

# ***WORKING PAPER***

**INTERNATIONAL RIVER BASIN  
NEGOTIATIONS:  
BUILDING A DATABASE OF  
ILLUSTRATIVE SUCCESSES**

*Alan McDonald*

October 1988  
WP-88-096

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## FOREWORD

Within IIASA's Environment Program, one of the objectives of the Project on Decision Support Systems for Managing Large International River Basins is to improve the exploitation of increasingly cheap and powerful computer analyses in international river basin negotiations and management. For hardware, the focus is on personal computers, as they may be the only technology reliably available in some parts of the world. For software, the emphasis is on graphics and menu-driven routines that are easy to use and interpret.

The computer work at IIASA is being done in connection with two case studies of international negotiations and joint management. One concerns the Gabcikovo-Nagymaros barrage and hydroelectric project on the Danube River. The other has been initiated in the context of the Zambezi Action Plan (ZACPLAN), signed by five of the eight Zambezi River Basin states in May 1987. One purpose is to assure that IIASA's software development is directly relevant and useful to specific issues and institutions in these two river basins.

But good comparative analysis of alternative projects and management arrangements is only part of negotiating mutually beneficial international agreements. And often it is harder to generate promising creative alternatives to be considered, than it is to analyze them subsequently. This paper describes work in progress to develop a simple personal computer package to help with the task of generating creative alternatives tailored to specific problems of international river basin negotiations and joint management.

R.E. Munn  
Leader  
Environment Program

INTERNATIONAL RIVER BASIN NEGOTIATIONS:  
BUILDING A DATABASE OF ILLUSTRATIVE SUCCESSES

Alan McDonald\*

1. INTRODUCTION AND PURPOSE

This working paper is for those who may someday want to hire an international water lawyer. The lawyer's expertise might be needed to design an international water agreement, or to help resolve an imminent or existing dispute. The relevant expertise that the lawyer brings to such tasks has many dimensions. This paper addresses a part of that expertise -- first, the lawyer's working acquaintance with a large catalogue of possibly analogous successful agreements, and, second, some rules of thumb for zeroing in quickly on the most promising entries in that catalogue.

I do not aspire to render water lawyers obsolete, only to give those who hire them a headstart. This paper introduces a database I have begun building to put examples of successful agreements, and cooperative tactics, at the fingertips of those who do not have the benefit of extensive personal involvement in the making of international water law. With the database, people in government ministries, international agencies, donor agencies, and private companies will be able to search efficiently through a large set of past agreements to find quickly those that have some useful similarities with their own situations.

The database I have called ILLEX, for ILLustrative EXamples of Negotiating Successes Relevant to International Rivers.

ILLEX is being developed in cooperation with the Large International Rivers Project (LIR) of the International Institute for Applied Systems Analysis (IIASA). ILLEX complements other research within the LIR Project to develop computer software (called IRIS for Interactive River Simulation package) to evaluate alternative proposals for developing or managing a given international river basin. IRIS will be flexible enough to be used for different, and possibly conflicting, analyses for different parties, incorporating in each case the assumptions and forecasting models preferred by one of the parties.

But for all its ability to evaluate proposals, IRIS will not generate new alternatives. And it is sometimes the inability to generate new, creative "candidate agreements" to

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then be analyzed that stymies a negotiation, rather than insufficient analytic capabilities.

Thus negotiations benefit from both creativity and good analytic competence among the parties. ILLEX is an effort to facilitate creativity. Its premise is that creative proposals often come from creative analogies, or from mixing and matching pieces from a series of creative analogies. The computer can help in that process, though in ILLEX the computer's power is harnessed in only a limited way. ILLEX is not an "expert system" aspiring to computer reasoning by analogy. The analogizing is done by people -- partly by me when building ILLEX, and partly by the user when running ILLEX. The power of the computer is used, first, to store a large number of examples and, second, to search quickly for relevant examples based on hints from the person using the database.

Ultimately, the value of ILLEX can only be judged by those for whom it is intended in ministries, agencies, and companies. However, my anticipation is that at least two features of ILLEX will be particularly important in determining its ultimate success: how comprehensive it is, and how easily one can quickly find useful analogies through using it. ILLEX is still only in its early stages, so it does not yet pass the test of comprehensiveness. However, it is getting big enough that, before a lot more effort is committed, ILLEX should face initial tests of the ease and speed with which it can be used.

The purpose of this working paper is therefore to inform people with an interest in international river negotiations about ILLEX, to allow them to judge its initial progress, and to solicit their criticisms (or encouragement).

The paper's organization is as follows.

Section 2 explains, first, how entries for ILLEX were selected and what sort of information they include. Second, it explains how the entries are indexed, or "keyworded," so that someone can search through them quickly to find entries similar to his own situation.

Section 3 then compares ILLEX with several related databases of international conflicts and legal precedents.

Section 4 presents a tutorial on searching ILLEX.

Appendix 1 is a vocabulary of the keywords used in indexing all the entries. The vocabulary is very useful to have at hand when searching ILLEX.

Appendix 2 presents the full text and keywords for all the entries currently in ILLEX. In including this "hard copy" version of the database, I should stress that ILLEX is designed to be used on a personal computer. It is the computer's power

that is exploited to allow fast, complex searches. Thus, to evaluate ILLEX properly, one must work with the computer version, and I will explain in the next paragraph how you can get a copy. Nonetheless, Appendix 2 has been included here to provide enough information to interest more people in testing the computer version.

To run the computer version of ILLEX you will need, first, the floppy diskette version of Appendix 2. This you can get by contacting me at:

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You also will need a copy of some commercial software called FYI 3000 Plus, which does the searches. If there is not too much demand, you can borrow a copy from me. Alternatively, you can order a copy for about \$195 (minus whatever discounts you qualify for) from

FYI, Inc.  
P.O. Box 26481  
Austin, TX 78755  
USA

Telephone: 512-346-0133

Finally, you will need an IBM-PC, or 100% compatible personal computer, with 128K random access memory and either two drives or a hard disk.

## 2. HOW EXAMPLES AND KEYWORDS WERE CHOSEN

Each example in ILLEX is short and illustrates just a single feature of a particular negotiation or agreement. The feature illustrated is one that lends itself to useful analogizing according to the framework described below. Thus there is not a single entry summarizing all dimensions of, say, the Columbia River Treaty. Rather there are (in the case of the Columbia River Treaty) three entries, each illustrating just one feature of the treaty or the negotiations that led up to it.

Each example begins with a title summarizing what the example illustrates. This is followed by one or two computer screens of text describing the example in more detail. Next comes a listing of published references upon which the example is based, and finally come the keywords.

The examples are not taken exclusively from international river basin negotiations. Other cases are included when they might provide a useful analogy for at least one feature of a river negotiation. For example, negotiations on international air pollution may yield lessons useful to negotiations addressing water pollution. Resolving disputed boundaries on land or at sea may have much in common with resolving disputed river boundaries. And even the resolutions of purely domestic disputes can sometimes be suggestive for those dealing with international problems.

### Keywords

At the end of each example in the database there are approximately ten to twenty "keywords," as they are referred to by ILLEX, though in many cases they are phrases, not single words. It is through specifying keywords that a user identifies features of his own negotiating situation, or of a hypothetical situation, for which he is looking for analogies. Therefore, to use ILLEX effectively, a user should have a sense of both the range of keywords used, and the concepts of negotiation theory that were the basis for assigning keywords to each example. The full list of keywords is referred to by ILLEX as its "vocabulary" and is given in Appendix 1. The remainder of this section introduces most of the keywords and explains the principles that have been used in keywording each example.

### Integrative Bargaining vs. Distributive Bargaining: the tension between making the pie bigger and dividing it up

One stereotype that is popularly associated with the word negotiation is that of a village market where a buyer and a seller haggle about the price of some item. The higher the price they settle on, the more money ends up in the seller's pocket; the lower the price they agree to, the more money stays in the buyer's pocket. This is straightforward distributive bargaining -- what one gets the other gives up.

But almost all negotiations have another dimension. By combining resources, or by well designed trade-offs, two parties can create additional value above and beyond what each brought to the negotiation. In fact most international river projects are clearly dominated by value creation. Joint hydroelectric projects, for example, are undertaken precisely because they provide more cheap power than the sum of the unilateral alternatives available to the parties involved. Efforts to jointly create new value, to "make the pie bigger," are labeled "integrative bargaining" to distinguish them from the distributive dimension of all negotiations.

All the illustrative examples in ILLEX are examples of integrative bargaining. It is therefore important to emphasize that integrative bargaining is only a part of any negotiation,

and that there is always a tension between integrative bargaining and distributive bargaining. As stated by Weeks, "although both creating [integrative] and claiming [distributive] processes are going on simultaneously in nearly every negotiation, the tactics used for creating and for claiming value differ dramatically. Thus the negotiator is constantly torn between the good communication, openness, trust, creativity, and joint problem-solving of integrative tactics, and the hiding of information, making of commitments, exaggeration of the cost of concessions, distortion of information, lying, and threatening of distributive tactics" (Weeks, 1986). This dynamic is discussed at length by Raiffa (1982) and by Lax and Sebenius (1986), and the interested reader is referred to these books for a proper treatment of the subject. For the purposes of this paper, I simply want to caution that in its focus on integrative bargaining ILLEX addresses only part of the whole story.

Thus the first theoretical categorization upon which the selection of illustrative examples is based is the distinction between examples of integrative bargaining and examples of distributive bargaining. ILLEX includes only examples of integrative bargaining.

### Cooperative Tactics

Next, the examples of integrative bargaining are considered in two subcategories, "cooperative tactics" and "creative compromises," which correspond precisely to two keywords in ILLEX's vocabulary, COOPERATIVE TACTICS and CREATIVE COMPROMISES. (Keywords will appear in this paper in upper case because that is the way they appear in ILLEX.) Thus a user can, if he wishes, restrict ILLEX's search for analogies to just one or the other of these categories by requesting only the examples with the appropriate keyword. The details of typing in such a request are described in Section 4.

Cooperative tactics are features that the parties may want to introduce into the process of the negotiation itself. More particularly, they are features that have often enhanced integrative bargaining within negotiations and thus facilitated resolution. In the vocabulary there are seven keywords referring to cooperative tactics. They are introduced here in alphabetical order.

**INCREMENTAL AGREEMENTS:** Rather than try to resolve all contentious issues simultaneously and once and for all, it is often productive to try to get an initial agreement, even if only in an informal way, on a subset of issues. Sometimes this is possible because there are some "easy" issues that are not hard to resolve as long as they are separated from other more difficult issues. Sometimes an initial agreement on principles is possible as long as it avoids contentious specifics of how



the principles are to be implemented. ILLEX includes examples of both situations.

There are several possible explanations for why incremental agreements can move a stalled negotiation toward success. For example, they create a small tradition of trust and agreement; they increase the costs of subsequently breaking off negotiations; and in the case of incremental agreements on principles they shift subsequent discussions toward joint problem solving based on shared principles, and away from stubborn defenses of conflicting positions (Fisher and Ury, 1981).

**INTERVENOR WITH RESOURCES AND INTERESTS:** When parties to a negotiation are stalled, it is common to bring in a third party who is not allied with any of the principals to help. For example, negotiators involved in labor-management disputes often turn to mediators, arguing children appeal to parents, and countries can request United Nations involvement. Sometimes the third party joins in uninvited. In international negotiations an intervenor almost always has an interest in the outcome, even if it is only the widely shared interest in peace that is a common basis for UN interventions. And often an international intervenor brings important resources. He may be able to increase the size of the pie the disputants are trying to divide; he may have information or the analytic capability for resolving particularly problematic points; he may be able to guarantee a settlement, due to his military or financial strength, that would otherwise be too risky for the disputants; or he may be able to increase the cost of failure confronting one or more of the disputants.

**INTERVENTION:** This keyword simply defines a broader category than that immediately above. It therefore also includes cases where the intervenor plays a neutral role and brings no power to the negotiation other than the power of persuasion.

**JOINT ANALYSIS:** Joint analysis of alternatives for developing or managing an international river basin has several advantages. It is cheaper than each party doing its own analysis, it steers the negotiation toward joint problem solving and away from positional bargaining, and it allows problematic issues to be dealt with as soon as they arise rather than after differences have become deeply entrenched.

**SEPARATING ISSUES:** Consider the example of two riparian countries arguing over the location of the international boundary in the river that separates them. Agreement may be impossible as long as it is assumed that the location of the boundary will automatically determine, for example, navigation rights, fishing rights, aircraft overflight rights, and the ownership of islands. If these issues are separated, however, fishing issues can be resolved in a way that truly responds to

the parties' concerns about fishing, while navigation issues may be resolved in an entirely different way that is nonetheless equally responsive to the parties' concerns about navigation. The added flexibility can make the difference between a settlement and an impasse.

**SINGLE NEGOTIATING TEXT:** In instances where there is an intervenor, he may choose to use a single negotiating text (SNT) as a technique to move the negotiators toward agreement (Fisher and Ury, 1981; Raiffa, 1982). Rather than allowing competing proposals and counter-proposals to be presented, there is only one proposal on the table at any time, that of the intervenor. Criticism and analysis is focussed on the shortcomings of this single negotiating text, until the intervenor agrees that enough additional insights have emerged to justify his preparation of a revised version. This is a new complete package incorporating the various criticisms of the previous version in a way the intervenor judges to be a collective improvement. The process continues until one of the revisions is unanimously accepted.

**THIRD-PARTY ANALYSIS:** Negotiating parties might have neither the resources, the expertise, nor the degree of cooperation necessary to undertake joint analysis as described above. In such a situation they can nonetheless sometimes benefit by turning to analysis done by a third party, whether carried out at their specific request or entirely independently.

### Issues and Actors

Examples are also keyworded to indicate the issues arising in the cases they describe, and to indicate the parties involved. Among the "issues" keywords in the vocabulary in Appendix 1 are BOUNDARIES, COMPENSATION, FISHING, FLOOD CONTROL, FLOW REGULATION, HYDROELECTRICITY, IRRIGATION, LAND USE, MINING, NAVIGATION, OIL RESOURCES, POLLUTION, ROYALTIES, SITING, SOVEREIGNTY, WATER ALLOCATION, WATER QUALITY, and WATER STORAGE.

The vocabulary also includes 72 countries, from ALGERIA to ZIMBABWE, and 17 international organizations, from the BINATIONAL ENTITY FOR YACYRETA to the WORLD BANK. Where relevant, the name of the river or other body of water which is the subject of the example is included as a keyword. Also included where relevant is the common name of the agreement the example describes, e.g., the LAW OF THE SEA or the OWENS FALLS DAM AGREEMENT.

### Creative Compromises

Where the keyword COOPERATIVE TACTICS referred to features of negotiation processes, the keyword CREATIVE COMPROMISES refers to features of negotiating outcomes, of the

agreements that finally emerge. The creative compromises illustrated in ILLEX fall into three categories, each with its own keyword: TRADEOFFS, CONTINGENT AGREEMENTS, and FAIR DIVISION. The three categories, and additional keywords related to FAIR DIVISION, are described below.

Negotiating failures are often due to important irreconcilable differences between parties. But negotiating successes are often also due to important differences between parties. In particular, differences in people's tastes and preferences provide the raw material for fashioning creative trades that leave all parties better off. If a person who prefers apples to oranges, and has equal amounts of both, meets someone with just as many apples and oranges, but with a preference for the oranges over the apples, it is easy to see the potential for a trade that will make both happier. Because there will always be a distributive dimension to the negotiation, there is no guarantee that the potential will be realized, but it is the difference in preferences that makes a trade possible at all. Included in ILLEX, therefore, are examples where differences in how strongly the parties felt about e.g. sovereignty, fishing rights, navigation rights, or the right to underwater resources were the basis for an eventual package of tradeoffs considered desirable by all. Such examples all include among their set of keywords, the keyword TRADEOFFS.

While mutually beneficial tradeoffs are based on differences in tastes or preferences, "contingent agreements" are based on differences in expectations about how various alternatives will work out if actually adopted.

Imagine a hypothetical example of two countries negotiating arrangements for future hydroelectricity sales from a joint hydropower project. They have agreed to allocate half of the electricity produced to each country, but both recognize that Country X will not be able to use all its allocation internally, while Country Y's electricity demand will outstrip its allocation. The standard solution is that X agrees to sell its surplus to Y. X gets an assured market, and Y gets an assured supply. But imagine the following disagreement over what the price should be. X, the prospective seller, argues that the price of alternative sources of electricity for Y will be high in the future. Therefore, the hydroelectricity price should be set relatively high in recognition of the expected high price of its competitors. However Y, the prospective buyer, contends that X has badly over-estimated the future price of alternative electricity. Y accepts some linkage between the hydroelectricity price and the expected price of alternatives, but given Y's lower estimate of the future price of alternatives, Y argues that such linkage justifies a relatively low price for hydroelectricity.

The difference between X's and Y's expectations can be the basis of a contingent agreement, where they agree that the hydroelectricity price will be adjusted in the future as the price of alternatives changes. Because this agreement means a high hydroelectricity price if the price of alternatives is high, which is what X predicts, X should find it attractive. And because it means a low hydroelectricity price if the price of alternatives is low, which is what Y predicts, Y should find it attractive. Thus, they could settle on such a contingent agreement without ever having to resolve the difference in their predictions.

There are many pitfalls to negotiating contingent agreements however. Lax and Sebenius (1986) discuss these in depth, but a few examples are in order here. If future burdens and advantages are to be tied to a given indicator of how the future "turns out," that indicator must be relatively unambiguous and beyond manipulation by either party. Otherwise the contingent agreement will have only postponed a dispute, not resolved it. In the above hypothetical case, the indicator of alternative electricity prices might be explicitly derived from the internationally quoted price of crude oil as an indicator of fossil fuel prices.

A second problem is the "morning after" problem. The following hypothetical illustration is from Lax and Sebenius (1986).

"Suppose...that a third party has induced the warring factions in a divided country to agree to a cease fire and to hold an election. Suppose that this agreement were possible primarily because each side had an over-optimistic estimate of its chances to win. Once the election [was] held, high expected utility would be replaced by a declared winner and an army of angry losers. Was thought given, for example, to how after the election a dominant coalition might form? Otherwise, the losers may find that abiding by the agreement and being ruled by the winners is worse for them than their alternative to continued agreement, which is to start fighting again...

"[For a contingent agreement to] be effective, the costs incurred for not complying must exceed the benefit of renegeing; otherwise the bargainer will happily renege."

After "tradeoffs" and "contingent agreements" the third category of creative compromises is "fair division." These are cases where it proved more desirable to agree a priori to a rule or procedure for fairly dividing benefits, or allocating costs, than to attempt to negotiate competitively a specific division. There is no one set of fair division rules or procedures that is theoretically or practically perfect. There are instead a number of options.

Most of the fair division rules that appear in one or another of ILLEX's examples are clear from their keywords: e.g., EQUAL BENEFITS, EQUAL BURDENS, EQUAL COSTS, EQUAL OPPORTUNITIES, PROPORTIONAL BENEFITS, PROPORTIONAL BURDENS, and PROPORTIONAL COSTS. Others are less straightforward, such as the method of SEPARABLE COSTS-REMAINING BENEFITS (SCRB). The SCRIB method allocates to each party the marginal cost of his inclusion in a project plus a share of the non-separable costs that is proportional to the benefits he receives by joining the joint project instead of going it alone.

Currently ILLEX contains only one example of a fair division procedure, as distinguished from a fair division rule. The procedure's keyword is DIVIDE-AND-CHOOSE. The most familiar illustration is its application to the problem of fairly dividing a piece of cake between two young claimants. If an adult cuts the cake, there is the danger that whichever child does not get to choose first between the two pieces will protest that he was left with a smaller piece. With the divide-and-choose procedure, however, one child cuts the piece of cake into two, and the other gets first choice between the two pieces. If the cutter is left with a smaller piece, he has only himself to blame. So he has a strong incentive to divide the cake evenly. This procedure, in a less pedestrian version, was incorporated in the Law of the Sea Convention, an application included in ILLEX.

### Definitions and Publications

In addition to examples of complete and partial negotiating successes ILLEX contains two other types of entries. They have not been mentioned until now so as not to divert attention from the central aspect of the database, the examples. And they are included only to make it easier to make use of the information in the examples.

First, ILLEX includes definitions of some of the keywords found in the vocabulary, such as FAIR DIVISION, CONTINGENT AGREEMENTS, and RISK AVERSION, to help users not familiar with the way these terms are used in ILLEX. The set of keywords for each such entry includes the keyword DEFINITIONS, as well as the keyword for the specific term being defined.

Second, ILLEX contains a separate, short entry for each book or journal article referenced in one or more of the examples. There are a few references, such as UN documents, that are neither books nor journal articles, and ILLEX does not yet include separate entries for these publications. The entries for books and journal articles all include the keyword PUBLICATIONS. They are also keyworded according to the publication's author. Beyond that, however, they are not extensively keyworded, and they do not include abstracts. Additional effort could be devoted to these tasks if there is a

demand for ILLEX to meet an unmet need for a computerized annotated bibliography. For the moment, however, effort is focussed on building up the examples in ILLEX.

Finally, while entries containing definitions and publications include the keywords DEFINITIONS and PUBLICATIONS respectively, the entries with examples include, not surprisingly, the keyword EXAMPLES.

