasons for the project and its expected output, as well as the background to and the results expected from this course.

Context

The growth of trade in goods and services and the increased flow of foreign direct investment (FDI) and technology across borders have prompted governments and the private sector to adopt substantive legal rules on international trade, investment and intellectual property, and to establish international or regional bodies and procedures for the settlement of disputes arising from their interpretation and application. This process moves in two opposite directions: substantive rules are unified, while dispute settlement bodies and procedural rules are multiplied. In other words, substantive legal rules on trade, services, investment or intellectual property are unified by international and regional organizations, but the settlement of the disputes arising from their interpretation and application is entrusted to a growing number of international bodies and rules.

At the international level, the World Trade Organization (WTO) provides for the settlement of trade disputes between States; the World Bank Group (WG) administers dispute settlement between States and private investors; and the World Intellectual Property Organization (WIPO) has facilities for dispute settlement between private commercial parties. In addition, the United Nations Commission on International Trade Law (UNCITRAL), responsible for the unification of trade law and procedures, has developed rules for arbitration, mediation and conciliation of commercial disputes between private parties.

Likewise, at the regional level, the North American Free Trade Agreement (NAFTA), the Association of South-East Asian Nations (ASEAN) and the
Southern Common Market (MERCOSUR) have established procedures and rules for the settlement of disputes arising from intraregional trade in goods and services and from investments. The establishment of dispute settlement bodies is under consideration in southern Africa and in Central America. In addition, the Asian African Legal Consultative Organization (AALCO) has sponsored the creation of regional arbitration centres in New Delhi, Kuala Lumpur, Cairo and Lagos, which are mandated to settle commercial disputes between private parties.

The growing number of bodies and rules available for the settlement of disputes arising in international trade, investment and intellectual property calls for a better understanding of their jurisdiction, applicable law, modus operandi and decision-making. It has therefore become necessary to study, compare and evaluate them.

Commercial partners around the world wish to enforce their rights and obtain effective remedies through established international procedures. As a result, dispute settlement has become an important feature of the rules-based multilateral trade, investment and intellectual property regimes.

Governments and the private sector in developing countries and countries with economies in transition are increasingly seeking assistance in building the necessary capacity to protect their interests when disputes arise concerning commitments undertaken by them or by their trade and investment partners. They are aware that their limited skills and knowledge of how to secure compliance, through legal channels, with trade, investment and technology agreements – which are international agreements or international contracts – can adversely affect their commercial interests and can further marginalize them as potential beneficiaries of trade and investment opportunities.

Needs assessment

Following the establishment of the WTO, UNCTAD made an evaluation of the need for training in commercial diplomacy and dispute settlement. Geneva-based diplomats, officials of regional organizations, legal practitioners and academics of developing countries all confirmed the need for such training.

In 1997, UNCTAD surveyed the training programmes of the inter-governmental organizations/bodies concerned. The findings were that they had small training programmes, that their training activities were of an ad hoc nature, and that limited financial and human resources were budgeted for this work. The World Intellectual Property Organization was the exception.

Recognizing the need to strengthen training for developing countries, the General Assembly, at its fifty-second session, acting on a proposal of the Secretary-General of UNCTAD, authorized UNCTAD to convene an informal group of experts to consider the development of a curriculum for training on
the settlement of disputes in international trade and investment for lawyers and business managers in the least developed countries (LDCs).

Preliminary work

The informal group of experts, which met on 17 September 1999 in Geneva, made a number of recommendations. The main ones were that training should be provided to all the developing countries, and that it should focus on dispute settlement in international trade, investment and intellectual property, with particular attention given to providing information about various dispute settlement bodies and the rules of intergovernmental organizations and bodies (WTO, WIPO, ICSID and UNCITRAL). They also recommended that the training be targeted at government officials, academics, legal practitioners and businesspersons in developing countries. It should be delivered at the regional and national levels, and should focus on practical aspects through inclusion of simulation exercises and case studies. It was further recommended that UNCTAD establish a network of academic and training institutions in developing countries.

At the invitation of UNCTAD, Professor E.-U. Petersmann prepared a curriculum for a training package based on the recommendations of the informal group of experts. UNCTAD also sought the advice and cooperation of senior legal officials at WTO, WIPO, ICSID and UNCITRAL. The curriculum was refined at a Workshop on Settlement of Disputes in International Trade, Investment and Intellectual Property held from 20 to 22 January 2000 in Geneva.