### 3. COMPARISONS WITH OTHER DATABASES

#### Historical Events Research in Political Science

Since the late 1960s there have been several research efforts to assemble on computers summaries of international disputes and then code (in effect, keyword) each dispute according to who was involved, who intervened, any military action that occurred, and so forth. In some cases, the purpose has been, at least partly, quite close to that of ILLEX, i.e., to provide quickly examples of successful negotiations in situations similar to those of whomever is using the database (e.g., Bloomfield, 1987). In other cases, the purpose has been to provide data for statistically analyzing hypotheses about why some international conflicts escalate and how others are resolved (e.g., Butterworth, 1976). A summary of the main research efforts is provided by Sherman (1987a).

Unfortunately the databases that have been compiled are not especially helpful when building ILLEX. First, most of their events are included because they involve hostilities. Thus successful negotiations that avoided threatened and actual hostilities are poorly represented, and it is these success stories that are desirable for ILLEX, not the failed negotiations that led to shooting. Second, even one of the largest of these databases, SHERFACS with approximately 1700 total entries (Sherman, 1987b), includes very few river disputes. (Perhaps this is a happy indicator that river conflicts lead to hostilities relatively rarely.) Third, the codings used by the political scientists cannot be directly converted to the framework of keywords described above. While some of the databases involve hundreds of coded variables for each entry, they either provide detail not of interest for ILLEX (levels of riots, border skirmishes, terrorism, strikes, repression, plots, major military confrontations, etc.) or too little detail on other issues; a party's interests, for example, might be coded simply as primarily economic, political, strategic, humanitarian, unknown, or irrelevant. In fact, in the databases examined so far, there is no code that indicates if an entry concerns rivers or other water bodies. Often the title of an entry gives a clue, but unlike the codes, titles cannot be scanned by the computer. To find entries that might be appropriate for ILLEX, it is therefore necessary to

scan manually lists of entry titles or the actual narrative text within entries.

Nonetheless, these databases do contain some entries that are very appropriate for ILLEX, though it is necessary to rewrite both the event summary and the coding/keywording. As can be seen from Appendix 2, a number of ILLEX examples reference Butterworth (1976), and there will undoubtedly be further references to the accomplishments of historical events research as ILLEX grows.

#### Legal Precedent: Lexis and WESTLAW

Mead Data Central maintains extensive databases marketed commercially as the "Lexis/Nexis Information Services." These include, among other things, the full text of newspapers, magazines, corporate annual reports, the U.S. Internal Revenue Service Code, tax handbooks, corporate filings with the U.S. Securities and Exchange Commission, all U.S. patents since 1975, the U.S. Code of Federal Regulations, U.K. statutes and statutory instruments, French laws and regulations, the U.S. Federal Register, major university law reviews, and over three million legal cases and other legal documents -- including American, English, and French case law, cases of the European Court of Justice, and decisions of the Commission of the European Communities. All the legal databases are available to subscribers to Lexis. The databases are continuously updated, and new legal decisions are added sometimes as soon as 48 hours after being handed down.

The Lexis databases are not easy to search for suggestive analogies relevant to river basin disputes, though presumably Lexis or a comparable source would have to be reviewed by water lawyers working on the final stages of a contract, a treaty, or litigation. What makes Lexis difficult is that a user must search the full text of the entries in a database. Lexis contributes no keywords, abstracts, or summaries, just the straight text whether it is a legal decision, a tax regulation, or a patent. One advantage of this approach is that a lot of new information can be added quickly; there is no need to wait for someone to keyword or abstract each new entry. The disadvantage is that judges, journalists, and administrators, in writing their opinions, newspaper articles, and regulations, do not necessarily use the terms of negotiation analysis in ways that lend themselves to computer searches. For example, imagine a judicial opinion that requires a polluter to post a bond which he will forfeit if he fails to meet a certain target clean-up date. Such a judgement is comparable to a contingent agreement, but there is no guarantee that the word "contingent," or even a plausible synonym, will necessarily appear in the judge's opinion.

There is a second set of commercial databases designed principally for lawyers, WESTLAW, which is produced by West

Publishing Company. WESTLAW provides more than just the texts of legal decisions. It includes headnotes and synopses written by its own editors, and it classifies cases by topics as well as by courts and judges. These added features make searches easier on WESTLAW than on Lexis, though they mean added time in getting a new case added to the WESTLAW databases.

Even with its synopses and headnotes however, WESTLAW is not easy to search for successful river basin negotiations. First, neither it nor Lexis includes the real success stories, those agreements settled out of court or, better yet, without ever having contemplated litigation at all. Second, judicial opinions and administrative rulings are more often judgements in favor of one party or another's position, not examples of creative integrative bargaining. Third, even where an opinion or a ruling does exemplify principles of integrative bargaining, it is not presented as such in the text in WESTLAW or Lexis.

The conclusion is that while WESTLAW and Lexis, like SHERFACS and CASCON, may provide raw material that can be productively mined in building ILLEX, they do not provide directly an easy way to zero in on past successes that provide helpful analogies for current international river basin negotiations. They do not make ILLEX redundant.

#### 4. SEARCHING THE DATABASE: A TUTORIAL

This section presents complete instructions for going step-by-step through a simple sample computer search of ILLEX. It is not intended to replace the FYI 3000 Plus users manual as a guide to the searching software. But it helps give an immediate sense of what ILLEX can provide when used on the computer. And it should be enough so that readers so inclined can forge ahead, prior to reading any manuals, with other searches beyond the sample given here.

Throughout the tutorial there will be reproductions of what the person using ILLEX should see on the computer screen at each stage of the search. These reproductions of what is on the screen will be set off from the rest of the text with double dashed lines; i.e., "====="." These reproductions of screen displays are provided solely so that you can check at any point to make sure things are going the way they should. It is not necessary even to read them as you go along, and some readers may find it easiest to go through this section a first time just following my tutorial instructions about which keys to hit, while barely taking in what is on the screen.

To the extent that you do read some of what shows on the screen, please do not let yourself get distracted by any puzzling information, options, and instructions. If something appears that is neither straightforward nor explained in my instructions, then it is not necessary for getting through the



tutorial. Ignore it. There will be plenty of time to explore later, with or without the FYI 3000 Plus users manual, more complex features of FYI 3000 Plus and ILLEX. The purpose of this section is simply to plod step-by-step through a sample search that is very basic.

One bit of additional advice for those who are using a computer for the first time. When you strike a key, release it promptly. If you hold the key down, the computer will think you meant to hit it twice, or three times, or more, depending on how long you hold it down.

My text reproductions of what appear on the screen are not perfect. For example, sometimes FYI 3000 Plus presents something on the screen in "reverse video," i.e., dark letters on a light background instead of light letters on a dark background. Since I haven't such fancy graphics here, text that appears in reverse video on the screen will be underlined in this section. Another convention I have used is that things that are to be typed by the person using ILLEX are enclosed in curly brackets, "{ }." You should type exactly what is inside the curly brackets, but not the brackets themselves.

This tutorial is based on a system with two floppy disk drives.

Boot your system so that the "A>" prompt appears. (If you don't understand this sentence, I think the easiest solution is to find someone who does. Alternatively, the manuals with your computer should explain how to boot your system.) Insert the diskette that says "FYI 3000 Plus" into drive A and type {fyi3000p}, and hit a carriage return. The screen will shortly appear as follows.

```
=====
                          FYI 3000 Plus (tm)
                          Bringing power to your information
                          Copyright (C) 1986 FYI, Inc.
                          Unauthorized copying violates Federal law.
                          v3.15 FY+OIB7-10115L
=====
```

START-UP MENU

F1 - Access existing filing systems

F5 - Create new filing systems

<Esc> - Exit from program

Press F1, F5, or <Esc> >

---

=====

The "F1" stands for the function key #1. Therefore, just hit the function key #1 (hereafter referred to as F1). You don't have to hit a carriage return. The screen will then look like this.

=====

Select from existing filing systems  
on > A:\

NO FILING SYSTEMS HERE

Type the number of filing system you want, and press ENTER.  
Or, type a new drive:\path, then press ENTER.  
Or, press <Esc> to go back to START-UP MENU.

>

---

=====

Insert into drive B the diskette labeled "ILLEX DISK NO. 1," type {b:\} and a carriage return. Now the screen will look a little more encouraging.

```
=====
Select from existing filing systems
on > B:\
```

```
1  ILLEX
```

```
Type the number of filing system you want, and press ENTER.
Or, type a new drive:\path, then press ENTER.
Or, press <Esc> to go back to START-UP MENU.
```

```
>
```

```
=====
Now type {1} and a carriage return.  You will see:
```

```
=====
Filing system title: ILLEX
      Last modified: October 5, 1988
              Comment: Revision 0.04
Entries defined by: Start and end markers
      Number of entries:      94
      Type of key words: Separate keywords
      Number of key words:    363
Total number of key words
in entire filing system:    1432
```

```
MAIN MENU
```

```
F1 - Search filing system
F2 - Display vocabulary
F3 - Add entries
F4 - Re-index this filing system
F5 - Select another filing system
```

```
<Esc> - Go back to start-up menu
```

```
Press F1, F2, F3, F4, F5, or <Esc> >
```

```
=====
At this stage, it is worth pointing out that you can
almost always get out of any trouble within ILLEX by hitting
the escape key, <Esc>, one, twice, or however many times you
need to get back to a menu screen you recognize, and then start
fresh from there.  If you hit <Esc> enough times, you will
eventually get back to the "A>" prompt of the operating system.
```

To continue on from the above screen, hit F1. We want to do a sample search of ILLEX's examples. You will get the following.

```
=====
| For 'automatic' searching, just type a search word and press
| ENTER.
```

```
| For 'full-control' Boolean, type several left parentheses
| '((( then start building your search request.
```

```
| For truncation in either search mode, type the first letters
| of the word, followed by *.
```

```
| \ must precede search operators. <Esc> to quit.
```

```
| >
```

```
=====
| Here is where we start to tell ILLEX what sorts of
| entries we want to see. We do this by typing one or more
| keywords. If we want to see all of ILLEX's examples, we would
| need to give it only the keyword EXAMPLES. But if we want to
| be more specific and see only those examples dealing with
| navigation, we would need to instruct ILLEX to show us any
| entries whose set of keywords includes both EXAMPLES and
| NAVIGATION. For the purposes of this tutorial, suppose we
| would like to see examples involving tradeoffs where one of the
| relevant issues is sovereignty. This means we are looking for
| entries in ILLEX that have the three keywords, EXAMPLES and
| TRADEOFFS and SOVEREIGNTY.
```

Begin by typing {EXAMPLES} and a carriage return. If you make a mistake, use the backspace key. Or you can always hit the escape key, which will take you back to the screen in the middle of page 16, and start with the search again. You may type the keyword in upper or lower case letters. After your carriage return the screen will be as follows.

```
=====
| ((EXAMPLES
```

```
| and >
```

At this point type the next keyword {TRADEOFFS} and a carriage return. The screen will appear as follows.

```
=====
| ((EXAMPLES \AND TRADEOFFS
|
| and >
|=====
```

Now it is time to type the third keyword. At this stage, however, in order to demonstrate a nice feature of FYI 3000 Plus, I suggest that you make a spelling mistake, say, {SOVEREIGNTY}. Then hit the carriage return. Since SOVEREIGNTY is not in ILEX's vocabulary, the screen will appear as follows.

```
=====
| ((EXAMPLES \AND TRADEOFFS
|
| SOVEREIGNTY not recognized
|   these are close
|
| 1  SOLE, M.E.
| 3  SOUNDPROOFING
| 7  SOUTH AFRICA
| 1  SOUTHERN AFRICAN DEVELOPMENT COORDINATION CONFERENCE
| 11 SOVEREIGNTY
| 7  SOVIET UNION
| 3  SPAIN
| 1  STEIN, JANICE GROSS
| 1  STEINHAUS PROCEDURE
| 2  STREET REPAIRS
|
| retype >
|=====
```

If you now type it correctly, {SOVEREIGNTY}, and hit a carriage return, you will get the following.

```
=====
| ((EXAMPLES \AND TRADEOFFS \AND SOVEREIGNTY
|
| and >
|_____
|=====
```

Since we have no other keywords to add to this search, just hit a carriage return. You will get the following. (For those of you who think the screen below is identical to the one above, look again. In the screen below there is a parenthesis after SOVEREIGNTY, and the "and" on the reverse video line has changed to "or." Why the computer does this is indeed significant, but not for this tutorial. It is explained in the FYI 3000 Plus users manual.)

```
=====
| ((EXAMPLES \AND TRADEOFFS \AND SOVEREIGNTY)
|
| or (
|_____
|=====
```

Although the software is giving us the chance to make a more complex search, we are not interested (for the purposes of this tutorial); again hit a carriage return. There will be a brief message on the screen saying "SEARCHING," and then you will see:

```
=====
SEARCH RESULTS MENU

5 entries were found that match your search request:

----- Current Output Choices -----

Output destination is: ON SCREEN WITH OPTIONAL OUTPUT TO
                        PRINTER
Output content is: WHOLE ENTRY, INCLUDING MARKERS AND KEY
                   WORDS
Search request included with output - YES
Disk and file names included with output - YES
Retrieval Order - FIRST IN - FIRST OUT

Press ENTER to proceed with output,

    or

F1 - Choose other output options (printer, disk file,
    content)
F2 - Save search criteria on disk

F6 - Do another search (RESULTS OF CURRENT SEARCH WILL BE
    LOST)
<Esc> - Return to Main Menu (RESULTS OF CURRENT SEARCH WILL
    BE LOST)

Press ENTER, F1, F2, F6, or <Esc> >
=====
```

The second line on the above screen is important. It tells us that out of the 94 entries in ILLEX, the software found five that fit the search request, i.e., that, whatever their other characteristics, have all three keywords EXAMPLES, TRADEOFFS, and SOVEREIGNTY.

Rather than simply hitting a carriage return ("pressing ENTER") to see the five examples in ILLEX that fit the search request, I suggest first instructing the machine to show us just summary titles of the five examples until we specifically ask it for the complete entries. To do this hit F1 to tell the machine we want to "choose other output options." The following menu will appear.

=====

OUTPUT OPTIONS MENU

F1 - Output to (screen, printer or disk)  
now: ON SCREEN WITH OPTIONAL OUTPUT TO PRINTER  
F2 - Output content  
now: WHOLE ENTRY, INCLUDING MARKERS AND KEY WORDS  
F3 - Search request included with output .....now: YES  
F4 - Disk and file names included with output ..now: YES  
F5 - Retrieval Order: FIRST IN - FIRST OUT

ENTER - Continue with output

Press ENTER, F1, F2, F3, F4, or F5 >

=====

The two lines that say

"F2 - Output content  
now: WHOLE ENTRY, INCLUDING MARKERS AND KEY WORDS"

mean, first, that if we proceed to look at the five entries resulting from our search, we will be shown each entry in its entirety. Second, these lines tell us that if we want to see something less in the way of "Output content," the first thing to do is hit F2.

When you hit F2, a menu will appear at the bottom of the screen, so the whole screen will look like this.



=====

OUTPUT OPTIONS MENU

- F1 - Output to (screen, printer or disk)  
now: ON SCREEN WITH OPTIONAL OUTPUT TO PRINTER
- F2 - Output content  
now: WHOLE ENTRY, INCLUDING MARKERS AND KEY WORDS
- F3 - Search request included with output .....now: YES
- F4 - Disk and file names included with output ..now: YES
- F5 - Retrieval Order: FIRST IN - FIRST OUT

ENTER - Continue with output

CHOOSE OUTPUT CONTENT

- F1 - Whole entry, including markers and key words
- F2 - Entry without markers or key words
- F3 - Short form (between \*C and first \*)

Press F1, F2, or F3 >

=====

We want the short form, so hit F3. Don't worry about the meaning of the phrase in parentheses, though if you look at Appendix 2, it should be fairly apparent what's going to happen. The machine makes the change on the Output Options Menu, which now looks like this.

=====

OUTPUT OPTIONS MENU

- F1 - Output to (screen, printer or disk)  
now: ON SCREEN WITH OPTIONAL OUTPUT TO PRINTER
- F2 - Output content  
now: SHORT FORM (BETWEEN \*C AND FIRST \*)
- F3 - Search request included with output .....now: YES
- F4 - Disk and file names included with output ..now: YES
- F5 - Retrieval Order: FIRST IN - FIRST OUT

ENTER - Continue with output

Press ENTER, F1, F2, F3, F4, or F5 >

=====

Now that we've made that change, let's "Continue with output" by hitting ENTER (or carriage return). This takes us

back to the Search Results Menu with our change noted (see the line that begins "Output content is").

```
=====
SEARCH RESULTS MENU

5 entries were found that match your search request:

----- Current Output Choices -----

Output destination is: ON SCREEN WITH OPTIONAL OUTPUT TO
PRINTER
Output content is: SHORT FORM (BETWEEN *C AND FIRST *)
Search request included with output - YES
Disk and file names included with output - YES
Retrieval Order - FIRST IN - FIRST OUT

Press ENTER to proceed with output,

or

F1 - Choose other output options (printer, disk file,
content)
F2 - Save search criteria on disk

F6 - Do another search (RESULTS OF CURRENT SEARCH WILL BE
LOST)
<Esc> - Return to Main Menu (RESULTS OF CURRENT SEARCH WILL
BE LOST)

Press ENTER, F1, F2, F6, or <Esc> >
=====
```

Again we are told to press ENTER to proceed with output, so hit another carriage return. This will bring up the following.

```
=====
Please insert ILLEX DISK NO. 1
and indicate drive
Drive A,B,C>
=====
```

ILLEX DISK NO. 1 is already in drive B, so just hit {b}, with no carriage return. The short form, or summary title, of the first of the five selected examples will now appear.

```
=====
<Esc> Next Former Back Change <PgUp> <Pg Dn> 1 of 5
ILLEX DISK NO. 1 EX1 .D01
=====
```

```
THE USE OF JOINT OWNERSHIP IN THE DEVELOPMENT PLAN OF "THE
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL"
(OMVS) AS AN EXAMPLE OF TRADING SOME SOVEREIGN PRIVILEGES
IN ONE'S OWN COUNTRY IN EXCHANGE FOR BEING FREE OF
COMPARABLE CONSTRAINTS IN ANOTHER COUNTRY. (# E011)
```

```
Print Whole ( End of Entry )
=====
```

In the upper right corner of the screen the phrase "1 of 5" means that you are looking at the first of the five examples in ILLEX that satisfied the search request. To look at the title, or short form, for the second example use the "Next" command from the list of possibilities given on the top line on the screen. To use the "Next" command, just type the letter {n}. It can be upper case or lower case, and you do not need a carriage return. After you type {n}, the screen will show the title of the second of the five ILLEX examples selected.

```
=====
<Esc> Next Former Back Change <PgUp> <Pg Dn> 2 of 5
ILLEX DISK NO. 1 EX3 .D03
=====
```

```
THE 1978 CAMP DAVID ACCORDS BETWEEN EGYPT AND ISRAEL AS AN
EXAMPLE OF SEPARATING THE ISSUES OF SOVEREIGNTY AND
SECURITY, THUS ALLOWING PRODUCTIVE TRADEOFFS. (# E032)
```

```
Print Whole ( End of Entry )
=====
```

To move on to the third of the five selected examples, type {n} again.

```
=====
<Esc> Next Former Back Change <PgUp> <Pg Dn> 3 of 5
ILLEX DISK NO. 1 EX4 .D04
=====
```

THE 1958-1961 ICELANDIC FISHERIES DISPUTE AS AN EXAMPLE OF SEPARATING ISSUES AND SUBSEQUENT TRADEOFFS. (# E047)

Print Whole ( End of Entry )

To see the fourth of the five selected examples, type {n} once more.

```
=====
<Esc> Next Former Back Change <PgUp> <Pg Dn> 4 of 5
ILLEX DISK NO. 1 EX4 .D04
=====
```

THE 1973 DE LA PLATA RIVER AGREEMENT BETWEEN ARGENTINA AND URUGUAY AS AN EXAMPLE OF SEPARATING ISSUES, OF TRADEOFFS, AND OF JOINT OWNERSHIP. (# E048)

Print Whole ( End of Entry )

And to see the last of the five selected examples, type {n} one last time.

```
=====
<Esc> Next Former Back Change <PgUp> <Pg Dn> 5 of 5
ILLEX DISK NO. 1 EX5 .D07
=====
```

THE 1986 LESOTHO HIGHLANDS WATER PROJECT TREATY AS AN EXAMPLE OF TRADING OFF THE ISSUES OF SOVEREIGNTY AND OPERATIONAL CONTROL. (# E055)

Print Whole ( End of Entry )

Let us now go back to the third of the five examples and look at it in more detail. To go backwards through the group of five selected examples, use the "Former" command. To use the "Former" command, simply type {f}. The summary of the fourth example will appear.

```
=====
|<Esc> Next Former Back Change <PgUp> <Pg Dn> 4 of 5|
|ILLEX DISK NO. 1 EX4 .D04|
|
|THE 1973 DE LA PLATA RIVER AGREEMENT BETWEEN ARGENTINA AND
|URUGUAY AS AN EXAMPLE OF SEPARATING ISSUES, OF TRADEOFFS,
|AND OF JOINT OWNERSHIP. (# E048)|
|
|Print Whole ( End of Entry )|
|=====
```

Type {f} again, and the summary of the third example will appear.

```
=====
|<Esc> Next Former Back Change <PgUp> <Pg Dn> 3 of 5|
|ILLEX DISK NO. 1 EX4 .D04|
|
|THE 1958-1961 ICELANDIC FISHERIES DISPUTE AS AN EXAMPLE OF
|SEPARATING ISSUES AND SUBSEQUENT TRADEOFFS. (# E047)|
|
|Print Whole ( End of Entry )|
|=====
```

To see the more detailed information contained in ILLEX for this example, we have to change the "output content" from the short form we selected earlier, back to a more complete form. To do this use the "Change" command, which you do by simply typing {c}. The "Choose Output Content" menu that we've seen before will now pop up on the bottom of the screen.

=====  
<Esc> Next Former Back Change <PgUp> <Pg Dn> 3 of 5  
ILLEX DISK NO. 1 EX4 .D04

THE 1958-1961 ICELANDIC FISHERIES DISPUTE AS AN EXAMPLE OF  
SEPARATING ISSUES AND SUBSEQUENT TRADEOFFS. (# E047)

CHOOSE OUTPUT CONTENT

F1 - Whole entry, including markers and key words

F2 - Entry without markers or key words

F3 - Short form (between \*C and first \*)

Press ENTER, F1, F2, or F3 >

=====  
If you now hit F1, you will see the first screen for the  
whole entry.

=====  
<Esc> Next Former Back Change <PgUp> <Pg Dn> 3 of 5  
ILLEX DISK NO. 1 EX4 .D04

\*C

THE 1958-1961 ICELANDIC FISHERIES DISPUTE AS AN EXAMPLE OF  
SEPARATING ISSUES AND SUBSEQUENT TRADEOFFS. (# E047)

\*

In 1958 Iceland precipitated a dispute with the United  
Kingdom by announcing that Iceland would extend its  
territorial limits from four to twelve miles offshore. The  
ocean newly enclosed by the twelve-mile boundary would be  
closed to UK fishing. UK fishermen ignored the Icelandic  
position which led to several incidents involving the  
Icelandic Coast Guard, UK trawlers, a UK destroyer at one  
point, and gunfire at another.

"Tension eased, however, when Iceland announced that it had  
planned to raise the matter of territorial limits at the UN  
Law of the Sea Conference scheduled for 1960.

"The Conference met from March to April but failed to  
officially extend off-shore fishing limits. The UK then  
suggested bilateral talks be held and agreed to halt fishing  
activity in the disputed

Print Whole <sp> = more

Notice that at the bottom where it used to say "(End of Entry)" it now says "<sp> = more." What the new phrase means is that you should hit the space bar if you want to see more of this example. If you do hit the space bar, here is what you will see.

```
=====
|<Esc> Next Former Back Change <PgUp> <Pg Dn> 3 of 5|
|ILLEX DISK NO. 1 EX4 .D04|
|
|waters while negotiations were in progress. Agreement was
|reached in 1961: the UK dropped its objections to the
|12-mile limit, and Iceland agreed to allow British vessels
|to operate in the area during specified months of the year.
|Icelandic policy led to a renewed dispute on these issues
|ten years later."
|
|The 1961 agreement thus separated the issue of sovereignty
|from that of fishing rights, allowing a trade where Iceland
|was satisfied on the sovereignty issue and the UK got
|fishing rights that it considered acceptable.
|
|References:
|
|Robert Lyle Butterworth (with Margaret E. Scranton),
|"Managing Interstate Conflict, 1945-74: Data with Synopses,"
|University Center for International Studies, University of
|Pittsburgh, 1976, p. 248
|
|LAST MODIFIED: McDonald - 4/13/88 - checked
|
|Print Whole <sp> = more
|=====
```

From the bottom of the screen, you will notice we are not yet at the "(End of Entry)." Hitting the space bar one more time gives:

```

=====
|<Esc>  Next  Former  Back  Change  <PgUp>  <Pg Dn>  3 of 5|
|ILLEX DISK NO.  1                                     EX4  .D04|
|-----|
|*K|
|# E047 / EXAMPLES/ CREATIVE COMPROMISES/ SEPARATING ISSUES/|
|TRADEOFFS / BOUNDARIES /|
|FISHING / SOVEREIGNTY / UNITED KINGDOM / UK / ICELAND /|
|INTERNATIONAL / WET|
|*E|
|Print Whole ( End of Entry )|
|-----|
=====

```

Now we're at the end of the 1958-1961 Icelandic Fisheries Dispute example. If you want to read it again from the beginning, use the "Back" command by typing {b}. If you want to go on to the fourth of the five selected examples, use the "Next" command by typing {n}. You will see the first screen of the full form of the 1973 de la Plata River Agreement example.

If you want to change back to the "short form" at any time, use the "change" command by typing {c}. Then hit F3 to reset the machine to the short form.

Whenever you tire of the five selected examples, hit the "Escape" key, which will return you to the "Search Results Menu." From there you can start another search by hitting F6. If, however, you would rather stop at this point, hit the Escape key once more to get back to the "Main Menu," then once more again to get back to the "Start-Up Menu," and then one final time to get back to the operating system's "A>" prompt. Then take out the diskettes and turn off the machine.

If you feel an urge to save the results of this search for future reference, fight it. With a little practice, you will find it becomes easier to reproduce simple searches than to keep results well organized on floppy diskettes. If you would like a copy of the search material printed out, that is straightforward. It is well described in the FYI 3000 Plus manual, so the reader is referred to that source at this point.

5. SUMMARY

In order to solicit comments and criticisms at an early stage, this Working Paper has described work in progress on building a computer database of illustrative negotiating successes relevant to managing international river basins. Any



and all comments on either the substance of the work, or its presentation in this paper, will be very welcome.

## 6. REFERENCES

Lincoln P. Bloomfield, "Computers and Foreign Policy: The CASCON System," unpublished draft, Massachusetts Institute of Technology, November, 1987

Robert Lyle Butterworth with Margaret E. Scranton, Managing Interstate Conflict, 1945-74: Data with Synopses, University Center for International Studies, University of Pittsburgh, 1976

Roger Fisher and William L. Ury, Getting to Yes, Penguin, New York, 1981

David A. Lax and James K. Sebenius, The Manager as Negeotiator, Macmillen Free Press, New York, 1986

Howard Raiffa, The Art and Science of Negotiation, Harvard University Press, 1982

Frank L. Sherman (1987a), "Four Major Traditions of Historical Events Research: A Brief Comparison," presented at the MIT/Center for International Studies--Data Directions in International Relations Conference on "New Technologies for Storing, Indexing, Retrieving, Coding and Analyzing Information on International Events," Cambridge, Massachusetts, November 13-15, 1987

Frank L. Sherman (1987b), Miami University (Ohio), private correspondence, December, 1987

Thomas T. Weeks, "A Checklist for Negotiators," unpublished draft, Harvard University John F. Kennedy School of Government, May 5, 1986

## APPENDIX 1

### Vocabulary of Keywords

(Note: If you use the computer to look at the full ILLEX vocabulary, following the instructions in the FYI 3000 Plus users manual, you will find the first computer screen is not exactly the same as the beginning of this appendix. Instead the computer version starts with a lot of codes:

```
" 1   # D001
   1   # D002
   1   # D003
   1   # E001
   1   # E002
   1   # E003
   1   # E004
```

..."

This is because each entry in ILLEX has been given a unique code, which is included in both the entry's summary title and its set of keywords. Because they are included as keywords, the codes get included by ILLEX in its vocabulary. And it is a peculiarity of the FYI 3000 Plus software that because the codes begin with the special symbol, "#," they get included at the beginning of the vocabulary. Because the codes are more of a nuisance than a help for someone perusing the vocabulary, they were purposely left out of the listing in this appendix.)

Number of  
Appearances

Keyword

1	AGREEMENT FOR THE FULL UTILISATION OF THE NILE WATERS
5	AID
3	ALGERIA
1	ALPER, DONALD K.
2	ANALYTIC EXPENSES
4	ANTARCTICA
14	ARGENTINA
1	AUCTIONS
3	AUSTRALIA
2	AUSTRIA
3	BEAGLE CHANNEL
4	BELGIUM
1	BENDAHMANE, DIANE B.
1	BENIN
1	BINATIONAL ENTITY FOR YACYRETA
2	BOLIVIA
1	BOTSWANA
4	BOUNDARIES
2	BOUNDARY WATERS TREATY
9	BRAZIL
1	BROWNELL, HERBERT
2	BULGARIA
1	BUTTERWORTH, ROBERT LYLE
1	BYELOYRUSSIA
1	CAMEROUN
11	CANADA
1	CANO, GUILLERMO J.
2	CFCS
1	CHAD
6	CHILE
2	CHLORINE
2	CHLOROFLUOROCARBONS
2	COLORADO RIVER
4	COLUMBIA RIVER
4	COLUMBIA RIVER TREATY
1	COMMISSION FOR TECHNICAL COOPERATION IN AFRICA
5	COMPENSATION
5	CONTINGENT AGREEMENTS
19	COOPERATIVE TACTICS
12	COST ALLOCATION
36	CREATIVE COMPROMISES
2	CSSR
1	CTM
3	CYPRUS
2	CZECHOSLOVAKIA
1	DE LA PLATA RIVER
3	DEFINITIONS
2	DEL PLATA BASIN
1	DENMARK
2	DIOXIN

1 DISCOUNT RATES  
2 DIVIDE-AND-CHOOSE  
3 DONORS  
18 DRY  
1 DUMANOSKI, DIANNE  
1 EATON, SAMUEL D.  
1 EBY  
2 EC  
1 ECE  
1 ECONOMIC COMMISSION FOR EUROPE  
3 EEC  
12 EGYPT  
7 EQUAL BENEFITS  
1 EQUAL BURDENS  
4 EQUAL COSTS  
1 EQUAL OPPORTUNITIES  
2 EUROPEAN COMMUNITIES  
3 EUROPEAN ECONOMIC COMMUNITY  
56 EXAMPLES  
4 FACILITIES  
19 FAIR DIVISION  
8 FEDERAL REPUBLIC OF GERMANY  
1 FINANCIAL FUND FOR THE DEL PLATA BASIN DEVELOPMENT  
2 FINLAND  
3 FIRE PROTECTION  
1 FISHER, ROGER  
2 FISHING  
5 FLOOD CONTROL  
6 FLOODING  
6 FLOW REGULATION  
1 FONPLATA  
11 FRANCE  
8 FRG  
4 GDR  
4 GERMAN DEMOCRATIC REPUBLIC  
1 GODANA, BONAYA ADHI  
3 GREECE  
4 GUINEA  
1 HAAS, PETER M.  
1 HASHIMOTO, T.  
2 HUNGARY  
24 HYDROELECTRICITY  
1 ICELAND  
1 IIASA  
6 IJC  
5 INCREMENTAL AGREEMENTS  
5 INDIA  
2 INDUS WATER TREATY  
1 INTERNAL BARGAINING  
60 INTERNATIONAL  
2 INTERNATIONAL BOUNDARY AND WATER COMMISSION  
1 INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS  
6 INTERNATIONAL JOINT COMMISSION  
9 INTERVENOR WITH RESOURCES AND INTERESTS

14 INTERVENTION  
5 IRRIGATION  
10 ISRAEL  
2 ITAIPU TREATY  
1 ITALCONSULT  
8 ITALY  
1 IVORY COAST  
6 JAPAN  
2 JOB TRAINING  
2 JOINT ANALYSIS  
2 JOINT OWNERSHIP  
1 JORDAN, WILLIAM J.  
1 JOYNER, CHRISTOPHER C.  
1 KENYA  
1 KIMBALL, LEE A.  
1 KONKEL, R. STEVEN  
  
1 KRUTILLA, JOHN V.  
1 LAKE VICTORIA  
1 LAND USE  
10 LAW OF THE SEA  
1 LAX, DAVID A.  
3 LEBANON  
2 LEGAL EXPENSES  
1 LEMARQUAND, DAVID G.  
4 LESOTHO  
4 LESOTHO HIGHLANDS WATER PROJECT  
3 LIBYA  
1 LIECHTENSTEIN  
1 LUXEMBOURG  
13 MALI  
3 MALTA  
1 MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
12 MAURITANIA  
1 MCDONALD, JOHN W., JR.  
3 MEDITERRANEAN ACTION PLAN  
2 MEDITERRANEAN SEA  
1 MEHTA, J.S.  
2 MEXICO  
7 MILITARY THREATS  
14 MINERALS  
14 MINING  
1 MIT  
1 MIXED TECHNICAL COMMISSION FOR SALTO GRANDE  
3 MONACO  
1 MONAHAN, ROBERT L.  
1 MONITORING  
3 MOROCCO  
1 MOZAMBIQUE  
4 NATIONAL  
46 NATURAL RESOURCES  
12 NAVIGATION  
2 NETHERLANDS  
1 NEW YORK ACADEMY OF SCIENCES  
3 NEW ZEALAND  
3 NGUYEN, QUAC-LAN  
1 NICKSON, R. ANDREW

1 NIGER  
2 NIGER RIVER  
1 NIGER RIVER BASIN AUTHORITY  
1 NIGERIA  
3 NILE RIVER  
4 NORWAY  
1 NUCLEOLUS  
2 ODOR CONTROL  
3 OERS  
1 OIL RESOURCES  
1 OKADA, N.  
12 OMVS  
3 ORGANISATION DES ETATS RIVERAINS DE SENEGAL  
12 ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL  
1 OWENS FALLS DAM AGREEMENT  
2 OZONE  
2 PAKISTAN  
4 PALESTINIANS  
4 PANAMA  
4 PANAMA CANAL  
5 PARAGUAY  
3 PARANA RIVER  
3 PEOPLE'S REPUBLIC OF CHINA  
4 POLAND  
9 POLLUTION  
3 POPE  
3 PRC  
1 PRINCEN, THOMAS  
1 PRINCEN, THOMAS E.  
5 PROFIT SHARING  
1 PROPORTIONAL BENEFITS  
2 PROPORTIONAL BURDENS  
5 PROPORTIONAL COSTS  
1 PROPORTIONAL NUCLEOLUS  
35 PUBLICATIONS  
1 RAIFFA, HOWARD  
3 RECREATIONAL FACILITIES  
2 RISK AVERSION  
8 ROYALTIES  
1 SADCC  
5 SALINITY  
4 SCRB  
2 SEBENIUS, JAMES K.  
6 SECURITY  
12 SENEGAL  
12 SENEGAL RIVER  
4 SEPARABLE COSTS - REMAINING BENEFITS  
7 SEPARATING ISSUES  
3 SEWAGE TREATMENT  
1 SHAPLEY VALUE  
5 SINGLE NEGOTIATING TEXT  
3 SITING  
4 SKAGIT RIVER VALLEY TREATY  
5 SNT  
1 SOLE, M.E.

3 SOUNDPROOFING  
7 SOUTH AFRICA  
1 SOUTHERN AFRICAN DEVELOPMENT COORDINATION CONFERENCE  
11 SOVEREIGNTY  
7 SOVIET UNION  
3 SPAIN  
1 STEIN, JANICE GROSS  
1 STEINHAUS PROCEDURE  
2 STREET REPAIRS  
1 SUDAN  
1 SULPHUR  
4 SWEDEN  
1 SWITZERLAND  
3 SYRIA  
2 TANZANIA  
7 TERRITORY  
4 THIRD-PARTY ANALYSIS  
22 TRADEOFFS  
3 TUNISIA  
3 TURKEY  
1 U. S. CONGRESS  
1 UGANDA  
6 UK  
4 UNEP  
6 UNITED KINGDOM  
  
15 UNITED NATIONS  
4 UNITED NATIONS ENVIRONMENT PROGRAMME  
31 UNITED STATES  
1 UPPER VOLTA  
8 URUGUAY  
4 URUGUAY RIVER  
1 URY, WILLIAM  
31 USA  
2 USER FEES  
7 USSR  
2 UTAH STATE UNIVERSITY  
1 VAN ROBBROECK, T.P.C.  
3 VATICAN  
1 VOTING POWER  
1 WALSH, JOHN  
2 WATER ALLOCATION  
5 WATER QUALITY  
3 WATER STORAGE  
7 WATER SUPPLY  
1 WEAK NUCLEOLUS  
68 WET  
2 WORLD BANK  
1 YOUNG, H. PEYTON  
3 YUGOSLAVIA  
1 ZACPLAN  
1 ZAMBEZI ACTION PLAN  
2 ZAMBEZI RIVER  
2 ZAMBIA  
2 ZIMBABWE

APPENDIX 2

The Database to Date (Revision 0.04)



\*C  
THE LAW OF THE SEA AS AN EXAMPLE OF FAIR DIVISION USING THE  
DIVIDE-AND-CHOOSE METHOD. (# E001)

\*  
One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. The Convention establishes rules for deep-sea mining by private and state companies. It also establishes an international mining entity called the "Enterprise." The initial position of most Third-World countries was that the Enterprise should be the sole exploiter of seabed resources. Most developed countries preferred that the Enterprise be little more than a claims registry to facilitate mining by private and state companies.

The eventual compromise is, among other things, an example of the divide-and-choose principle of fair division. The Convention creates a parallel system. Private and state companies can mine. So can the Enterprise. However, relative to existing companies with their established expertise and technology, the Enterprise is at a disadvantage in identifying and exploring sites. Thus a "first come, first serve" rule for claiming sites would likely lead to the Enterprise being forever one step behind and left with the worst sites. The Convention, therefore, eventually incorporated a divide-and-choose system. A company wishing to mine must define two mining sites in its applications. The Enterprise then chooses one to reserve for current or future development by the Enterprise. The company can mine the other. Thus the applicant company is the "divider;" the Enterprise is the "chooser."

References:

The Law of the Sea: United Nations Convention on the Law of the Sea. United Nations, NY [Annex III, Article 8, p. 119]

James K. Sebenius. Negotiating the Law of the Sea. Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

\*K  
# E001 / EXAMPLES / CREATIVE COMPROMISES / NATURAL RESOURCES /  
DIVIDE-AND-CHOOSE / FAIR DIVISION / LAW OF THE SEA / MINING /  
UNITED NATIONS / MINERALS /  
INTERNATIONAL / WET

\*E

\*C  
THE MEDITERRANEAN ACTION PLAN AS AN EXAMPLE OF TRADING OFF  
POLLUTION CONTROLS FOR TECHNOLOGY TRANSFER. (# E002)

\*

In the Mediterranean Action Plan (MedPlan), facilitated from the start by the United Nations Environment Programme (UNEP), the northern developed countries wanted pollution controls. Southern, developing countries such as Algeria and Egypt saw such controls, particularly on shoreline industries, as hindering their economic development and therefore undesirable.

In the end the southern, developing countries agreed to such controls. One of the things they got in return from the developed countries was knowledge and technology transfer to help establish in their own (developing) countries ocean monitoring and research facilities and expertise.

References:

Peter M. Haas, "Dishonorable Discharges: International Collaboration for Mediterranean Pollution Control." Massachusetts Institute of Technology Ph.D. Thesis, February, 1986

LAST MODIFIED: McDonald - 6/6/88 - unchecked

\*K

# E002 / EXAMPLES / CREATIVE COMPROMISES /  
MEDITERRANEAN SEA / MEDITERRANEAN ACTION PLAN /  
POLLUTION / TRADEOFFS / NATURAL RESOURCES /  
UNEP / UNITED NATIONS / UNITED NATIONS ENVIRONMENT PROGRAMME /  
ALGERIA / CYPRUS / EEC / EGYPT / EUROPEAN ECONOMIC COMMUNITY /  
FRANCE / GREECE / ISRAEL / ITALY / LEBANON / LIBYA / MALTA /  
MONACO / MOROCCO / SPAIN / SYRIA / TUNISIA / TURKEY /  
YUGOSLAVIA /  
INTERNATIONAL / WET

\*E

\*C

THE MEDITERRANEAN ACTION PLAN AS AN EXAMPLE OF AN INTERVENOR WITH  
RESOURCES AND INTERESTS. (# E003)

\*

The Mediterranean Action Plan was facilitated from the start by the United Nations Environment Programme (UNEP). UNEP was a new agency at the time and had an interest in reaching an agreement that was visible and impressive and would establish it as a significant player in international relations.

In pursuing an agreement, UNEP used its money to fund studies, research, and conferences in countries which were hesitant and whose participation in the negotiation UNEP wanted to maintain. At important points in the negotiations, such funds proved an important inducement in maintaining participation of some hesitant countries.