Subsequently, the Programme of Action adopted at UNCTAD’s Tenth Session in Bangkok from 12 to 19 February 2000 included a recommendation that UNCTAD should support capacity building in developing countries so as to progressively enable these countries to become effective players in the multilateral trading system.

The project

Acting on this recommendation, the Secretary-General of UNCTAD established in the Secretariat a technical cooperation project on dispute settlement in international trade, investment and intellectual property.

The project has several activities that focus on information sharing, training and capacity building, as follows:
Preparing/updating and circulating the course on dispute settlement;

Organizing regional and national seminars, using the course on dispute settlement, in Africa, Asia, Latin America, the Caribbean, the Middle East, the Pacific and Central and Eastern Europe;

Training the trainers;

Providing distance learning;

Offering internships; and

Making available advisory services on dispute settlement procedures to interested intergovernmental organizations in developing countries.

The project was reviewed by a group of diplomats and experts meeting informally on 14 May 2000 in Geneva. A large majority of them approved its aim and proposed activities, and emphasized the need for coordination with training programmes of other organizations and bodies. Subsequently, the meeting authorized UNCTAD to present the project for funding to donor governments. Accordingly, the Secretary-General submitted a proposal for funding to several governments and to the General Assembly.

Expected results of the project

The implementation of the project depends on the interest of the donor countries and the readiness of the local partners to cooperate in its implementation. Within the coming five years, the project should help:

Create a better understanding of dispute settlement in international economic relations among young professionals in developing countries and countries with economies in transition;

Enhance the capacity of universities and research institutions to provide instruction and promote research on dispute settlement; and

Promote the rule of law among commercial partners, governments, corporations and individuals around the world.

Course objective

The objective of this course is:

To serve as pedagogical material that can assist lawyers, officials, academics and business persons in developing countries and countries with economies in transition to understand the basic rules and jurisprudence of dispute settlement in international trade, investment and intellectual property.
This objective should be implemented through UNCTAD-sponsored workshops and university courses on dispute settlement organized in developing countries and countries with economies in transition. Recommendations for the use of the course are made below.

Efforts will be made to give this course wide circulation. Printed copies have been distributed around the world to interested persons in government and universities and to university libraries. The course is also available in electronic format on the UNCTAD website: www.unctad.org. Copies may be downloaded free of charge on the understanding that they will be used for teaching or study, and not for a commercial purpose. Appropriate acknowledgement of the source is requested.

Course development

A Workshop on Dispute Settlement in International Trade, Investment and Intellectual Property, convened on 21 and 22 September 2000 for Geneva-based diplomats, was an occasion to try out certain pedagogical tools like case studies, simulation exercises, and a moot court that turned out to be very successful.

On 12 December 2000, an informal meeting of legal experts of the intergovernmental organizations and bodies concerned was convened to consider the contents of the course. It was decided that the curriculum should be divided into six chapters, which in turn would be divided into modules. A pedagogical approach for the presentation of the modules was adopted.

In May 2001, a pilot project was started, funded by the Government of France. UNCTAD commissioned a few short papers (30-50 pages each) on dispute settlement in WTO and ICSID, which served as teaching material for three workshops for Geneva-based diplomats held in May and September 2002 in Geneva. The teaching helped to refine the pedagogical approach.

Meanwhile, with funds received from the United Nations Development Account in March 2002 and from the Government of France in May 2002, UNCTAD invited over 30 international experts to write papers on the subjects identified in the curriculum. The topics and the authors of the papers are listed at the end of this introduction. In view of the large number of consultants, it was decided to draft the course in one language (i.e. in English). A small group of experts assisted with the final review and drafting of the papers, and 20 modules were finalized in December 2002. The full course is expected to be completed before mid-2003.

In the preparation of this course, UNCTAD has benefited from the advice of senior officials of the WTO, the Advisory Centre on WTO Law, ICSID, WIPO and UNCITRAL.
Course structure

The course has six chapters: 1. General Topics; 2. International Center for Settlement of Investment Disputes; 3. World Trade Organization, 4. World Intellectual Property Organization; 5. International Commercial Arbitration; and 6. Regional Approaches. The chapters are divided into modules, an approach that offers several advantages: a set of short papers is user-friendly; as each module has a different subject, it keeps the reader focused; the module concept makes updating easier and less costly; and, above all, for each workshop a curriculum can be designed by combining modules, that responds to the learning needs of a particular audience.