References:

Peter M. Haas, "Dishonorable Discharges: International

Collaboration for Mediterranean Pollution Control." Massachusetts Institute of Technology Ph.D. Thesis, February, 1986

LAST MODIFIED: McDonald - 6/6/88 - unchecked

\*K

\* E003 / EXAMPLES / COOPERATIVE TACTICS /  
INTERVENOR WITH RESOURCES AND INTERESTS / INTERVENTION /  
MEDITERRANEAN ACTION PLAN / NATURAL RESOURCES /  
UNEP / UNITED NATIONS / UNITED NATIONS ENVIRONMENT PROGRAMME /  
ALGERIA / CYPRUS / EEC / EGYPT / EUROPEAN ECONOMIC COMMUNITY /  
FRANCE / GREECE / ISRAEL / ITALY / LEBANON / LIBYA / MALTA /  
MONACO / MOROCCO / SPAIN / SYRIA / TUNISIA / TURKEY /  
YUGOSLAVIA /  
INTERNATIONAL / WET

\*E

\*C

THE INDUS WATER TREATY AS AN EXAMPLE OF AN INTERVENOR WITH  
RESOURCES AND INTERESTS. (\* E004)

\*

The 1960 Indus Water Treaty resolved a problem created by the 1948 partition of the Indian Empire into India and Pakistan. The World Bank was the critical intervenor. The World Bank had an interest, consistent with its own charter, in an agreement that would develop the resources of the Indus River. As its principal inducement for an agreement the World Bank offered India and Pakistan the prospect of major financial support. It also persuaded Australia, Canada, New Zealand, the Federal Republic of Germany, the United Kingdom and the United States to pledge additional grants and loans.

The World Bank's technical expertise also facilitated the negotiations. The World Bank and Western countries also had an interest in avoiding an India/Pakistan war over the Indus.

References:

J.S. Mehta, "The Indus Water Treaty (as a case study in the Resolution of International River Basin Conflict)," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/5/88 - checked

\*K

\* E004 / EXAMPLES / COOPERATIVE TACTICS /  
INTERVENOR WITH RESOURCES AND INTERESTS / WORLD BANK /

INTERVENTION / NATURAL RESOURCES /  
INDUS WATER TREATY / INDIA / PAKISTAN /  
WATER ALLOCATION / MILITARY THREATS /  
INTERNATIONAL / WET

\*E

\*C

THE "30% CLUB" AS AN EXAMPLE OF FAIR DIVISION BASED ON THE  
PRINCIPLE OF PROPORTIONAL BURDENS. (\* E005)

\*

In 1985 a number of European countries plus Canada signed a  
protocol obliging them to the following sulphur emission  
reductions as a specific step in implementing the November 13,  
1979 Geneva Convention on Long-range Transboundary Air  
Pollution. Each agreed to reduce its national sulphur emissions  
or its transboundary flux by at least 30% by 1993 at the latest  
using 1980 as the basis for calculating reductions.

As of mid-1988, the Protocol had been ratified by Austria,  
Byeloyrussia, Canada, Czechoslovakia, Denmark, the Federal  
Republic of Germany, Finland, France, Hungary, Liechtenstein,  
Luxembourg, the Netherlands, Norway, Sweden, Switzerland, and the  
USSR. It had also been signed, though not yet ratified, by  
Belgium, the German Democratic Republic, and Italy.

References:

"Protocol on the Reduction of Sulphur Emissions or Their  
Transboundary Fluxes by at Least 30 Per Cent." July 8, 1985.  
United Nations Document ECE/EE.AIR/12; International Digest of  
Health Legislation 36 (1985): 799

LAST MODIFIED: McDonald - 7/25/86 - unchecked

\*E

\* E005 / EXAMPLES / CREATIVE COMPROMISES / BYELOYRUSSIA /  
UNITED NATIONS / ECONOMIC COMMISSION FOR EUROPE / ECE /  
CANADA / AUSTRIA / BELGIUM / BULGARIA / CZECHOSLOVAKIA /  
CSSR / DENMARK / FEDERAL REPUBLIC OF GERMANY / FRG / ITALY /  
HUNGARY / LIECHTENSTEIN / LUXEMBOURG / NETHERLANDS / NORWAY /  
SWEDEN / SWITZERLAND / SOVIET UNION / USSR / FINLAND / FRANCE /  
GERMAN DEMOCRATIC REPUBLIC / GDR /  
POLLUTION / SULPHUR / NATURAL RESOURCES /  
FAIR DIVISION / PROPORTIONAL BURDENS /  
INTERNATIONAL / DRY

\*E

\*C

THE ITAIPU TREATY AS AN EXAMPLE OF COST ALLOCATION AND FAIR  
DIVISION BASED ON THE PRINCIPLES OF EQUAL COSTS AND EQUAL  
BENEFITS. (\* E006)

\*

The 1973 Itaipu Treaty between Brazil and Paraguay provides for the financing, construction, and management of the Itsipu hydroelectric project on the Parana River between the two countries.

Its provisions include an example of equally allocating costs in that each party had to put up 50% of the capital. (The treaty also included a loan from Brazil to Paraguay so that Paraguay could cover its half.) The treaty also includes an example of equal benefits in that the electricity produced is divided equally between the two countries.

References:

R. Andrew Nickson, "The Itaipu Hydro-Electric Project: The Paraguayan Perspective." Latin American Research, Vol. 2 No. 1, May 1982

LAST MODIFIED: McDonald - 4/4/88 - unchecked

\*K

# E006 / EXAMPLES / CREATIVE COMPROMISES /  
ITAIPU TREATY / PARANA RIVER / BRAZIL / PARAGUAY /  
HYDROELECTRICITY / NATURAL RESOURCES /  
FAIR DIVISION / EQUAL COSTS / EQUAL BENEFITS /  
COST ALLOCATION /  
INTERNATIONAL / WET

\*E

\*C

THE DEVELOPMENT PROGRAM OF "THE ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF TRADEOFFS INVOLVING MULTIPLE PROJECTS TO PROVIDE HYDROELECTRICITY AND IMPROVE NAVIGATION, WATER QUALITY, WATER SUPPLY, AND FLOW REGULATION. (\* E007)

\*

The Organisation pour la mise en valeur du fleuve Senegal (OMVS) was formed in 1972 by Mali, Mauritania, and Senegal to provide for integrated development of the Senegal River. The development program OMVS came up with is an example of tradeoffs among the three countries. The current program has four projects: 1) a hydroelectric storage dam at Manantali in Mali scheduled for completion in 1988; 2) an anti-salt and water storage barrier, completed in 1985, at Diama between Mauritania and Senegal near the mouth of the river; 3) development of river navigation from St. Louis, Senegal at the mouth of the river to Kayes in Mali; and 4) a river-maritime port at St. Louis, a port at Kayes, as well as port facilities at 10 stops along the river. The Manantali hydroelectricity and regulation of river flow will benefit everyone. But the facility's location in Mali is seen by Mali as an added benefit to itself. The Diama dam benefits only Mauritania and Senegal directly. The navigation improvements are

probably of more benefit to Mali, the upstream country, though the maritime improvements at St. Louis probably benefit Mauritania and Senegal independent of their contribution to river navigation.

The OMVS's predecessor, the Organisation des Etats riverains de Senegal (OERS), had floundered for several reasons. One of them was that this set of projects had no project for Guinea, which was a participant in OERS, but not yet in OMVS. Guinea frustrated progress in OERS, and Senegal eventually initiated OMVS instead to get things moving.

#### References:

David G. LeMarquand, "International Development of the Senegal River," in The Management of International River Basin Conflicts. Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

John Walsh, "A Project Born of Hope, Desperation." Science, Vol. 232, May 30, 1986, pp. 1081-1083

LAST MODIFIED: McDonald - 1/6/88 - checked

\*K

\* E007 / EXAMPLES / CREATIVE COMPROMISES /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER / NATURAL RESOURCES /  
SENEGAL / MAURITANIA / MALI / GUINEA /  
ORGANISATION DES ETATS RIVERAINS DE SENEGAL / OERS /  
TRADEOFFS / HYDROELECTRICITY / FACILITIES /  
NAVIGATION / WATER STORAGE / IRRIGATION / FLOOD CONTROL /  
FLOW REGULATION / WATER QUALITY / SALINITY /  
INTERNATIONAL / WET

\*E

\*C

THE DEVELOPMENT PROGRAM OF "THE ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF TRADEOFFS ALLOWING DONORS TO TARGET THEIR MONEY AS A CONDITION FOR PROVIDING THE FUNDS. (\* E008)

\*

The development program of the Organisation pour la mise en valeur du fleuve Senegal (OMVS) in the Senegal basin is financed by mainly Arab and European donor countries. Entry # E007 describes some of the tradeoffs among the basin states. There are also tradeoffs between OMVS and various donors. One example is that typically 80% of tied aid is then spent in the donor country. A second example is where, in exchange for a nation

funding the OMVS, the OMVS agreed to those funds being targeted to a part of the development program of particular interest to the funder. In the Senegal basin, France's main interest and financing is for the Diama dam. This helps maintain France's involvement and influence in its former colonial areas of the lower Senegal valley. In contrast, the FRG's main interests and money are for the Manantali hydroelectric and storage dam in Mali. The FRG first became interested in this dam as part of its industrial interest in exploiting iron ore reserves in the upper basin.

Note that the financing terms OMVS has received are so concessionary that the principal interest of a commercial lender, i.e. a competitive return on the loan, does not seem a main motivation for the funders.

#### References:

David G. LeMarquand, "International Development of the Senegal River," in The Management of International River Basin Conflicts. Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/6/88 - checked

\*K

\* E008 / EXAMPLES / CREATIVE COMPROMISES /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER / NATURAL RESOURCES /  
SENEGAL / MAURITANIA / MALI / FRANCE / FRG /  
FEDERAL REPUBLIC OF GERMANY / MINERALS /  
TRADEOFFS / HYDROELECTRICITY / DONORS / AID /  
MINING / HYDROELECTRICITY /  
INTERNATIONAL / WET

\*E

\*C

THE ESTABLISHMENT OF "THE ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF SEPARATING ISSUES AND EXCLUDING THOSE ISSUES THAT PREVENT REACHING A PRODUCTIVE AGREEMENT. (\* E009)

\*

The Organisation pour la mise en valeur du fleuve Senegal (OMVS) was formed in 1972 by Mali, Mauritania, and Senegal to provide for integrated development of the Senegal River. The OMVS's predecessor, the Organisation des Etats riverains de Senegal (OERS), in which Guinea had also participated, had floundered for several reasons. One was the inclusion of too many issues on the OERS's ambitious agenda. Beyond development of the Senegal River

the OERS had sweeping plans for integration in economic, cultural, and health matters. The expansive agenda in the end contributed to an inability to agree on the practical implementation of significant projects. The OMVS stuck to river development issues and has been much more productive.

References:

David G. LeMarquand, "International Development of the Senegal River," in The Management of International River Basin Conflicts. Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/6/88 - checked

\*K

\* E009 / EXAMPLES / COOPERATIVE TACTICS / SEPARATING ISSUES / ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL / OMVS / SENEGAL RIVER / NATURAL RESOURCES / SENEGAL / MAURITANIA / MALI / GUINEA / ORGANISATION DES ETATS RIVERAINS DE SENEGAL / OERS / INTERNATIONAL / WET

\*E

\*C

FINANCING THE DEVELOPMENT PROGRAM OF "THE ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF INCREMENTAL AGREEMENTS. (\* E010)

\*

The Organisation pour la mise en valeur du fleuve Senegal (OMVS) was formed in 1972 by Mali, Mauritania, and Senegal to provide for integrated development of the Senegal River. The financing package for a set of four projects involved more than 14 donors, some of whom did not think the set of four projects sensible. However, the set was desirable politically to the three basin states, and it would have been difficult for them to break it up. Getting sufficient donors on board was a problem. By breaking up the initial funding problem creatively the OMVS was successful in involving donors progressively. "France, [the FRG], Italy, Canada, and the United States funded various studies that gave them the incentive to see through the projects to implementation. They and other donors financed irrigation projects, which stimulated an interest in river regulation to increase the productivity of their investment."

Also the OMVS got French funding principally for the Diama dam, in which France had special interest (see Entry # E006), and FRG funding principally for the Manantali dam, in which the FRG had a special interest (see also Entry # E006).



References:

David G. LeMarquand, "International Development of the Senegal River," in The Management of International River Basin Conflicts. Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/6/88 - checked

\*K

\* E010 / EXAMPLES / COOPERATIVE TACTICS /  
INCREMENTAL AGREEMENTS / NATURAL RESOURCES /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER / DONORS /  
SENEGAL / MAURITANIA / MALI /  
FRANCE / FRG / ITALY / CANADA / USA /  
FEDERAL REPUBLIC OF GERMANY / UNITED STATES /  
INTERNATIONAL / WET

\*E

\*C

THE USE OF JOINT OWNERSHIP IN THE DEVELOPMENT PLAN OF "THE ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF TRADING SOME SOVEREIGN PRIVILEGES IN ONE'S OWN COUNTRY IN EXCHANGE FOR BEING FREE OF COMPARABLE CONSTRAINTS IN ANOTHER COUNTRY. (\* E011)

\*

The Organisation pour la mise en valeur du fleuve Senegal (OMVS) was formed in 1972 by Mali, Mauritania, and Senegal to provide for integrated development of the Senegal River. The current development program has four projects: 1) a hydroelectric storage dam at Manantali in Mali scheduled for completion in 1988; 2) an anti-salt and water storage barrier, completed in 1985, at Diama between Mauritania and Senegal near the mouth of the river; 3) development of river navigation from St. Louis, Senegal at the mouth of the river to Kayes in Mali; and 4) a river-maritime port at St. Louis, a port at Kayes, as well as port facilities at 10 stops along the river. To resolve questions of which parties would own and operate the different facilities, they settled on joint ownership. Each party thereby sacrificed some sovereignty over facilities in its country to avoid the other parties being free to exercise normal constraints of national sovereignty on facilities in their countries.

References:

David G. LeMarquand, "International Development of the Senegal River," in The Management of International River Basin Conflicts.

Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/6/88 - checked

\*K

\* E011 / EXAMPLES / CREATIVE COMPROMISES /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER / NATURAL RESOURCES /  
SENEGAL / MAURITANIA / MALI /  
TRADEOFFS / SOVEREIGNTY / FACILITIES /  
JOINT OWNERSHIP /  
INTERNATIONAL / WET

\*E

\*C

THE MONTREAL PROTOCOL ON THE OZONE LAYER AS AN EXAMPLE OF  
PROPORTIONALLY ALLOCATING BURDENS, OF ALLOCATING BURDENS EQUALLY,  
AND OF RESTRICTING OPPORTUNITIES EQUALLY. (# E012)

\*

The 1987 Montreal Protocol to protect the earth's ozone layer requires the parties to limit their consumption of chlorofluorocarbons (CFCs). The industrialized countries must freeze their consumption at 1986 levels until 1994. This is an example of equal burdens. In 1994 they must reduce consumption by 20% relative to 1986 levels, with a further reduction of 30% required in 1999. These are examples of proportional burdens. The developing countries have a 10-year grace period before starting the same kinds of reductions.

Note that there are no constraints on producers, who therefore all have equal opportunities to provide CFCs to the constrained market.

References:

Dianne Dumanoski, "24 countries sign treaty to protect ozone layer," The Boston Globe, Sept. 17, 1987

LAST MODIFIED: McDonald - 1/7/88 - checked

\*K

\* E012 / EXAMPLES / CREATIVE COMPROMISES /  
EQUAL BURDENS / PROPORTIONAL BURDENS /  
EQUAL OPPORTUNITIES / NATURAL RESOURCES /  
OZONE / CHLOROFLUOROCARBONS / CFCs /  
UNITED STATES / USA / EC / EUROPEAN COMMUNITIES /  
JAPAN / SOVIET UNION / USSR /  
INTERNATIONAL / DRY

\*E

\*C

THE CAMP DAVID NEGOTIATIONS BETWEEN EGYPT AND ISRAEL AS AN EXAMPLE OF AN INTERVENOR WITH RESOURCES AND INTERESTS. (\* E013)

\*

In the 1978 Camp David negotiations between Egypt and Israel, the United States was the intervenor with resources and interests. The U.S. had moral, political, and economic interests in resolving the Middle East conflict. Also, in the end the U.S. sweetened considerably the pot Egypt and Israel were trying to divide. The sweeteners include economic aid, military aid, and arms sales. Also important were President Carter's agreement that the U.S. would be a guarantor of the treaty, "subject to Congressional processes," and his commitment that the U.S. would monitor compliance and provide data to both sides.

References:

Howard Raiffa, The Art and Science of Negotiation, Harvard University Press, Cambridge, Massachusetts, 1982

Janice Gross Stein, "Structures, Strategies, and Tactics of Mediation: Kissinger and Carter in the Middle East," Negotiation Journal, Vol. 1, No. 4, pp. 331-347, October 1985

Harvard University, Kennedy School of Government, "Middle East Negotiations: The Camp David Summit," C14-79-261

LAST MODIFIED: McDonald - 3/29/88 - unchecked

\*K

\* E013 / EXAMPLES / COOPERATIVE TACTICS / INTERVENOR WITH RESOURCES AND INTERESTS / INTERVENTION / UNITED STATES / USA / ISRAEL / EGYPT / SOVEREIGNTY / TERRITORY / MILITARY THREATS / SECURITY / PALESTINIANS / AID / MONITORING / INTERNATIONAL / DRY

\*E

\*C

THE CAMP DAVID NEGOTIATIONS BETWEEN EGYPT AND ISRAEL AS AN EXAMPLE OF THE USE OF A SINGLE NEGOTIATING TEXT. (\* E014)

\*

In the 1978 Camp David negotiations between Egypt and Israel, the United States was the intervenor with resources and interests. "The [U.S.] mediators tried initially to get the principals to construct a package on an issue-by-issue basis, but they expected that this strategy would not work. It didn't. By day two Begin and Sadat would not talk to each other." (Raiffa, 1982) The Americans then introduced the use of a single negotiating text

(SNT), where they would draft an entire package to be reviewed and criticized by the principals. The Americans would return to the drawing board to come up with a subsequent complete package attempting to respond to the criticisms. "At Camp David, the draft of the text on Palestinian autonomy went through 23 revisions while the treaty between Egypt and Israel was redrafted eight times, largely under President Carter's personal supervision." (Stein, 1985)

References:

Howard Raiffa, *The Art and Science of Negotiation*, Harvard University Press, Cambridge, Massachusetts, 1982

Janice Gross Stein, "Structures, Strategies, and Tactics of Mediation: Kissinger and Carter in the Middle East," *Negotiation Journal*, Vol. 1, No. 4, pp. 331-347, October 1985

Harvard University, Kennedy School of Government, "Middle East Negotiations: The Camp David Summit," C14-79-261

LAST MODIFIED: McDonald - 3/29/88 - unchecked

\*K

# E014 / EXAMPLES / COOPERATIVE TACTICS /  
SINGLE NEGOTIATING TEXT / SNT /  
UNITED STATES / USA / ISRAEL / EGYPT /  
SOVEREIGNTY / TERRITORY / MILITARY THREATS / SECURITY /  
PALESTINIANS / AID /  
INTERNATIONAL / DRY

\*E

\*C

THE PANAMA CANAL TREATY NEGOTIATIONS AS AN EXAMPLE OF THE  
PRODUCTIVE USE OF INCREMENTAL AGREEMENTS (# E015)

\*

In the negotiations in the 1970s between the United States and Panama over a new Panama Canal Treaty, the eight Kissinger-Tack principles agreed to on February 7, 1974 are an example of an incremental agreement. These established a bit of a tradition of progress and agreement without getting bogged down by problematic details. Thus the two sides could formally sign an agreement stating that the new treaty would have an eventual termination date, which was especially important to Panama, while putting off agreeing to the precise date. Another principle was that Panama would grant the U.S. the rights necessary "to operate, maintain, protect and defend the canal," without detailing those rights. This principle was especially important to the U.S. As other examples, the agreement stated that Panama would participate in the canal administration during the treaty period, without sorting out the details of that participation. The agreement also stated both countries would participate in the protection and defense, again putting off details until later.

The progress represented by the Kissinger-Tack principles is given particular credit for keeping the negotiations on track.

References:

William J. Jordan, "The Panama Canal Treaty," in Diane B. Bendahmane and John W. McDonald, Jr. (Eds.), Perspectives on Negotiation: Four Case Studies and Interpretations, Foreign Service Institute, U.S. Department of State, Washington, DC, 1986

Howard Raiffa, The Art and Science of Negotiation, Harvard University Press, Cambridge, Massachusetts, 1982

Harvard University, Kennedy School of Government, "Panama Canal Treaty Negotiations: Concluding a Treaty," C14-79-224

Harvard University, Kennedy School of Government, "Panama Canal Treaty Negotiations: The Setting," C14-79-223

LAST MODIFIED: McDonald - 1/8/86 - unchecked

\*K

# E015 / EXAMPLES / COOPERATIVE TACTICS /  
INCREMENTAL AGREEMENTS / SOVEREIGNTY /  
NAVIGATION / SECURITY /  
PANAMA CANAL / PANAMA / UNITED STATES / USA /  
INTERNATIONAL / WET

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\*C

THE USER FEE SCHEDULE ADOPTED BY "THE ORGANISATION POUR LA MISE EN

VALEUR DU FLEUVE SENEGAL" (OMVS) AS AN EXAMPLE OF COST ALLOCATION  
USING THE METHOD OF SEPARABLE COSTS - REMAINING BENEFITS. (\*  
E016)

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The Organisation pour la mise en valeur du fleuve Senegal (OMVS) was formed in 1972 by Mali, Mauritania, and Senegal to provide for integrated development of the Senegal River. The current program has four projects: 1) a hydroelectric storage dam in Mali; 2) an anti-salt and water storage barrier near the mouth of the river; 3) development of river navigation from St. Louis, Senegal at the mouth of the river to Kayes in Mali; and 4) a river-maritime port at St. Louis, a port at Kayes, as well as port facilities at 10 stops along the river. Most of the capital funding has been raised from outside donors. However, it is OMVS's objective that "in the final stage" operating expenses for all facilities will be covered by user fees. To recommend fair user fees for different goods and services (e.g. hydroelectricity, navigation, water for irrigation and other purposes) OMVS hired consultants from Utah State University. They used the method of separable costs - remaining benefits to propose a number of different fee structures based on different assumptions about rates of agricultural development, completion dates of the facilities, increases in thermal energy costs, social discount rates, and hydroelectricity consumption. The process took several years, but in May 1981 the OMVS Council of Ministers approved a provisional cost allocation formula based on this work. The references below are not sufficiently recent to report how smoothly it has been implemented as the facilities have come on line.

References:

Quac-Lan Nguyen, "The Development of the Senegal River Basin: An Example in International River Co-operation." Natural Resources Forum, Vol. 6, No. 4, October 1982, pp. 307-19

Quac-Lan Nguyen, "Problems of Allocating Installation and Operating Costs of Multi-Purpose Projects of the Organization for the Development of the Senegal River." in Experiences in the Development and Management of International River and Lake Basins, Natural Resources/Water Series No. 10, ST/ESA/120, Department of Technical Co-operation for Development, Proceedings of the UN Interregional Meeting of International River Organization, Dakar, Senegal, 5-14 May 1981, United Nations, New York, 1983, pp. 148-157

LAST MODIFIED: McDonald - 1/11/88 - unchecked

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\* E016 / EXAMPLES / CREATIVE COMPROMISES / NATURAL RESOURCES /  
FAIR DIVISION / SEPARABLE COSTS - REMAINING BENEFITS /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER / COST ALLOCATION / SCRB /  
UTAH STATE UNIVERSITY / USER FEES /

SENEGAL / MAURITANIA / MALI /  
HYDROELECTRICITY /  
NAVIGATION / WATER SUPPLY / IRRIGATION /  
INTERNATIONAL / WET

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\*C

FINANCING FOR A U.S. DESALTING PLANT FOR THE LOWER COLORADO RIVER  
AS AN EXAMPLE OF INTERNAL BARGAINING IN THE U.S. NECESSARY TO  
REACH AN INTERNATIONAL AGREEMENT WITH MEXICO. (\* E017)

\*

In November 1961 Mexico formally protested that the U.S. was violating the 1944 U.S.-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande. The charge was due to high salinity in Colorado River water at the point it entered Mexico. The dispute was finally resolved in 1973. As part of the resolution, which took the form of Minute 242 of the International Boundary and Water Commission, the U.S. agreed to build, among other things, a \$62 million desalting plant. However, Congressman from the seven Colorado River basin states in the U.S. wanted the agreement to include additional projects that would benefit their states. The U.S. Administration did not include the additional projects in the agreement with Mexico, and since the agreement was not in the form of a treaty, it did not require ratification by the U.S. Congress. However, the U.S. basin states got their way by prevailing on Congress to make sure the legislation needed for funding the projects that were agreed to with Mexico, also funded the additional projects benefiting the U.S. basin states.

Thus the internal U.S. political process generated a side-payment that was sufficient to gain necessary support for the external agreement by the U.S. basin states, without being unacceptably high for the Administration

References:

Herbert Brownell and Samuel D. Eaton, "The Colorado River Salinity Problem with Mexico," The American Journal of International Law, Vol. 69, 1975, pp. 255-71

LAST MODIFIED: McDonald - 1/11/88 - checked

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\* E017 / EXAMPLES / INTERNAL BARGAINING /  
UNITED STATES / MEXICO / USA / NATURAL RESOURCES /  
COLORADO RIVER / SALINITY / WATER QUALITY /  
INTERNATIONAL BOUNDARY AND WATER COMMISSION /  
U.S. CONGRESS /  
INTERNATIONAL / WET

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\*C

THE OWENS FALLS DAM AGREEMENT AS AN EXAMPLE OF ACCEPTING MONEY AS COMPENSATION FOR FLOOD DAMAGE. (\* E018)

\*

The Owens Falls Dam Agreement of 1952 between Egypt and the United Kingdom concerned the construction of the Owens Falls Dam in Uganda, then under British administration. The Agreement had two purposes: 1) regulating flow in the Nile and 2) hydropower for Uganda. It was anticipated that the dam would raise the level of Lake Victoria and cause flooding in Uganda, Kenya, and Tanzania. Egypt agreed to compensate Uganda for flooding due to the dam and that "all new flooding around Lake Victoria within the agreed range of three meters shall be deemed to be due to the implementation of the scheme." Godana (Ref. 1) argues that international law (n.b. the "Trail Smelter" arbitration [Refs. 2 and 3]) would require Uganda to compensate Kenya and Tanzania for flood damage due to Uganda's dam, but that the Owens Falls Dam Agreement effectively assigns to Egypt Uganda's obligation to Kenya and Tanzania.

In fact, there was significant flooding documented in Kenya after the dam went into operation in 1961. For reasons that are not clear from Ref. 1, Uganda maintained the flooding was due to heavy rains and not the dam. Reference 1 does not describe any compensation payments being made.

References:

1. Bonaya Adhi Godana, Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Niger and Senegal River Systems, Frances Pinter (Publishers), London, Lynne Rienner Publishers, Inc., Boulder, Colorado, 1985

2. Trail Smelter - United Nations, "Report of International Arbitration Awards," Vol. III, p. 1938. at p. 1965

3. Trail Smelter arbitration, American Journal of International Law, Vol. 35, 1941, p. 684

LAST MODIFIED: McDonald - 1/18/88 - unchecked

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\* E018 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
COMPENSATION / FLOODING / NILE RIVER / NATURAL RESOURCES /  
EGYPT / UGANDA / KENYA / TANZANIA / UNITED KINGDOM / UK /  
OWENS FALLS DAM AGREEMENT /  
FLOW REGULATION / HYDROELECTRICITY /  
LAKE VICTORIA /  
INTERNATIONAL / WET

\*E

\*C

THE AGREEMENT FOR THE FULL UTILISATION OF THE NILE WATERS AS AN



EXAMPLE OF ACCEPTING MONEY AS COMPENSATION FOR FLOOD DAMAGE. (\* E019)

\*

The 1959 Agreement for the Full Utilisation of the Nile Waters between Egypt and Sudan deals with the high Aswan dam; it includes \$43 million from Egypt to Sudan in compensation for flooding due to the dam.

Reference:

Bonaya Adhi Godana, Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Niger and Senegal River Systems, Frances Pinter (Publishers), London, Lynne Rienner Publishers, Inc., Boulder, Colorado, 1985

LAST MODIFIED: McDonald - 1/18/88 - checked

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\* E019 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS / NILE RIVER / FLOODING / EGYPT / SUDAN / COMPENSATION / NATURAL RESOURCES / AGREEMENT FOR THE FULL UTILISATION OF THE NILE WATERS / INTERNATIONAL / WET

\*E

\*C

THE PROCESS OF ESTABLISHING THE NIGER RIVER BASIN AUTHORITY AS AN EXAMPLE OF AN INTERVENOR WITH RESOURCES AND INTERESTS AND OF PRODUCTIVE THIRD-PARTY ANALYSIS. (\*E 020)

\*

The parties to the 1980 Convention for the Establishment of the Niger River Basin Authority are the nine basin states of the Niger River: Benin, Cameroun, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria, and Upper Volta. The 1980 convention had been preceded by two agreements, each providing for successively more integration of the basin states' management and development of the river: the 1963 Act Concerning Navigation and Economic Cooperation between the States of the River Niger Basin, and the 1964 Agreement Concerning the River Niger Commission and the Navigation and Transport on the River Niger. A principal point of departure for these agreements was a report by an Italian consulting firm, Italconsult, which had been commissioned by the United Nations at the request of Mali, Niger, Nigeria, and Upper Volta. The request followed a 1961 meeting at Segou, Guinea of these four countries under the auspices of the Commission for Technical Cooperation in Africa. That meeting had focussed attention on the dangers of uncoordinated national projects, and the poor understanding of such dangers at the time. Italconsult was to study the consequences for other states of the national programs of Mali, Niger, Nigeria, and Upper Volta. The Italconsult report was the first comprehensive study of the Niger River basin. Its conclusions, though not entirely

uncontroversial, provided the substantive basis and common reference point for negotiating the eventual series of agreements.

References:

Bonaya Adhi Godana, Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Niger and Senegal River Systems, Frances Pinter (Publishers), London, Lynne Rienner Publishers, Inc., Boulder, Colorado, 1985

LAST MODIFIED: McDonald - 1/18/88 - checked

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\* E020 / EXAMPLES / COOPERATIVE TACTICS /  
THIRD-PARTY ANALYSIS / NATURAL RESOURCES /  
INTERVENOR WITH RESOURCES AND INTERESTS / INTERVENTION /  
NIGER RIVER / IVORY COAST / CAMEROUN / UPPER VOLTA / CHAD /  
MALI / NIGER / NIGERIA / BENIN / GUINEA /  
NIGER RIVER BASIN AUTHORITY / NAVIGATION / ITALCONSULT /  
UNITED NATIONS /  
COMMISSION FOR TECHNICAL COOPERATION IN AFRICA /  
INTERNATIONAL / WET

\*E

\*C

THE OPERATION OF THE KARIBA DAM AS AN EXAMPLE OF EQUALLY  
ALLOCATING BENEFITS. (\* E021)

\*

The Kariba Dam on the Zambezi River between Zambia and Zimbabwe began operation in 1960. 50% of the hydroelectricity produced by the dam is allocated to Zambia. 50% is allocated to Zimbabwe.

Reference:

Alan McDonald, Sept. 25, 1985 memo "The Zambezi River and IIASA's LIR and PIN Projects"

LAST MODIFIED: McDonald - 1/18/88 - checked

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\* E021 / EXAMPLES / CREATIVE COMPROMISES /  
FAIR DIVISION / EQUAL BENEFITS / HYDROELECTRICITY /  
ZAMBEZI RIVER / ZAMBIA / ZIMBABWE / NATURAL RESOURCES /  
INTERNATIONAL / WET

\*E

\*C

FINANCING THE FINANCIAL FUND FOR THE DEL PLATA BASIN DEVELOPMENT  
AS AN EXAMPLE OF COST ALLOCATION BASED PARTLY ON EQUAL ALLOCATION  
OF COSTS, AND PARTLY ON PROPORTIONAL ALLOCATION OF COSTS.  
(\* E022)

\*

In 1974 Argentina, Bolivia, Brazil, Paraguay, and Uruguay created the Financial Fund for the Del Plata Basin Development (FONPLATA). The fund's initial capital of \$100 million was collected as follows: 33.3% from each of the two big countries, Argentina and Brazil, and 11.1% from each of the three small countries, Bolivia, Paraguay, and Uruguay.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of its Development Process and Related Conflicts," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 4/4/88 - checked

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# E022 / EXAMPLES / FAIR DIVISION / EQUAL COSTS /  
CREATIVE COMPROMISES / PROPORTIONAL COSTS /  
ARGENTINA / BOLIVIA / BRAZIL / COST ALLOCATION /  
PARAGUAY / URUGUAY / DEL PLATA BASIN /  
FINANCIAL FUND FOR THE DEL PLATA BASIN DEVELOPMENT /  
FONPLATA /  
INTERNATIONAL / WET

\*E

\*C

THE CHARTER OF THE INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS AS AN EXAMPLE OF EQUALLY SHARING VOTING POWER AND OF ALLOCATING COSTS BASED PARTLY ON EQUAL COST ALLOCATION, AND PARTLY ON PROPORTIONAL COST ALLOCATION. (# E023)

\*

The International Institute for Applied Systems Analysis (IIASA) is a nongovernmental institute founded in 1972. It was originally negotiated by governments, however, which agreed on voting rights and a two-tiered dues structure. Each member organization has equal voting power, one vote each. From the larger countries, the two "Category A" members, originally the Academy of Sciences of the USSR and the U.S. National Academy of Sciences, each pay the same amount. All other members, from the smaller countries, are classified as "Category B" and pay 15% of the Category A dues level. Currently IIASA has nongovernmental member organizations from Austria, Bulgaria, Canada, Czechoslovakia, the Federal Republic of Germany, Finland, France, the German Democratic Republic, Hungary, Italy, Japan, the Netherlands, Poland, Sweden, Soviet Union, and the United States. The Royal Society of the United Kingdom was a founding member.

also in 1972, but subsequently withdrew.

The financial arrangement worked well in practice until the early 1980's. Then financial difficulties in Eastern European countries and weakened political support for IIASA in the U.S. led to IIASA allowing a number of ad-hoc modifications to the dues arrangements.

Reference:

"Charter of the International Institute for Applied Systems Analysis," International Institute for Applied Systems Analysis, Laxenburg, Austria, 1972 (Revised 1978)

LAST MODIFIED: McDonald - 4/4/88 - checked

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\* E023 / EXAMPLES / CREATIVE COMPROMISES /  
FAIR DIVISION / EQUAL COSTS / PROPORTIONAL COSTS /  
COST ALLOCATION / VOTING POWER /  
INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS /  
IIASA / AUSTRIA / BULGARIA / CANADA / CZECHOSLOVAKIA /  
CSSR / FEDERAL REPUBLIC OF GERMANY / FRG / FINLAND /  
FRANCE / GERMAN DEMOCRATIC REPUBLIC / GDR / HUNGARY /  
ITALY / JAPAN / NETHERLANDS / POLAND / SWEDEN / USSR /  
SOVIET UNION / UNITED STATES / USA / UNITED KINGDOM / UK /  
INTERNATIONAL / DRY

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\*C

THE YACYRETA HYDROPOWER PROJECT AS AN EXAMPLE OF EQUALLY SHARING  
COSTS AND BENEFITS. (\* E024)

\*

In 1973 Argentina and Paraguay signed a treaty to construct a binational hydropower project at Yacyreta on the Parana River. Apparently, each country contributed half of the initial capital for the agency created to build the project, the Binational Entity for Yacyreta (EBY), although Argentina lent Paraguay the \$50 million it needed for its share. Half of the project's benefits belong to each country.

The agreement also contains a "mirror law," whereby if a national of one country is hired in a given capacity by EBY, a national of the other country has to be hired in the same capacity. This leads to inefficiencies, made worse because of the asymmetry of labor force skills in the two countries.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of its Development Process and Related Conflicts," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for

Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 4/4/88 - checked

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\* E024 / EXAMPLES / FAIR DIVISION / EQUAL COSTS / CREATIVE COMPROMISES / EQUAL BENEFITS / COST ALLOCATION / ARGENTINA / PARAGUAY / PARANA RIVER / HYDROELECTRICITY / BINATIONAL ENTITY FOR YACYRETA / EBY / NATURAL RESOURCES / INTERNATIONAL / WET

\*E

\*C

A 1961 ARGENTINA/URUGUAY TREATY AS AN EXAMPLE OF SEPARATING NAVIGATION ISSUES FROM OTHERS, THUS ALLOWING PRODUCTIVE TRADEOFFS. (\* E025)

\*

In 1961 Argentina and Uruguay signed a treaty resolving a boundary dispute on the Uruguay River. Two different boundaries were established for different purposes: one for navigation and one for all other purposes.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of its Development Process and Related Conflicts," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy The George Washington University, Washington, DC 20052

United Nations Treaty Series, Vol. 635, No. 9074, p. 91, 1968, "Treaty between the Argentine Republic and the Eastern Republic of Uruguay Concerning the Boundary Constituted by the River Uruguay. Signed at Montevideo, on 7 April 1961"

LAST MODIFIED: McDonald - 3/29/88 - checked

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\* E025 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS / ARGENTINA / URUGUAY / URUGUAY RIVER / NAVIGATION / TERRITORY / BOUNDARIES / SEPARATING ISSUES / NATURAL RESOURCES / INTERNATIONAL / WET

\*E

\*C

THE MIXED TECHNICAL COMMISSION FOR SALTO GRANDE AS AN EXAMPLE OF

DIVIDING BENEFITS EQUALLY. (# E026)

\*

A 1973 agreement between Argentina and Uruguay created the Mixed Technical Commission for Salto Grande (CTM) to build a hydroelectric and navigation project on the Uruguay River. 50% of the hydroelectricity produced belongs to each country.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of its Development Process and Related Conflicts," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/18/88 - checked

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# E026 / EXAMPLES / FAIR DIVISION / EQUAL BENEFITS /  
CREATIVE COMPROMISES /  
ARGENTINA / URUGUAY / URUGUAY RIVER / NAVIGATION /  
HYDROELECTRICITY / CTM / NATURAL RESOURCES /  
MIXED TECHNICAL COMMISSION FOR SALTO GRANDE /  
INTERNATIONAL / WET

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\*C

THE MASSACHUSETTS WATER RESOURCES AUTHORITY AS AN EXAMPLE OF  
COMPENSATION PAYMENTS TO A COMMUNITY WHERE AN UNDESIRABLE  
FACILITY IS SITED. (# E027)

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The Massachusetts Water Resources Authority (MWRA) serves 43 communities in Eastern Massachusetts and in the late 1980's was required by the U.S. Environmental Protection Agency to clean up the badly polluted Boston Harbor. The \$4.5 billion to \$6 billion overall cleanup program included building new primary and secondary sewage treatment plants costing \$3 billion. The MWRA chose the town of Winthrop for the site of the sewage treatment plants. Winthrop filed a suit to block the plants.

In February of 1988 the MWRA and Winthrop reached an agreement, to be effective from 1988-2000. Winthrop agreed to let the sewage treatment plants go forward, and the MWRA agreed to pay the town \$24 million "for soundproofing homes, public works projects, recreational facilities, and other projects. In addition, the MWRA will provide \$250,000 per year for fire protection at Deer Island [the site of the plants] from 1988 to 1995, provide job training for Winthrop residents and pay for street repairs caused by MWRA-generated traffic. Other terms

include an agreement by the MWRA to reimburse Winthrop for legal and technical expenses incurred in its lawsuit, to install odor control equipment at the facility and to cease using chlorine at its existing Deer Island facility by 1989." (The Patriot Ledger, 1988)

References:

The Patriot Ledger (Quincy, Massachusetts), "Plants to net town \$24M," February 13, 1988

The Boston Globe, "Waste plants net Winthrop \$24M," February 13, 1988

LAST MODIFIED: McDonald - 2/16/88 - checked

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\* E027 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
COMPENSATION / SITING / ANALYTIC EXPENSES / NATURAL RESOURCES /  
SOUNDPROOFING / SEWAGE TREATMENT / POLLUTION /  
RECREATIONAL FACILITIES / FIRE PROTECTION / JOB TRAINING /  
STREET REPAIRS / ODOR CONTROL / CHLORINE / LEGAL EXPENSES /  
NATIONAL / UNITED STATES / USA / WET

\*E

\*C

THE GARABI HYDROELECTRIC PROJECT AS AN EXAMPLE OF DIVIDING  
BENEFITS EQUALLY. (\* E028)

\*

The Garabi hydroelectric project on the Upper Uruguay River is a bilateral undertaking of Argentina and Brazil. Each will get 50% of the electricity produced.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of its Development Process and Related Conflicts," in The Management of International River Basin Conflicts, Proceedings of a Workshop held at the Headquarters of the International Institute for Applied Systems Analysis, Laxenburg, Austria, September 22-25, 1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.), Graduate Program in Science, Technology, and Public Policy, The George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/19/88 - checked

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\* E028 / EXAMPLES / FAIR DIVISION / EQUAL BENEFITS /  
CREATIVE COMPROMISES / NATURAL RESOURCES /  
ARGENTINA / BRAZIL / URUGUAY RIVER / HYDROELECTRICITY /  
INTERNATIONAL / WET

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\*C  
THE RONCADOR HYDROELECTRIC PROJECT AS AN EXAMPLE OF DIVIDING  
BENEFITS EQUALLY. (\* E029)

\*  
The Roncador hydroelectric project on the Upper Uruguay River is  
a bilateral undertaking of Argentina and Brazil. Each will get  
50% of the electricity produced.

Reference:

Guillermo J. Cano, "The 'Del Plata' Basin: Summary Chronicle of  
its Development Process and Related Conflicts," in The Management  
of International River Basin Conflicts, Proceedings of a Workshop  
held at the Headquarters of the International Institute for  
Applied Systems Analysis, Laxenburg, Austria, September 22-25,  
1986, Evan Vlachos, Anne C. Webb, and Irene L. Murphy (Eds.),  
Graduate Program in Science, Technology, and Public Policy, The  
George Washington University, Washington, DC 20052

LAST MODIFIED: McDonald - 1/19/88 - checked

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# E029 / EXAMPLES / FAIR DIVISION / EQUAL BENEFITS /  
CREATIVE COMPROMISES / NATURAL RESOURCES /  
ARGENTINA / BRAZIL / URUGUAY RIVER / HYDROELECTRICITY /  
INTERNATIONAL / WET

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\*C

THE LAW OF THE SEA AS AN EXAMPLE OF CONTINGENT AGREEMENTS. (\*  
E030)

\*

One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. The Convention establishes rules for deep-sea mining by private and state companies. It also establishes an international mining entity called the "Enterprise." A particularly difficult negotiation concerned the payments (fees, royalties, and profit shares) that mining companies would be required to pay to the Enterprise. Many developed countries argued that mining operations would yield only modest returns. Requiring large payments to the Enterprise could make mining too unprofitable for anyone to proceed. Many developing countries expected mining to be extremely profitable and wanted to assure that the international community shared in those profits. Thus they favored higher required payments which, given their expectations, would still leave enough profit to a mining company to make mining well worth its while.