The modules have been written adopting a uniform format, and applying modern pedagogical principles. The “Overview” or “What you will learn” section gives a summary of the principal issues examined and an indication of what the reader can expect to learn. The section on “Objectives” indicates what the reader should expect to learn and be able to master after a careful reading or study of the module. The “Text” presents the basic rules and jurisprudence in an analytical and organized format. This section is divided into subsections, each dealing with a different aspect of the subject. Subtitles and key words are highlighted in the margin. Quotations from jurisprudence and articles of legal texts are placed in text boxes. References to jurisprudence or to official documents are made in short footnotes.

The “Conclusion” or “Summing up” section enables the reader to take stock of what has been discussed in the preceding pages. The “Test your understanding” questions help readers to self-examine or assess their understanding and to think critically about the issues. The section on “Cases” comprises fictitious legal cases; presenting the position of a claimant and a defendant, they incorporate the main issues discussed in the module. These are intended for use in a workshop or classroom setting, where a discussion in small groups should precede an exchange in the full group under the guidance of the tutor. The “Further reading” section gives those who wish to study the subject in greater depth a synopsis of the relevant literature, official documents and jurisprudence. Materials posted on the website of the organizations or bodies concerned are also identified.

Audience

The course is addressed to a large spectrum of professionals, specializing in law, economics or international relations, in developing countries and countries with economies in transition. For example,

- Lawyers and officials in government service (e.g. middle-level decision-makers in ministries of foreign affairs, finance, industry, foreign trade or justice), who may be associated with the preparation of a case;
• Officials of intergovernmental and non-governmental organizations who are specialists in international trade, investment or intellectual property, and who may be called upon to provide administrative services to the dispute settlement bodies of their organizations;

• Academics at universities and training institutions (i.e. professors, lecturers in the fields of law, economics or international relations), who may wish to organize courses on dispute settlement with a view to creating a permanent capacity in the field of dispute resolution; or

• Finally, lawyers and middle-level managers working for the private sector, who, after all, would be directly concerned by a dispute.

Historically, international dispute settlement has been the exclusive domain of a small group of lawyers and diplomats, who prepared and presented cases before international courts and tribunals. This situation is changing, because it is no longer possible for one person to master all the dispute settlement mechanisms and procedures. In addition, the complexity and technical nature of the subject matter of many disputes brought to litigation have necessitated the assistance of a range of experts from government, academia or business in the preparation of the cases.

In setting the level of this course it has been assumed that the student has a general understanding of dispute settlement in various international organizations.

Course uses

This course can be used for different purposes. It can serve as training material in workshops organized by UNCTAD or other international organizations. It can be used as teaching material in universities or training institutes in developing countries and countries with economies in transition. It can serve as background material for train-the-trainers’ courses organized by UNCTAD. It can function as a compendium for self-study by individual readers. It can be of assistance as background material for seminars using video-conferencing. Lastly, advanced readers can keep it as a reference tool.

The course is too voluminous and diverse to be used in a single workshop or class. The modules are intended for use in small groups or for a particular audience focusing on a specific theme. For example, a university could offer to its graduate students a course on WTO dispute settlement using the relevant modules during one semester of classroom teaching of two hours each week. A chamber of commerce could offer to business executives an introduction to WTO using module 3.1 in a one-day symposium. A ministry of justice or an attorney general’s office could offer to its officials an introduction to WTO dispute settlement using modules 3.1 to 3.4 in a three-day workshop. A ministry of trade or industry could offer new staff an introduction to dispute settlement
concerning commercial defence measures in WTO using modules 3.6 to 3.8 in a three-day workshop. An arbitrator wishing to specialize in online commercial arbitration could study at home modules 4.2 and 5.9. An academic conference on the evergreen topic of recognition and enforcement of arbitral awards could use modules 2.9 and 5.7 as reference materials. Proposals for workshop themes and the use of combinations of the modules are made at the end of this introduction.

Course implementation

UNCTAD should cooperate with universities and training institutes in developing countries and countries with economies in transition. Institutions of higher learning could be invited to include a course or seminar on dispute settlement in their curriculum of graduate studies. Twenty-five institutions should be targeted for this purpose in the coming five years. Greater attention to dispute settlement in academic circles will contribute to creating a permanent local capacity for dispute settlement. The role of universities and institutes in this regard is important for ensuring the short-term success of the project.