The compromise eventually worked out is an example of a contingent agreement. It takes advantage of the two different sets of expectations by setting two payment schedules, one to apply in the event of modest returns and the other in the event of larger returns. The first schedule includes a 2% royalty and the following profit sharing. The Enterprise receives 35% of profits up to a 10% return on investment, 42.5% of profits representing a 10% to 20% return, and 50% of remaining profits. "The second... schedule is triggered when the overall cash flow of the operation, cumulated forward with a 10% real rate is sufficient to recover the preproduction investment (also cumulated with interest)." (Sebenius, pp. 39-40) Its royalty rate is 4%, with profit sharing of 40% on profits up to a 10% return, 50% on profits representing a 10% to 20% return, and 70% on remaining profits.

References:

James K. Sebenius, Negotiating the Law of the Sea, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

\*K

# E030 / EXAMPLES / CREATIVE COMPROMISES /  
CONTINGENT AGREEMENTS / PROFIT SHARING / MINERALS /  
LAW OF THE SEA / MINING / ROYALTIES / NATURAL RESOURCES /  
UNITED NATIONS /  
INTERNATIONAL / WET

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\*C

THE SYDVATTEN COMPANY IN SWEDEN AS AN EXAMPLE OF COST ALLOCATION PROPORTIONAL TO POPULATION. (# E031)

\*

In the 1960s several municipalities in the Skane region of southern Sweden formed the Sydvatten (South Water) Company, an association for planning the long-term water supply of the region. By the late 1960s Sydvatten had begun designing a major project for obtaining water from Lake Bolmen, a source outside the region that would require a tunnel 80 kilometers long. Since its inception and throughout the project, costs have been allocated among the participating municipalities in proportion to their populations.

The references examine the advantages and disadvantages of this cost allocation arrangement.

References:

H. Peyton Young, N. Okada, and T. Hashimoto, "Sharing Costs Fairly: A Practical Introduction to Cooperative Game Theory," ER-5, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria, 1981

H. Peyton Young, N. Okada, and T. Hashimoto, "Cost Allocation in Water Resources Development - A Case Study of Sweden," RR-80-32, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria, 1980

LAST MODIFIED: McDonald - 4/4/88 - unchecked

\*K

# E031 / EXAMPLES / CREATIVE COMPROMISES /  
WATER SUPPLY / SWEDEN / COST ALLOCATION / NATURAL RESOURCES /  
PROPORTIONAL COSTS / FAIR DIVISION /  
NATIONAL / WET

\*E

\*C

THE 1978 CAMP DAVID ACCORDS BETWEEN EGYPT AND ISRAEL AS AN EXAMPLE OF SEPARATING THE ISSUES OF SOVEREIGNTY AND SECURITY, THUS ALLOWING PRODUCTIVE TRADEOFFS. (# E032)

\*

Prior to the Egyptian-Israeli 1978 negotiations at Camp David, Israel had occupied the Egyptian Sinai Peninsula since the Six-Day War of 1967. At Camp David efforts to draw a boundary in the Sinai dividing it between Egypt and Israel were unsuccessful. However, when the boundary issue was separated into a security issue and a sovereignty issue, tradeoffs and a compromise proved possible.

"Israel's interest lay in security; they did not want Egyptian tanks poised on their border ready to roll across at any time.

Egypt's interest lay in sovereignty; the Sinai had been part of Egypt since the Pharaohs. After centuries of domination by Greeks, Romans, Turks, French, and British, Egypt had only recently gained full sovereignty and was not about to cede territory to another foreign conqueror.

"At Camp David, President Sadat of Egypt and Prime Minister Begin of Israel agreed to a plan that would return the Sinai to complete Egyptian sovereignty and, by demilitarizing large areas, would still assure Israeli security. The Egyptian flag would fly everywhere, but Egyptian tanks would be nowhere near Israel." (Fisher and Ury, p. 42-43).

References:

Roger Fisher and William Ury, Getting to Yes: Negotiating Agreement Without Giving In, Houghton-Mifflin Company, Boston, Massachusetts, 1981

LAST MODIFIED: McDonald - 2/1/88 - checked

\*K

# E032 / EXAMPLES / CREATIVE COMPROMISES /  
TRADEOFFS / SEPARATING ISSUES / ISRAEL / EGYPT /  
SECURITY / SOVEREIGNTY / BOUNDARIES /  
MILITARY THREATS /  
INTERNATIONAL / DRY

\*E

\*C

THE LAW OF THE SEA NEGOTIATIONS AS AN EXAMPLE OF THE PRODUCTIVE USE OF THIRD-PARTY ANALYSIS. (# E033)

\*

One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. A particularly difficult negotiation concerned the payments (fees, royalties, and profit shares) that mining companies would be required to pay to the international community. Many developed countries argued that mining operations would yield only modest returns. Requiring large payments could make mining too unprofitable for anyone to proceed. Many developing countries expected mining to be extremely profitable and wanted to assure that the international community shared in those profits. Thus they favored higher required payments.

Shortly before a 1978 negotiating session, a research group at the Massachusetts Institute of Technology (MIT) published a cost model of seabed mining. The model could be used to analyze the future financial performance of a mining operation under alternative assumptions about costs, production volumes, future mineral prices, etc., and under alternative proposed schedules of fees, royalties, and profit sharing requirements. Subsequently,

this model became a vehicle for mutual education and exploration of alternatives by the negotiators, and instrumental in achieving the final consensus. Sebenius (1984) attributes the effectiveness of the MIT group as third-party analysts to their work being generally perceived as independent, credible, and accessible. As evidence of the MIT model's independence he cites its extended and special construction procedure, the fact that it clearly was not created for the Law of the Sea Conference (it assumed the U.S. tax system and barely mentioned the Conference), its reliance on outside sources for the bulk of its figures, and the fact that its results on seabed profitability fully pleased no delegation. Negotiators had opportunities to question the MIT group at seminars, and members of the group were often present at negotiating sessions to answer questions. Negotiators had full access to the documented version of the MIT work. The Chairman of the Conference Group negotiating mining provisions, T.T.B. Koh of Singapore, made particular use of the MIT model and urged the different delegations to do the same.

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

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# E033 / EXAMPLES / COOPERATIVE TACTICS /  
THIRD-PARTY ANALYSIS / MIT / NATURAL RESOURCES /  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY /  
LAW OF THE SEA / MINING / ROYALTIES / MINERALS /  
PROFIT SHARING / UNITED NATIONS /  
INTERNATIONAL / WET

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THE LAW OF THE SEA CONVENTION AS AN EXAMPLE OF TRADING OFF SHORT-TERM REVENUE AGAINST LONG-TERM REVENUE. (# E034)

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One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. A particularly difficult negotiation concerned the payments (fees, royalties, and profit shares) that mining companies would be required to pay to the international community. The compromise eventually worked out is described in entry # E030 as an example of a contingent agreement.

It is also an example of a tradeoff taking advantage of differences among the negotiators in the value each attached to revenue in the near future relative to revenue in the longer term. In economic terminology, the negotiators differed in the "discount rates" they applied to future revenue. Private companies would evaluate their investments by comparing after-tax

returns to alternative current investments. "Sovereign nations that would receive their income before taxes, that were expressly trying to create an enduring system, and that in the negotiations frequently voiced concern about the welfare of future generations might evaluate the revenue streams using relatively lower discount rates. A sharing system whose rates rise over time, giving a higher proportion of the early money to companies who then value it the most and much higher amounts later to the international community, offers a creative use of such differences." (Sebenius, p. 60) The agreed system described in entry # E030 does just that. While the system is an example of a contingent agreement, it is also an example of trading current revenue for future revenue independent of how the contingencies work out.

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

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# E034 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
LAW OF THE SEA / MINING / ROYALTIES / PROFIT SHARING /  
DISCOUNT RATES / UNITED NATIONS / NATURAL RESOURCES / MINERALS /  
INTERNATIONAL / WET

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THE LAW OF THE SEA CONFERENCE AS AN EXAMPLE OF THE USE OF A  
SINGLE NEGOTIATING TEXT. (# E035)

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"Negotiations [during the 1974-1982 United Nations Law of the Sea Conference] proceeded on the basis of 'single negotiating texts' that the committee chairmen could modify on the basis of discussions. Conference organizers intended these texts to provide a basis for negotiation without formally binding any delegation to their provisions. Delegates at early session of the conference devoted themselves to working out starting versions of these texts. (Normally a specialized group, such as the International Law Commission, would have worked for some time prior to a conference on a basic negotiating document.) By 1978 the conference stiffened the standard for a chairman's revision of the text. The new rules required such modifications or revisions of the text to emerge from negotiations themselves, to enjoy widespread support, and to offer 'a substantially improved prospect of a consensus.'" (Sebenius, p. 13).

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

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\* E035 / EXAMPLES / COOPERATIVE TACTICS /  
LAW OF THE SEA / SINGLE NEGOTIATING TEXT / SNT /  
MINING / NAVIGATION / POLLUTION / FISHING /  
UNITED NATIONS / MINERALS / NATURAL RESOURCES /  
INTERNATIONAL / WET

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THE LAW OF THE SEA CONVENTION AS AN EXAMPLE OF TRADING OFF  
PROVISIONS ON START-UP FUNDING FOR PROVISIONS ON SHARING EVENTUAL  
PROCEEDS. (# E036)

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One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. The Convention establishes rules for deep-sea mining by private and state companies. It also establishes an international mining entity called the "Enterprise." Particularly difficult negotiations were those concerning, first, how the Enterprise would be initially funded and, second, the payments (fees, royalties, and profit shares) that mining companies would subsequently be required to pay to the Enterprise. For most of negotiation, the initial funding of the Enterprise and the setting of fees, royalties, and profit shares were dealt with separately. Neither subnegotiation reached an agreement. After the two issues came to be considered together, an agreement was eventually reached. For the initial funding of the Enterprise, the agreement included provisions closer to the preferences of the Third World countries than to the preferences of the developed countries. On the other hand, the agreed schedule of fees, royalties, and profit shares was closer to the preferences of the developed countries.

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

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\* E036 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
LAW OF THE SEA / COST ALLOCATION / ROYALTIES /  
PROFIT SHARING / MINING / MINERALS / NATURAL RESOURCES /  
UNITED NATIONS /  
INTERNATIONAL / WET

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THE LAW OF THE SEA CONVENTION AS AN EXAMPLE OF TRADING FINANCIAL ARRANGEMENTS ON DEEP-SEA MINING AGAINST NAVIGATION FREEDOMS. (\* E037)

\*

Sebenius (1984) describes "the central trade" in the 1982 Law of the Sea Convention as that between relatively unconstrained freedom of navigation on the one hand, and restrictions against unilateral exploitation of seabed mineral resources on the other. Freedom of navigation was particularly important to the developed, maritime nations. They were dismayed by a trend of increasing restrictions on navigation being imposed by coastal states. Thus they were looking for a convention that would assure what they considered desirable, if not essential, freedoms of navigation. On the other side, "[c]oastal, straits, and archipelagic states of the Third World generally do not possess the means for harvesting the [mineral resources of] the deep seabed." (Sebenius, p. 81). The Third-World states therefore wanted developed countries who did have the means to mine the ocean floor to agree to arrangements assuring that the benefits of deep-sea mining would be equitably shared internationally. The final treaty that was opened for signature in December 1982 included assurances of navigational freedoms on the one hand, and regulations on ocean mining on the other, that were felt to represent an acceptable trade from all perspectives.

Although the treaty had been signed by at least 118 nations, developed and developing, by 1984, it is noteworthy that the United States did not sign despite its support just two years earlier. Sebenius (1984) attributes the U.S. reversal to a re-evaluation of "the central trade" by the Administration of the new U.S. President, Ronald Reagan. In 1982 the Reagan Administration valued the advantage in navigational freedoms that the treaty would bring less than previous Administrations had valued it during their tenures. The Reagan Administration also valued the concessions represented by the treaty's mining provisions more highly than had its predecessors. Thus what had been evaluated by earlier U.S. administrations as a desirable trade, was judged by the Reagan Administration as undesirable.

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

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\* E037 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
LAW OF THE SEA / NAVIGATION / MINING / MINERALS /  
UNITED NATIONS / UNITED STATES / USA / NATURAL RESOURCES /  
INTERNATIONAL / WET

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\*C

A NEW YORK CITY DISPUTE AS AN EXAMPLE OF (TEMPORARILY) SUCCESSFUL INTERVENTION AND A CONTINGENT AGREEMENT ON DIOXIN EMISSIONS FROM A TRASH-TO-ENERGY PLANT. (\* E038)

\*

In 1984 the New York City Department of Sanitation was proposing to build a trash-to-energy plant in Brooklyn. To build and operate the plant, the Department of Sanitation needed approval from the New York City Board of Estimate, the elective body responsible for deciding whether to proceed with such plants. Residents in the neighborhood proposed for the plant opposed it, principally out of their concern about health risk due to dioxin emissions from the plant. The Department of Sanitation requested the New York Academy of Sciences to coordinate a meeting of concerned parties. As a consequence the Academy sponsored a mediation of the dispute.

The Department of Sanitation had more confidence than did the residents in the Department's ability to keep future dioxin emissions below pre-set performance standards. This difference in expectations about future dioxin emissions was exploited by a contingent agreement that established a formal monitoring program for plant emissions and required that the plant would be immediately closed down if emissions exceeded agreed pre-set standards.

Although this agreement was supported by all parties at the conclusion of the mediation sessions, some of the residents subsequently changed their evaluation of the agreement. They therefore broke the agreement and filed a lawsuit against the Department of Sanitation to prevent the plant

References:

R. Steven Konkol, "Risk Management in the United States: Three Case Studies - Dioxin Emissions and Trash-to-Energy Plants in New York City," Environmental Impact Assessment Review, Vol. 7, No. 1, pp. 37-55, March 1987

Merrie Klapp, -----, forthcoming, 1988

LAST MODIFIED: McDonald - 2/4/88 - unchecked

\*K

\* E038 / EXAMPLES / CREATIVE COMPROMISES /  
CONTINGENT AGREEMENTS / INTERVENTION /  
POLLUTION / UNITED STATES / USA / DIOXIN /  
NEW YORK ACADEMY OF SCIENCES /  
NATIONAL / DRY

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THE LAW OF THE SEA CONVENTION AS AN EXAMPLE OF TRADING FINANCIAL



RISK BURDENS AMONG PARTIES WITH DIFFERENT DEGREES OF RISK  
AVERSION. (\* E039)

\*

One of the issues dealt with in the 1982 Law of the Sea Convention is deep-sea mining of manganese nodules on the ocean floor. A particularly difficult negotiation concerned the payments (fees, royalties, and profit shares) that mining companies would be required to pay to the international community. The compromise eventually worked out is described in entry # E030 as an example of a contingent agreement, and in entry # E034 as an example of a tradeoff taking advantage of differences among the negotiators in the value each attached to revenue in the near future relative to revenue in the longer term. It is also an example of a tradeoff taking advantage of differences in risk aversion.

From the perspective of countries to whom fees, royalties, and profit-shares would be distributed, "[a]ny eventual revenue from seabed exploitation would be divided up among the members of the world community and would not represent a major share of any country's income." From the perspective of a state or private mining company, however, "[c]orporate investments in seabed mining operations... could represent significant portions of their assets." Theory predicts that given these different perspectives, the companies are likely to be more risk averse than the "world community." (Sebenius, p. 134) Compared to the world community then, the companies are relatively more concerned about being protected against a big loss in an unsuccessful operation, than reaping huge profits for a very successful operation. Both sides should like an agreement that insures the companies against too big a loss for an unsuccessful operation, in exchange for the worldwide community getting a big share of the profits for a very successful operation. The agreed system described in entry # E030 does just that. While the system is an example of a contingent agreement, and of trading current revenue for future revenue independent of how the contingencies work out, it is also an example of how differences in risk aversion can be exploited.

References:

James K. Sebenius, *Negotiating the Law of the Sea*, Harvard University Press, Cambridge, Massachusetts, 1984

LAST MODIFIED: McDonald - 2/2/88 - checked

\*K

# E039 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
LAW OF THE SEA / MINING / ROYALTIES / PROFIT SHARING /  
RISK AVERSION / UNITED NATIONS / MINERALS / NATURAL RESOURCES /  
INTERNATIONAL / WET

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THE BEAGLE CHANNEL MEDIATION AS AN EXAMPLE OF AN INTERVENOR WITH RESOURCES AND INTERESTS. (\* E040)

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Between 1978 and 1984 the Vatican mediated a dispute, which had festered since 1881, between Argentina and Chile revolving around three islands in the Beagle Channel. The Pope was the official mediator and occasionally intervened personally. However, the bulk of the mediation was managed by a special Vatican team appointed by the Pope. Though the mediation took much longer than the six months predicted at the outset, it resulted successfully in a treaty ratified in 1985. Moreover, throughout the mediation and subsequently, hostilities, which were imminent in 1978, were avoided.

The Vatican came into the dispute largely due to its interest in securing peace, particularly between two Catholic countries. Once in the midst of mediation the Vatican came to have an additional important interest in a successful outcome -- avoiding the damage a failed mediation would have on the Pope's ability to influence world affairs in the future.

The principal resource the Vatican brought to the mediation was the moral authority of the Pope. Other special characteristics of the Vatican served it well. Confidentiality is something the Church always valued very highly and has much practice in maintaining. The mediators used the very credible assurance of confidentiality to promote eventually a broader exploration of interests and possible options than might have been possible in a more leaky mediation. The Vatican also had direct channels to the negotiators' leaders (through the Vatican's diplomatic representation in both countries) and electorates (through the local churches). The latter access became important, for example, when the final treaty needed ratification in Argentina in a public referendum.

References:

Thomas Princen, "International Mediation - The View from the Vatican: Lessons from Mediating the Beagle Channel Dispute," *Negotiation Journal*, October 1987, pp. 347-366

Thomas E. Princen, "Intermediary Intervention: A Model of Intervention and a Study of the Beagle Channel Case," Ph.D. Thesis, Political Economy and Government, Harvard University, Cambridge, Massachusetts, January, 1988

LAST MODIFIED: McDonald - 2/23/88 - checked

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\* E040 / EXAMPLES / COOPERATIVE TACTICS /  
INTERVENOR WITH RESOURCES AND INTERESTS / INTERVENTION /  
VATICAN / POPE / ARGENTINA / CHILE / BEAGLE CHANNEL /  
SOVEREIGNTY /

INTERNATIONAL / WET

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THE ANTARCTIC MINERALS NEGOTIATIONS AS AN EXAMPLE OF A SINGLE  
NEGOTIATING TEXT (SNT). (# E041)

\*

The Antarctic Treaty Consultative Parties (ATCP's) began negotiating an Antarctic minerals regime in 1982. The ATCP's include Argentina, Australia, Belgium, Brazil, Chile, Federal Republic of Germany, France, German Democratic Republic, India, Italy, Japan, New Zealand, Norway, the People's Republic of China, Poland, South Africa, the Soviet Union, the United Kingdom, the United States, and Uruguay (Kimball, 1988). The negotiations were characterized by significant informal diplomacy, an emphasis on consensus building within ad hoc working groups, and at least three successive informal but significant texts prepared by Chairman Christopher D. Beeby of New Zealand -- the first in 1983, the second in 1984, and the third in 1986. These "Beeby texts" can be taken as an example of a single negotiating text. Each represented Beeby's perception, considering all issues together as a package, of the extent of consensus that appeared to exist at the time. The revisions represented by the second and third texts were comprehensive rather than piecemeal. In each case they reflected Beeby's consideration of extensive discussions, formal and informal, generated by the previous version.

The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) was signed on June 2, 1988 and is expected to be formally adopted in Wellington, New Zealand on November 11, 1988. To enter into force it will require ratification by 16 of the 20 ATCP's. Joyner (1987) attributes much of the negotiation's success, at least through May 1987, to its productive procedural choices, among which the Beeby texts were particularly significant.