In addition, UNCTAD should organize workshops in Africa, Asia, the Caribbean, Latin America, the Middle East, the Pacific and Central and Eastern Europe. Eight workshops, with a maximum of 25 participants, should be convened each year. The aim should be to reach more than 1,000 persons over the next five years. Regional intergovernmental organizations, universities and research/training institutes could be invited to cooperate in the execution of the workshops. The local partners could assist in a number of valuable ways, such as making proposals for improving, adapting and updating the curriculum, providing the logistics, selecting the participants, and securing the support of local experts to act as lecturers or speakers.

UNCTAD could also organize train-the-trainers’ courses. Young professionals at universities and training institutes should be identified for this purpose. Their teaching would contribute to creating a local and permanent capacity in this field.

Acknowledgements

We are extremely grateful to Rubens Ricupero, Secretary-General of UNCTAD for his encouragement and support throughout the preparation of this course.

Christoph Schreuer (ICSID), Peter Van den Bossche (WTO), Edwin Vermulst (WTO), Erik Wilbers (WIPO) and Eric Bergsten (International Commercial Arbitration) assisted with the final review and drafting of a number of modules. They are the Associate Editors of this course.

Marie-Hélène Baumann and Chiara Vitucci assisted with the analysis and drafting of papers and the preparation of workshops. Sven Callebaut provided
pedagogical insights. Azam Alvi provided secretarial assistance. Several interns provided helpful support: Josefita Pardo, Juan Nicolás Guerrero, Adriana de Menezes Dantas, Susan Isiko Strba, Nilay Arat, Elena Zuyeva Dubs, Levente Albert, Priscila Benelli Walker and Qi Zhang.

The graphic design was done by Diego Oyarzun and Christophe Manceau. David Hillman and Brigitte Ruby-Cosgrove assisted with the production.

Their support is greatly appreciated.

May this course on dispute settlement contribute to international understanding.

Erik Chrispeels
Editor
Geneva,
March 2003
1. **General Topics**

R. Ricupero & E. Chrispeels

1.1 Preface & Introduction

P. S. Rao

1.2 International Court of Justice (ICJ)

B. Shifman & H. Holtzmann

1.3 Permanent Court of Arbitration (PCA)

2. **International Center for Settlement of Investment Disputes**

C. Schreuer

2.1 Overview

A. Reinisch

2.2 Selecting the Appropriate Forum

C. Schreuer

2.3 Consent to Arbitration

M. Al-Sharmani

2.4 Requirements *Ratione Personae*

A. Escobar

2.5 Requirements *Ratione Materiae*

G. S. Tawil

2.6 Applicable Law

E. Schwartz & R. Mohtashami

2.7 Procedural Issues

D. Wang

2.8 Post-Award Remedies

D. Wang

2.9 Binding Force and Enforcement

3. **World Trade Organization**

P. Van den Bossche

3.1 Overview

P. Van den Bossche

3.2 Panels

P. Gappah

3.3 Appellate Review

E. Kessie

3.4 Implementation and Enforcement

S. Cartier

3.5 GATT 1994

E. Vermulst

3.6 Anti-dumping Measures

E. Vermulst

3.7 Subsidies and Countervailing Measures

E. Montaguti

3.8 Safeguard Measures
# TRADE, INVESTMENT AND INTELLECTUAL PROPERTY

<table>
<thead>
<tr>
<th>Author</th>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Prévost</td>
<td>3.9</td>
<td>Sanitary and Phytosanitary Measures</td>
</tr>
<tr>
<td>A. Appleton</td>
<td>3.10</td>
<td>Technical Barriers to Trade</td>
</tr>
<tr>
<td>M. Ahmad</td>
<td>3.11</td>
<td>Textiles and Clothing</td>
</tr>
<tr>
<td>J. Pérez Gabilondo</td>
<td>3.12</td>
<td>Government Procurement</td>
</tr>
<tr>
<td>D. Steger</td>
<td>3.13</td>
<td>GATS</td>
</tr>
<tr>
<td>F. Abbott</td>
<td>3.14</td>
<td>TRIPS</td>
</tr>
<tr>
<td>B. O’Connor</td>
<td>3.15</td>
<td>Agriculture</td>
</tr>
</tbody>
</table>