References:

Christopher C. Joyner, "National Interests, Processes and International Negotiation: A Case Study of the Evolving Antarctic Minerals Regime," WP-6 in the Working Paper Series of the Program on the Processes of International Negotiation, American Academy of Arts and Sciences, Cambridge, Massachusetts, May 15, 1987

Lee A. Kimball, "Special Report on: The Antarctic Minerals Convention," International Institute for Environment and Development - North America, World Resources Institute, Washington, DC, July, 1988

Quincy Patriot Ledger, "Antarctic Mining Pact Signed," June 3, 1988

LAST MODIFIED: McDonald - 8/26/88 - checked

\*K

# E041 / EXAMPLES / COOPERATIVE TACTICS / MINERALS /

SINGLE NEGOTIATING TEXT / SNT / MINING / ANTARCTICA /  
NATURAL RESOURCES /  
ARGENTINA / CHILE / AUSTRALIA / BELGIUM / BRAZIL /  
GERMAN DEMOCRATIC REPUBLIC / GDR / ITALY /  
FEDERAL REPUBLIC OF GERMANY / FRG / FRANCE / INDIA / JAPAN /  
NEW ZEALAND / NORWAY / PEOPLE'S REPUBLIC OF CHINA / PRC /  
POLAND / SOUTH AFRICA / SOVIET UNION / USSR / UK / USA /  
UNITED KINGDOM / UNITED STATES / URUGUAY /  
INTERNATIONAL / DRY

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THE PARTIAL EGYPTIAN-ISRAELI DISENGAGEMENT IN SEPTEMBER 1975 AS  
AN EXAMPLE OF AN INCREMENTAL AGREEMENT. (\* E042)

\*

Stein (1985) writes of the September 1975 agreement, "[Henry] Kissinger favored transitional agreements that would permit change in preference structures over time. He hoped that as a result of working with arrangements in place, the parties would acquire new confidence in each other. In addition, the transitional arrangements would reduce the risk of concessions, since these arrangements were not irrevocable or final. For example, in the [September 1975] agreement between Egypt and Israel, Kissinger put in place a series of arrangements to monitor the observance of the limited force zones that were to last three years, until September 1978. He hoped that, by the end of this period, the opportunity costs of retreat from agreement would have become too large for both Egypt and Israel, that the process in place would have changed at least some of the basic preferences on each side..."

"As Kissinger had predicted, the alternative to concession -- a return to the use of force -- was far less attractive to both parties in 1978 than it had been in 1974. In the changed negotiating environment, a bilateral agenda that was comprehensive rather than limited in scope was conceivable to both sides."

References:

Janice Gross Stein, "Structures, Strategies, and Tactics of Mediation: Kissinger and Carter in the Middle East," *Negotiation Journal*, Vol. 1, No. 4, pp. 331-347, October 1985

LAST MODIFIED: McDonald - 3/29/88 - unchecked

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\* E042 / EXAMPLES / COOPERATIVE TACTICS /  
INCREMENTAL AGREEMENTS / UNITED STATES / USA / ISRAEL / EGYPT /  
SOVEREIGNTY / TERRITORY / MILITARY THREATS / SECURITY /  
INTERNATIONAL / DRY

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\*C

THE CAMP DAVID NEGOTIATIONS BETWEEN EGYPT AND ISRAEL AS AN  
EXAMPLE OF SEPARATING ISSUES. (\* E043)

\*

The 1978 Camp David negotiations involving Egypt, Israel, and the United States provide an example of separating particularly problematic issues off the agenda so that they do not prevent implementable agreement on less problematic issues. "[President] Carter, like [Henry] Kissinger, postponed the most intractable issues; effectively he took them off the bargaining agenda. Discussion of Jerusalem, for example, was relegated to an exchange of letters in which all three leaders expressed their positions, agreeing to disagree. The difficult negotiations on the form and substance of Palestinian autonomy were postponed until after the peace treaty between Egypt and Israel was concluded. And determination of the final status of the West Bank and the Gaza Strip was not scheduled until after Israel completed its withdrawal from the Sinai." (Stein, 1985)

References:

Janice Gross Stein. "Structures, Strategies, and Tactics of Mediation: Kissinger and Carter in the Middle East," *Negotiation Journal*, Vol. 1, No. 4, pp. 331-347, October 1985

LAST MODIFIED: McDonald - 3/29/88 - unchecked

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\* E043 / EXAMPLES / COOPERATIVE TACTICS /  
SEPARATING ISSUES / UNITED STATES / USA / ISRAEL / EGYPT /  
TERRITORY / PALESTINIANS /  
INTERNATIONAL / DRY

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THE COLUMBIA RIVER TREATY AS AN EXAMPLE OF JOINT ANALYSIS.  
(\* E044)

\*

The process that eventually resulted in the 1961 Columbia River Treaty between Canada and the United States began in 1944 with an example of joint analysis. In that year "the governments of Canada and the United States...referred the task of assessing the possibilities for co-operative development of the Columbia River to the International Joint Commission (IJC)," which had been set up under the 1909 Canada-U.S. Boundary Waters Treaty. The IJC then established the International Columbia River Engineering Board (ICREB), with representatives from both countries, to undertake the necessary engineering studies of potential projects and alternative basin-wide systems incorporating the different projects. The ICREB submitted its report in 1959. On the basis of the report negotiations then began, first on principles to

guide the selection of projects and the allocation of costs and benefits (see Entries # E045 and # E046), and then on the specifics of a formal treaty. In contrast to the 15 years required for the ICREB analysis, the negotiation on principles took eleven months, and the negotiation of the 1961 Treaty itself took another eleven months. However, negotiation of a supplemental agreement was also required before Canada formally ratified the Treaty in 1964.

References:

John V. Krutilla, "The Columbia River Treaty: The Economics of an International River Basin Development," John Hopkins Press, Baltimore, Maryland, 1967

LAST MODIFIED: McDonald - 4/1/88 - checked

\*K

\* E044 / EXAMPLES / COOPERATIVE TACTICS / JOINT ANALYSIS / HYDROELECTRICITY / FLOOD CONTROL / COLUMBIA RIVER TREATY / FLOW REGULATION / NATURAL RESOURCES / COLUMBIA RIVER / UNITED STATES / USA / CANADA / INTERNATIONAL JOINT COMMISSION / IJC / BOUNDARY WATERS TREATY / INTERNATIONAL / WET

\*E

\*C

THE COLUMBIA RIVER TREATY AS AN EXAMPLE OF INCREMENTAL AGREEMENTS. (# E045)

\*

The process leading to the 1961 Columbia River Treaty began with a joint analysis, described in Entry # E044, by the International Columbia River Engineering Board (ICREB). On the basis of that analysis the International Joint Commission (IJC), which had been set up under the 1909 Canada-U.S. Boundary Waters Treaty, then negotiated an initial "incremental agreement" on principles to guide preparation of the Treaty itself. The objectives incorporated in these principles were to assure the most economic overall system possible, to assure a division of costs and benefits that was regarded as fair and made the joint system preferable to both countries over alternatives they could develop unilaterally, and to accommodate political or other interests of the parties that would not be captured by solely economic and engineering calculations.

This initial, incremental agreement on mutual objectives, and their explicit wording, was considered an important step in eventually completing the Columbia River Treaty. Entry # E046 summarizes some of the specifics of the IJC principles.

References:

John V. Krutilla, "The Columbia River Treaty: The Economics of an International River Basin Development," John Hopkins Press, Baltimore, Maryland, 1967

LAST MODIFIED: McDonald - 4/4/86 - checked

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# E045 / EXAMPLES / COOPERATIVE TACTICS / INCREMENTAL AGREEMENTS / FLOW REGULATION / NATURAL RESOURCES / HYDROELECTRICITY / FLOOD CONTROL / COLUMBIA RIVER TREATY / COLUMBIA RIVER / UNITED STATES / USA / CANADA / INTERNATIONAL JOINT COMMISSION / IJC / BOUNDARY WATERS TREATY / INTERNATIONAL / WET

\*E

\*C

THE COLUMBIA RIVER TREATY AS AN EXAMPLE OF 1) EQUALLY DIVIDING DOWNSTREAM BENEFITS DUE TO UPSTREAM STORAGE, AND 2) DIVIDING OTHER BENEFITS, AS WELL AS COSTS, "IN PROPORTION TO" THE LOCATION OF THE FACILITIES. (\* E046)

\*

As described in Entry # E045, negotiation of the 1961 Columbia River Treaty between Canada and the United States was preceded by agreement on a set of principles to guide the negotiation. Among other things, these principles addressed the allocation of costs and benefits.

Power Principle No. 6 provides that, "The power benefit [to] the downstream country from regulation of flow in the upstream country should be shared on a basis such that the benefit, in power, to each country will be substantially equal, provided that such sharing would result in an advantage to each country as compared with alternatives available to that country. . . Each country should assume responsibility for providing that part of the facilities needed for the cooperative development that is located within its own territory." (Department of External Affairs, and Northern Affairs and National Resources, 1964, quoted in Krutilla, 1967)

Flood Control Principle No. 4 reads that, "The upstream country should be paid one-half of the benefits as measured in Flood Control Principle No. 3, i.e., one-half of the value of the [flood] damages prevented." (Department of External Affairs, and Northern Affairs and National Resources, 1964, quoted in Krutilla, 1967)

Thus the principles divide costs based on (or "proportional to") location, they share equally any downstream flood control and power benefits from upstream storage, and they otherwise allocate benefits proportional to location. That is, they allocate to the upstream country any upstream benefits from upstream facilities, and to the downstream country any downstream benefits from



downstream facilities. It should be noted that Krutilla (1967) emphasizes that if the overall system is in fact made up of the most economic possible collection of projects, these principles for dividing costs and benefits will not necessarily result in both parties finding participation in the joint system better than their unilateral alternatives. Thus the inclusion in Power Principle No. 6 of the qualifier, "Where such sharing should not result in an advantage to each country...there should be negotiated and agreed upon such other division of benefits or other adjustments as would be equitable to both countries, and would make the cooperative development feasible." (Department of External Affairs, and Northern Affairs and National Resources, 1964, quoted in Krutilla, 1967) As it turned out, the final terms of the 1961 Columbia River Treaty take advantage of this qualifier in several instances.

References:

John V. Krutilla, "The Columbia River Treaty: The Economics of an International River Basin Development," John Hopkins Press, Baltimore, Maryland, 1967

"Report of the International Joint Commission on Principles for Determining and Apportioning Benefits from Cooperative Use of Storage of Waters and Electrical Interconnection within the Columbia River System," December 29, 1959. Reprinted in "The Columbia River Treaty, Protocol and Related Documents," Ottawa, Department of External Affairs, and Northern Affairs and National Resources, February 1964

LAST MODIFIED: McDonald - 4/4/88 - checked

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\* E046 / EXAMPLES / CREATIVE COMPROMISES / COST ALLOCATION /  
EQUAL BENEFITS / PROPORTIONAL COSTS / PROPORTIONAL BENEFITS /  
FAIR DIVISION / FLOW REGULATION / NATURAL RESOURCES /  
HYDROELECTRICITY / FLOOD CONTROL / COLUMBIA RIVER TREATY /  
COLUMBIA RIVER / UNITED STATES / USA / CANADA /  
INTERNATIONAL / WET

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THE 1958-1961 ICELANDIC FISHERIES DISPUTE AS AN EXAMPLE OF  
SEPARATING ISSUES AND SUBSEQUENT TRADEOFFS. (\* E047)

\*

In 1958 Iceland precipitated a dispute with the United Kingdom by announcing that Iceland would extend its territorial limits from four to twelve miles offshore. The ocean newly enclosed by the twelve-mile boundary would be closed to UK fishing. UK fishermen ignored the Icelandic position which led to several incidents involving the Icelandic Coast Guard, UK trawlers, a UK destroyer at one point, and gunfire at another.

"Tension eased, however, when Iceland announced that it planned to raise the matter of territorial limits at the UN Law of the Sea Conference scheduled for 1960.

"The Conference met from March to April but failed to officially extend off-shore fishing limits. The UK then suggested bilateral talks be held and agreed to halt fishing activity in the disputed waters while negotiations were in progress. Agreement was reached in 1961: the UK dropped its objections to the 12-mile limit, and Iceland agreed to allow British vessels to operate in the area during specified months of the year. Icelandic policy led to a renewed dispute on these issues ten years later." (Butterworth, 1976)

The 1961 agreement thus separated the issue of sovereignty from that of fishing rights, allowing a trade where Iceland was satisfied on the sovereignty issue and the UK got fishing rights that it considered acceptable.

#### References:

Robert Lyle Butterworth (with Margaret E. Scranton), "Managing Interstate Conflict, 1945-74: Data with Synopses," University Center for International Studies, University of Pittsburgh, 1976, p. 248

LAST MODIFIED McDonald - 7/25/88 - checked

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# E047 / EXAMPLES / CREATIVE COMPROMISES / SEPARATING ISSUES / TRADEOFFS / BOUNDARIES / NATURAL RESOURCES / FISHING / SOVEREIGNTY / UNITED KINGDOM / UK / ICELAND / INTERNATIONAL / WET

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THE 1973 DE LA PLATA RIVER AGREEMENT BETWEEN ARGENTINA AND URUGUAY AS AN EXAMPLE OF SEPARATING ISSUES, OF TRADEOFFS, AND OF JOINT OWNERSHIP. (# E048)

\*

"The [de la Plata River] is formed by the confluence of the Uruguay and Parana Rivers, at which point it is 25 miles wide; it flows 150 miles to debouche into the Atlantic, at which point it is 125 miles wide. The river is generally quite shallow and is subject to shifting obstructions formed by silt; its deepest channel runs quite close to Uruguay for almost its entire length... Jurisdiction over the river was never precisely demarcated; before 1969 both Argentina and Uruguay shared its use freely under the terms of a 1910 protocol. Several decades before 1969 Argentina had occupied Martin Garcia Island and during the 1960s maintained a naval station on it; Uruguay had never acquiesced in this arrangement but it created no conflict.

"During late 1968, however, Uruguay called for bids by international corporations to develop oil and natural gas fields on the continental shelf underlying the Plata estuary. Argentina protested, laying claim to portions of the territory that Uruguay had planned to exploit. Jurisdictional disputes over various islands were revived. . . . Argentina forces occupied . . . Timoteo Dominguez. . . . Uruguay insisted that the river should be demarcated at its geographic center; such a border would leave it controlling the major channel. Argentina insisted that the boundary should follow the deep channel, a division leaving it controlling virtually all of the oil resources under the river." (Butterworth, 1976)

The resolution came only in 1973. "After suitable arrangements had been made for joint economic exploitation of the oil resources, the Uruguayan position had been adopted. The middle of the river was taken as the boundary, but the accord provided for international use of the various channels in the river. In addition, Argentina was awarded Martin Garcia and it agreed to convert the island from a navy station to a resort spot. Uruguay gained possession of the Timoteo Dominguez key." (Butterworth, 1976)

Thus the agreement separated the issues of sovereignty (and territory), navigation rights, economic rights to oil resources, and even land use (in the case of Martin Garcia Island) to allow tradeoffs that made each country better off than with the status quo. The reference does not provide details about the "suitable arrangements" for joint exploitation of oil resources. The keyword "joint ownership" has been included to refer to these arrangements. Even though they may not meet legal criteria for joint ownership, that appears to be their effect. Thus the use of the keyword "joint ownership" in the absence of sufficient knowledge to permit a better phrase.

References:

Robert Lyle Butterworth (with Margaret E. Scranton), "Managing Interstate Conflict, 1945-74: Data with Synopses," University Center for International Studies, University of Pittsburgh, 1976, p. 430-431

LAST MODIFIED: McDonald - 10/4/88 - checked

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\* E048 / EXAMPLES / CREATIVE COMPROMISES / SEPARATING ISSUES /  
TRADEOFFS / BOUNDARIES / NATURAL RESOURCES /  
JOINT OWNERSHIP / SOVEREIGNTY / TERRITORY / NAVIGATION /  
OIL RESOURCES / LAND USE / ARGENTINA / URUGUAY /  
DE LA PLATA RIVER /  
INTERNATIONAL / WET

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THE ZAMBEZI ACTION PLAN (ZACPLAN) AS AN EXAMPLE OF AN INCREMENTAL AGREEMENT, AN INTERVENOR WITH RESOURCES AND INTERESTS, AND A MIXTURE OF JOINT ANALYSIS AND THIRD-PARTY ANALYSIS. (# E049)

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In the development of the 1987 Zambezi Action Plan (ZACPLAN), it was the United Nations Environment Programme (UNEP) that was the intervenor with resources and interests. In 1985, in response to interest expressed by the Heads of State of Botswana, Zambia, and Zimbabwe for help in the development of regional cooperation and in the promotion of sustainable development, UNEP helped establish a Working Group of Experts on the Zambezi River System. The Working Group involved representatives from Botswana, Malawi, Mozambique, Tanzania, Zambia, Zimbabwe, the United Nations Council for Namibia, and a number of international organizations. Angola was invited to be represented but did not participate. The Working Group efforts can be characterized as a mixture of joint analysis and third-party analysis. The Working Group met three times from 1985-1987, made substantial use of outside consultants in its work, and prepared two documents: a "Diagnostic Study on the Present State of the Ecology and the Environmental Management of the Common Zambezi River System" (UNEP, 1987a) and a draft Zambezi Action Plan.

In May 1987 ZACPLAN was formally signed by Botswana, Mozambique, Tanzania, Zambia, and Zimbabwe. It is best described as an incremental agreement because it limits itself to expressed agreement on broad goals and the importance of particular problems within the Zambezi basin. It proposes 19 projects concerned mainly with collecting and disseminating information, conducting research, developing integrated plans and procedures, and preparing for a regional legal convention and supporting national legislation. It proposes a budget including contributions from UNEP, other international organizations, and the basin countries, both the five that signed ZACPLAN and the three that did not. It proposes that ZACPLAN be implemented by the Southern African Development Coordination Conference (SADCC), and SADCC took on that responsibility formally later in 1987.

References:

United Nations Environment Programme (1987a), "Diagnostic Study on the Present State of the Ecology and the Environmental Management of the Common Zambezi River System," EMINWA Programme, prepared for the Conference of Plenipotentiaries on the Environmental Management of the Common Zambezi River System, Harare, May 1987, UNEP, UNEP/IG.78 Background, paper 1, 10 March 1987

United Nations Environment Programme (1987b), "Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System - Final Act, Harare, 26-28 May 1987

LAST MODIFIED: McDonald - 4/15/88 - checked

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\* E049 / EXAMPLES / COOPERATIVE TACTICS / JOINT ANALYSIS / THIRD-PARTY ANALYSIS / INCREMENTAL AGREEMENTS / INTERVENTION / INTERVENOR WITH RESOURCES AND INTERESTS / BOTSWANA / ZAMBIA / MOZAMBIQUE / TANZANIA / ZIMBABWE / ZAMBEZI RIVER / ZAMBEZI ACTION PLAN / ZACPLAN / NATURAL RESOURCES / UNITED NATIONS ENVIRONMENT PROGRAMME / UNEP / SADCC / SOUTHERN AFRICAN DEVELOPMENT COORDINATION CONFERENCE / INTERNATIONAL / WET

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THE 1984 SKAGIT RIVER VALLEY TREATY AS AN EXAMPLE OF SEPARATING ISSUES, THUS ALLOWING MUTUALLY BENEFICIAL TRADEOFFS. (\* E050)

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In 1942 the Canada-United States International Joint Commission (IJC) approved a proposal to raise the height of the Ross Dam in the State of Washington, thus flooding the Skagit River Valley, to supply electricity to Seattle, Washington. "The IJC order prescribed that the dam would be raised in stages in accordance with future power requirements . . . In 1953 the Ross Dam was raised to its present level which flooded a limited area . . . In 1967 Seattle and British Columbia reached an agreement which authorized raising the dam to its highest level which would have resulted in the flooding of 1902 hectares of land in the province Ross Dam agreement and the flooding that would result." [Alper and Monahan, 1986] The resolution only came in 1984. It involved separating the issue of electricity generation from dam construction.

"The Settlement, which will be in force for a period of eighty (80) years, ensures that the flooding of the Skagit Valley into British Columbia will not take place. Seattle will not raise the Ross Dam and, in return, British Columbia will supply the city with electricity equivalent to that which would have been generated had the dam been raised. British Columbia will receive as payment for the electricity the sums equivalent to the cost of construction, operation and maintenance of the dam." [Canadian Department of External Affairs, 1984]

Formally, the settlement involved three separate agreements: 1) a British Columbia-Seattle Agreement signed on March 30, 1984; 2) the "Treaty between Canada and the United States of America Relating to the Skagit River and Ross Lake, and the Seven Mile Reservoir on the Pend d'Oreille River" (the Skagit River Valley Treaty) signed on April 2, 1984; and 3) a Canada-British Columbia Agreement signed on October 29, 1984.

#### References:

"Skagit River Valley Treaty: Canada-British Columbia Agreement," Communique No. 151, Canadian Department of External Affairs, October 29, 1984

Donald K. Alper and Robert L. Monahan. "Regional Transboundary Negotiations Leading to the Skagit River Treaty: Analysis and Future Application," Canadian Public Policy, XII:1:163-174, 1986

LAST MODIFIED: McDonald - 10/4/88 - checked

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\* E050 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
SEPARATING ISSUES / HYDROELECTRICITY / FLOODING /  
CANADA / UNITED STATES / USA / IJC / NATURAL RESOURCES /  
INTERNATIONAL JOINT COMMISSION /  
SKAGIT RIVER VALLEY TREATY /  
INTERNATIONAL / WET

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"VOLUNTARY RESTRAINT" OF MINERAL RESOURCE ACTIVITIES AS AN EXAMPLE OF A CONTINGENT AGREEMENT AMONG THE ANTARCTIC TREATY CONSULTATIVE PARTIES (ATCP'S). (# E051)

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In 1988 the ATCP's concluded the Convention on the Regulation of Antarctic Mineral Resources Activities (CRAMRA). Prior to the treaty they had followed a policy of voluntary restraint articulated in Recommendation IX-1 of the ninth Antarctic Treaty Consultative Meeting (ACTM) held in London in 1977.