### 4. World Intellectual Property Organization

<table>
<thead>
<tr>
<th>Author</th>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. W. Plant</td>
<td>4.1</td>
<td>Arbitration and Mediation Center</td>
</tr>
<tr>
<td>T. Bettinger</td>
<td>4.2</td>
<td>Internet Domain Name Dispute Resolution</td>
</tr>
</tbody>
</table>

### 5. International Commercial Arbitration

<table>
<thead>
<tr>
<th>Author</th>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Bergsten</td>
<td>5.1</td>
<td>Overview</td>
</tr>
<tr>
<td>R. Caivano</td>
<td>5.2</td>
<td>Submission Agreement/Clause</td>
</tr>
<tr>
<td>A. M. Garro</td>
<td>5.3</td>
<td>Arbitral Tribunal</td>
</tr>
<tr>
<td>R. Tan</td>
<td>5.4</td>
<td>Arbitral Proceedings</td>
</tr>
<tr>
<td>J-M. Jacquet</td>
<td>5.5</td>
<td>Applicable Law</td>
</tr>
<tr>
<td>M. Aboul-Enein</td>
<td>5.6</td>
<td>Making the Award</td>
</tr>
<tr>
<td>P. Šarčević</td>
<td>5.7</td>
<td>Recognition and Enforcement of the Award</td>
</tr>
<tr>
<td>R. P. Correa</td>
<td>5.8</td>
<td>Court Measures</td>
</tr>
<tr>
<td>O. Cachard</td>
<td>5.9</td>
<td>Electronic Arbitration</td>
</tr>
</tbody>
</table>

### 6. Regional approaches

<table>
<thead>
<tr>
<th>Author</th>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. Ojeda Cardenas &amp; C. Azar</td>
<td>6.1</td>
<td>NAFTA</td>
</tr>
<tr>
<td>E. Grebler</td>
<td>6.2</td>
<td>MERCOSUR</td>
</tr>
<tr>
<td>S. Sucharitkul</td>
<td>6.3</td>
<td>ASEAN</td>
</tr>
</tbody>
</table>
**WORKSHOP**

*Introduction to International Commercial Arbitration*

5.1 Overview
5.2 Submission Agreement/Clause
5.3 Arbitral Tribunal
5.4 Arbitral Proceedings
5.5 Applicable Law
5.6 Making the Award
5.7 Recognition and Enforcement of the Award
5.8 Court Measures

*Dispute Settlement at ICSID*

2.1 Overview
2.2 Selecting the Appropriate Forum
2.3 Consent to Arbitration
2.4 Requirements *Ratione Personae*
2.5 Requirements *Ratione Materiae*
2.6 Applicable Law
2.7 Procedural Issues
2.8 Post-Award Remedies
2.9 Binding Force and Enforcement

*Introduction to Dispute Settlement*

1.2 International Court of Justice (ICJ)
1.3 Permanent Court of Arbitration (PCA)
2.1 Overview (ICSID)
3.1 Overview (WTO)
4.1 Arbitration and Mediation Center (WIPO)
5.1 Overview (Arbitration)

*Regional Approaches to Dispute Settlement*

6.1 NAFTA
6.2 MERCOSUR
6.3 ASEAN

*Online Dispute Settlement*

5.9 Electronic Arbitration
4.2 Internet Domain Name Dispute Resolution
PROPOSALS

Introduction to Dispute Settlement at WTO

3.1 Overview
3.2 Panels
3.3 Appellate Review
3.4 Implementation and Enforcement

WTO Dispute Settlement on Basic Rules of Trade in Goods, Services and Intellectual Property

3.5 GATT 1994
3.13 GATS
3.14 TRIPS

WTO Dispute Settlement on Commercial Defence Measures

3.6 Anti-dumping Measures
3.7 Subsidies and Countervailing Measures
3.8 Safeguard Measures

WTO Dispute Settlement on Textiles and Agriculture

3.11 Textiles and Clothing
3.15 Agriculture

Dispute Settlement at ICSID

2.1 Overview
2.2 Selecting the Appropriate Forum

Dispute Settlement at ICSID

2.3 Consent to Arbitration
2.4 Requirements Ratione Personae
2.5 Requirements Ratione Materiae

Dispute Settlement at ICSID

2.6 Applicable Law
2.7 Procedural Issues

Dispute Settlement at ICSID

2.8 Post-Award Remedies
2.9 Binding Force