"[The ATCP's] urge their nationals and other States to refrain from all exploration and exploitation of Antarctic mineral resources while making progress towards the timely adoption of an agreed regime concerning Antarctic mineral resource activities. They will thus endeavour to assure that, pending the timely adoption of agreed solutions pertaining to exploration and exploitation of mineral resources, no activity shall be conducted to explore or exploit such resources."

This can be seen as a contingent agreement accomodating both those worried that the absence of an agreed regime would lead to destructive exploitation, and those worried that the commitment to wait for an agreed regime could be exploited by a party wanting to block development. That is, if things were to move along expeditiously, as presumedly intended by those worried about destructive exploitation, such exploitation would be successfully avoided. And if the negotiations were intentionally impeded, states wanting to pursue development would be free to no longer voluntarily restrain mineral activities.

As it turned out, the negotiations moved along expeditiously CRAMRA was signed on June 2, 1988. (See also entry # E041.)

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Lee A. Kimball, "Special Report on: The Antarctic Minerals Convention," International Institute for Environment and Development - North America, World Resources Institute, Washington, DC, July, 1988

LAST MODIFIED: McDonald - 8/26/86 - checked

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# E051 / EXAMPLES / CREATIVE COMPROMISES / MINERALS / CONTINGENT AGREEMENTS / MINING / ANTARCTICA / NATURAL RESOURCES / ARGENTINA / CHILE / AUSTRALIA / BELGIUM / BRAZIL / GERMAN DEMOCRATIC REPUBLIC / GDR / ITALY / FEDERAL REPUBLIC OF GERMANY / FRG / FRANCE / INDIA / JAPAN / NEW ZEALAND / NORWAY / PEOPLE'S REPUBLIC OF CHINA / PRC / POLAND / SOUTH AFRICA / SOVIET UNION / USSR / UK / USA / UNITED KINGDOM / UNITED STATES / URUGUAY /

INTERNATIONAL / DRY

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THE 1984 SKAGIT RIVER VALLEY TREATY NEGOTIATIONS AS AN EXAMPLE OF  
THIRD-PARTY ANALYSIS. (\* E052)

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In 1942 the Canada-United States International Joint Commission (IJC) approved a proposal to raise the height of the Ross Dam in the State of Washington, thus flooding the Skagit River Valley, to supply electricity to Seattle, Washington. "The IJC order prescribed that the dam would be raised in stages in accordance with future power requirements." [Alper and Monahan, 1986] As described in Entry # E050, the Ross Dam was raised once in 1953, but a 1967 agreement between Seattle and British Columbia to raise the dam further ran into trouble in the 1970s. The eventual resolution formalized in the 1984 treaty is summarized in Entry # E050. In the negotiations leading up to the treaty the constructive role of third-party analysis under the auspices of the IJC is described as follows by Alper and Monahan (1986).

"A ... factor important in the IJC role was its recognition of the impasse caused by each side having their own technical (working) committees to advise the principal negotiators. These committees became fixed in their narrow perspectives and, as would be expected, each side accused the other of inflexibility and bias. To overcome this problem the IJC constituted its own binational technical committee consisting of Douglas Gordon, Chief Executive Officer of Ontario Hydro, and George Berry, former director of the Power Authority of the State of New York (PASNY). The two-man committee was accepted by the technical people as well as the lead negotiators on both sides because they were acknowledged leaders in the power field, had worked across the border over a long period of time, understood the IJC and its activities and, as easterners, were not identified with British Columbia or Seattle ... The existence of this impartial and autonomous source of information proved to be a major factor in moving the negotiations forward."

References:

Donald K. Alper and Robert L. Monahan, "Regional Transboundary Negotiations Leading to the Skagit River Treaty: Analysis and Future Application," Canadian Public Policy, XII:1:163-174, 1986

LAST MODIFIED: McDonald - 10/4/88 - checked

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\* E052 / EXAMPLES / COOPERATIVE TACTICS / THIRD-PARTY ANALYSIS /  
HYDROELECTRICITY / FLOODING /  
CANADA / UNITED STATES / USA / IJC / NATURAL RESOURCES /  
INTERNATIONAL JOINT COMMISSION /  
SKAGIT RIVER VALLEY TREATY /



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THE 1984 SKAGIT RIVER VALLEY TREATY NEGOTIATIONS AS AN EXAMPLE OF AN INTERVENOR WITH RESOURCES AND INTERESTS. (# E053)

\*

In 1942 the Canada-United States International Joint Commission (IJC) approved a proposal to raise the height of the Ross Dam in the State of Washington, thus flooding the Skagit River Valley, to supply electricity to Seattle, Washington. "The IJC order prescribed that the dam would be raised in stages in accordance with future power requirements." [Alper and Monahan, 1986] As described in Entry # E050, the Ross Dam was raised once in 1953, but a 1967 agreement between Seattle and British Columbia to raise the dam further ran into trouble in the 1970s. "The new opposition to the flooding and asked the IJC to void its 1942 order which also would have had the effect of invalidating the 1967 ... agreement. In 1972 the province formally repudiated the 1967 agreement." [Alper and Monahan, 1986] The eventual resolution formalized in the 1984 treaty is summarized in Entry # E050. In the negotiations leading up to the treaty the IJC had an important role as a third-party, or intervenor, with interests and resources. The IJC's interest was in a timely resolution of the dispute that was advantageous to both parties; that is the IJC's *raison d'être*. Entry # E052 describes how the IJC used its technical resources to provide for constructive third-party analysis. Another resource of the IJC was its power, if the parties could not agree, to impose a resolution by ruling one way or the other on British Columbia's formal request to void the 1942 order. Alper and Monahan (1986) describe one way in which that resource was used.

"The IJC was able to induce a sense of crisis for the negotiators by setting a one-year deadline (later extended to a second year) by which time the two parties would have to reach a settlement. The commissioners were able to pressure the two parties to negotiate seriously by convincing each, in separate discussions, that it might well lose if the IJC were to rule on the 1942 order. By taking advantage of this uncertainty they convinced British Columbia that the IJC would probably rule on the strict legal grounds that favoured Seattle and, at the same time, convinced Seattle the IJC would probably rule on the broader environmental considerations that favoured British Columbia. By taking a tough line and making different and contradictory arguments to each side [Commissioners E. Richmond] Olson and [Keith] Bulen accomplished the difficult task of making negotiation and compromise the preferred option for both parties. Thus, the IJC was crucial to the starting and continuation of serious negotiations"

References:

Donald K. Alper and Robert L. Monahan, "Regional Transboundary Negotiations Leading to the Skagit River Treaty: Analysis and Future Application," Canadian Public Policy, XII:1:163-174, 1986

LAST MODIFIED: McDonald - 10/4/88 - checked

\*K

# E053 / EXAMPLES / COOPERATIVE TACTICS /  
INTERVENTION / INTERVENOR WITH RESOURCES AND INTERESTS /  
HYDROELECTRICITY / FLOODING /  
CANADA / UNITED STATES / USA / IJC / NATURAL RESOURCES /  
INTERNATIONAL JOINT COMMISSION /  
SKAGIT RIVER VALLEY TREATY /  
INTERNATIONAL / WET

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THE 1986 LESOTHO HIGHLANDS WATER PROJECT TREATY AS AN EXAMPLE OF  
TRADING OFF THE ISSUES OF WATER SUPPLY AND HYDROELECTRICITY, AND  
OF COST ALLOCATION PROPORTIONAL TO THE FUNCTION OF FACILITIES.  
(# E054)

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"In October 1986 the Kingdom of Lesotho and the Republic of South Africa [RSA] signed a Treaty on the proposed Lesotho Highlands Water Project [LHWP]. This US \$ 4000 M multi-purpose project, to be built in phases, serves to double the water resources available to the largest concentration of economic activity in South Africa centered in Johannesburg and to provide a large measure of self-sufficiency in electric power to Lesotho." [Sole and Van Robbroeck, 1988] The central trade in the project is that

- 1) South Africa, which badly needs water, gets water from Lesotho, where "few opportunities exist for using its water resources for irrigation." [Sole and Van Robbroeck, 1988], while
- 2) Lesotho, which has substantial external debt relative to potential earnings, gets royalties for the water plus a hydroelectric facility which it could not finance as a separate project on its own and which will make it much less dependent on electricity imports from South Africa.

Because South Africa is interested in water supplies and Lesotho is interested in hydroelectricity, the basic cost allocation principal was to allocate costs of various project components in proportion to their function. Thus the costs associated with supplying South Africa with water are to be charged to South Africa, and the costs of the hydroelectric facility are to be charged to Lesotho. However, many components serve both functions. "Consequently it was decided [to allocate costs] to the RSA based on the cost of a theoretical 'water-only' scheme, designed to the same standards as the multi-purpose scheme. The difference between the cost of the multi-purpose scheme and the

water-only one would be regarded as the cost of the hydro-scheme. That means that the marginal cost would be allocated to hydro-generation, which obviously improves the economic viability of such scheme markedly." [Sole and Van Robbroeck, 1988]

References:

M.E. Sole and T.P.C. Van Robbroeck, "A Unique Treaty for the Lesotho Highlands Water Project," presented at the 6th IWRA World Congress, Ottawa Canada, May 29 - June 3, 1988

"Treaty on the Lesotho Highlands Water Project between the Government of the Republic of South Africa and the Government of the Kingdom of Lesotho," (1986) received from the South African Embassy in Washington, D.C.

"South Africa tunnels to tap Lesotho's rivers," Tunnels & Tunnelling, April 1988, pp. 75-82

"Lesotho Highlands Scheme. A Survey," Supplement to the Financial Mail, May 6, 1988

LAST MODIFIED: McDonald - 10/5/88 - checked

\*K

# E054 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS / HYDROELECTRICITY / WATER SUPPLY / ROYALTIES / COST ALLOCATION / PROPORTIONAL COSTS / FAIR DIVISION / SOUTH AFRICA / LESOTHO / NATURAL RESOURCES / LESOTHO HIGHLANDS WATER PROJECT / INTERNATIONAL / WET

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THE 1986 LESOTHO HIGHLANDS WATER PROJECT TREATY AS AN EXAMPLE OF TRADING OFF THE ISSUES OF SOVEREIGNTY AND OPERATIONAL CONTROL. (# E055)

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"In October 1986 the Kingdom of Lesotho and the Republic of South Africa [RSA] signed a Treaty on the proposed Lesotho Highlands Water Project [LHWP]. This US \$ 4000 M multi-purpose project, to be built in phases, serves to double the water resources available to the largest concentration of economic activity in South Africa centered in Johannesburg and to provide a large measure of self-sufficiency in electric power to Lesotho." [Sole and Van Robbroeck, 1988]

One problematic issue in the negotiations was establishing institutions to manage the project that would be acceptable to both sides. South Africa will pay about 90% of the cost of the project, which will double the water supply to South Africa's industrial heartland [Sole and Van Robbroeck, 1988]. It has a strong interest in institutions it judges sufficient to allow it

to protect its investment and its water supply. Most of the mammoth project will be built and operated in Lesotho, however, and Lesotho was concerned that institutional arrangements not encroach on Lesotho's sovereignty.

"Initially, a bi-national private company with equal shareholding by the two Governments was contemplated. This idea was taken as far as the drafting of a complete set of Articles of Association. In the end, this formula was found to be insufficient to overcome the issue of sovereignty ... [The eventual solution was that in] each country, an autonomous statutory body under the respective country's own laws was created and entrusted with the implementation of that part of the project situated on its own soil: the Lesotho Highlands Development Authority (LHDA) in Lesotho and the Trans Caledon Tunnel Authority (TCTA) in the RSA ... In order to meet the legitimate concerns of the two parties on what is happening across the border, a Joint Permanent Technical Commission (JPTC) was created by the Treaty. This is a bi-national organization with equal representation by the two countries. The Treaty gives monitoring and advisory power to the JPTC, and also powers of approval of key actions of the two parastatals, as enumerated in Article 9 ... Decisions have to be taken by consensus. The lack of agreement by one Party therefore amounts to a veto." [Sole and Van Robbroeck, 1988]

References:

M.E. Sole and T.P.C. Van Robbroeck, "A Unique Treaty for the Lesotho Highlands Water Project," presented at the 6th IWRA World Congress, Ottawa Canada, May 29 - June 3, 1988

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LAST MODIFIED: McDonald - 10/5/88 - checked

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\* E055 / EXAMPLES / CREATIVE COMPROMISES / TRADEOFFS /  
SOVEREIGNTY / SOUTH AFRICA / LESOTHO / NATURAL RESOURCES /  
LESOTHO HIGHLANDS WATER PROJECT /  
INTERNATIONAL / WET

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THE CALCULATION OF WATER DELIVERY ROYALTIES IN THE 1986 LESOTHO

HIGHLANDS WATER PROJECT TREATY AS AN EXAMPLE OF A CONTINGENT AGREEMENT. (\* E056)

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"In October 1986 the Kingdom of Lesotho and the Republic of South Africa [RSA] signed a Treaty on the proposed Lesotho Highlands Water Project [LHWP]. This US \$ 4000 M multi-purpose project, to be built in phases, serves to double the water resources available to the largest concentration of economic activity in South Africa centered in Johannesburg and to provide a large measure of self-sufficiency in electric power to Lesotho." [Sole and Van Robbroeck, 1988]

The parties agreed to split the benefits of the project with 56% going to Lesotho and 44% to South Africa. They also agreed on how to define benefits: the difference between the cost of the LHWP and the least-cost alternative available to South Africa to supply the same amount of water on its own. However, "the lack of sufficient reliable hydrological data made it impossible for the countries to agree on the annual yield of the two projects, and consequently the precise sizes of the components and their costs." [Sole and Van Robbroeck, 1988] The solution was a contingent agreement. They agreed what data needed to be collected, they agreed who would collect the data, they agreed how to resolve disputes about the data, and they agreed on precisely how the benefit of the project would be calculated once the approved data were in hand. Thus the royalties to be paid by South Africa to Lesotho for LHWP water deliveries were made contingent, according to a precisely spelled out procedure, on future hydrological data.

References:

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LAST MODIFIED: McDonald - 10/5/88 - checked

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\* E056 / EXAMPLES / CREATIVE COMPROMISES /  
CONTINGENT AGREEMENTS / ROYALTIES / WATER SUPPLY /  
SOUTH AFRICA / LESOTHO / NATURAL RESOURCES /  
LESOTHO HIGHLANDS WATER PROJECT /

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ENTRIES: # E016

LAST MODIFIED: McDonald - 1/4/88 - unchecked

\*K

# P001 / PUBLICATIONS / NGUYEN, QUAC-LAN /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER /  
SENEGAL / MAURITANIA / MALI /  
WET

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ENTRIES: # E016

LAST MODIFIED: McDonald - 1/4/88 - unchecked

\*K

# P002 / PUBLICATIONS / NGUYEN, QUAC-LAN /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS / SENEGAL RIVER /  
SENEGAL / MAURITANIA / MALI /  
FAIR DIVISION / COST ALLOCATION /  
SEPARABLE COSTS - REMAINING BENEFITS / SCRB /  
WET

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ENTRIES: \* E018, \* E019, \* E020

LAST MODIFIED: McDonald - 1/4/88 - unchecked

\*K

\* P003 / PUBLICATIONS / GODANA, BONAYA ADHI /  
NILE RIVER / NIGER RIVER / SENEGAL RIVER /  
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL /  
OMVS /  
SENEGAL / MAURITANIA / MALI /  
WET

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\* E039

LAST MODIFIED: McDonald - 2/8/88 - checked

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WET

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MEDITERRANEAN SEA / MEDITERRANEAN ACTION PLAN /  
POLLUTION / TRADEOFFS /  
INTERVENOR WITH RESOURCES AND INTERESTS / INTERVENTION /  
UNEP / UNITED NATIONS / UNITED NATIONS ENVIRONMENT PROGRAMME /  
ALGERIA / CYPRUS / EEC / EGYPT / EUROPEAN ECONOMIC COMMUNITY /  
FRANCE / GREECE / ISRAEL / ITALY / LEBANON / LIBYA / MALTA /  
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ENTRIES: # E004

LAST MODIFIED: McDonald - 1/5/88 - checked

\*K  
# P007 / PUBLICATIONS / MEHTA, J.S. /  
INTERVENOR WITH RESOURCES AND INTERESTS / WORLD BANK /  
INTERVENTION / INDUS WATER TREATY / INDIA / PAKISTAN /  
WATER ALLOCATION / MILITARY THREATS /  
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ENTRIES: \* E007, \* E008, \* E009, \* E010, \* E011

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\* P008 / PUBLICATIONS / LEMARQUAND, DAVID G. /  
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OMVS / SENEGAL RIVER /  
SENEGAL / MAURITANIA / MALI / FRANCE / FRG / GUINEA /  
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TRADEOFFS / HYDROELECTRICITY / DONORS / AID /  
MINING / MINERALS /  
ORGANISATION DES ETATS RIVERAINS DE SENEGAL / OERS /  
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OMVS / SENEGAL RIVER /  
SENEGAL / MAURITANIA / MALI /  
TRADEOFFS / HYDROELECTRICITY / FACILITIES /  
NAVIGATION / WATER STORAGE / IRRIGATION /  
WATER QUALITY / SALINITY /  
WET

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\*K

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DRY

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SINGLE NEGOTIATING TEXT / SNT /  
FAIR DIVISION / TRADEOFFS / AUCTIONS /  
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SOUTH AFRICA / LESOTHO /  
LESOTHO HIGHLANDS WATER PROJECT

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DEFINITIONS: FAIR DIVISION

Most negotiations have a possible cooperative dimension, i.e., the possibility of "making the pie bigger." However, all negotiations have a competitive dimension, i.e., how to divide the "pie" up. Sometimes it is easier to agree a priori to a rule or procedure for dividing benefits, or allocating costs, than it is to negotiate competitively a specific division. Examples of possible rules or procedures that negotiators might use are keyworded in this database with the phrase FAIR DIVISION. There is no one set of fair division rules or procedures that is theoretically or practically perfect. There are instead a number of options. Options included in this data base have the following keywords.

DIVIDE-AND-CHOOSE  
EQUAL BENEFITS  
EQUAL BURDENS  
EQUAL COSTS  
EQUAL OPPORTUNITIES  
NUCLEOLUS  
PROPORTIONAL BENEFITS  
PROPORTIONAL BURDENS  
PROPORTIONAL COSTS  
PROPORTIONAL NUCLEOLUS  
SEPARABLE COSTS - REMAINING BENEFITS or SCORE  
SHAPLEY VALUE  
STEINHAUS PROCEDURE  
WEAK NUCLEOLUS

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\* D001 / DEFINITIONS / FAIR DIVISION

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DEFINITIONS: RISK AVERSION

Most people are not gamblers. They are risk averse. That is, they would prefer \$50 for certain to a promise of \$100 if a coin flip comes up heads (and nothing if it comes up tails). It is because people are risk averse that insurance arrangements are desirable. An individual prefers paying a definite modest sum (his premium) to taking the gamble of either paying nothing, if he meets with no accident, or paying quite a bit in the event of an accident, unlikely though that accident may be. Because people are risk averse, the total they collectively pay in premiums to the insurance company more than covers the claims. Thus parties to a negotiation can sometimes share risks to their mutual advantage through devising appropriate insurance arrangements.

If they are risk averse to different degrees, there are additional options they should explore. For example, even if two people agree totally on the probability that a given stock option will be a bonanza, and the probability it will be a disaster, if one is more risk averse than the other, they should be able to find a price at which the more risk averse investor will sell his options to the less risk averse investor, and both will walk away happy with the deal.

LAST MODIFIED: McDonald - 4/21/88 -checked

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\* D002 / DEFINITIONS / RISK AVERSION

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DEFINITIONS: CONTINGENT AGREEMENTS

Where two parties disagree in their expectations about the future, that difference can sometimes be exploited by a contingent agreement. In a river basin negotiation imagine a downstream party unhappy with a pollution control technology proposed by a potential polluter upstream. The downstream party has less confidence that the technology will work as advertised than does the potential polluter. That is, they have different expectations. However, they both might agree to an arrangement where the potential polluter commits to immediately shutting down his operation if monitors show pollution climbing above an agreed trigger value. The potential polluter sees such an agreement as relatively costless because he thinks it very unlikely the trigger value will ever be exceeded. The downstream party, however, thinks it more likely that the trigger will be exceeded, and thus the commitment to shut the plant down is very valuable to him.

There are at least two important characteristics of successful contingent agreements. First, as time passes one party's expectations will be proven right, and the provisions of the contingent agreement favoring that party will be triggered. If these are perceived, after the fact, as unfairly onerous by the other party, he may have strong incentives to renege, and the agreement may not be sustainable. Thus the future sustainability of the agreement, no matter who turns out to be right, must be considered. Second, it is important that whatever is to indicate whose expectations turn out to be right be something relatively unambiguous and unmanipulable. In the hypothetical example above, it may be desirable to make a neutral third party responsible for monitoring whether pollution levels exceed the trigger value, or to make the agreement very specific about the monitoring equipment and procedures.

LAST MODIFIED: McDonald - 2/10/88 - unchecked

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\* D003 / DEFINITIONS / CONTINGENT AGREEMENTS

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