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INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS

Summary Report

Prepared by

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Vicente Giner Boira
David P. Daines
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Colorado State University
Fort Collins, Colorado
March 1976

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agency or the United States Government.

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March 1976

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* *CONFERENCE PROCEEDINGS* *
* * * * * * *

These proceedings in four volumes (1,451 pages) contain the solicited and contributed reports of some 35 specialists in water resources areas. (See Appendix 1--table of contents of the proceedings.) The reports provide in varying detail the substance of positions presented and discussed at The International Conference on Global Water Law Systems in Valencia, Spain, from September 1-6, 1975. The authors have attempted to convey their expertise on the topics according to a preset outline and agreed upon common line of exposition. The Conference Committee welcomes and requests any comments on the reports, information and materials or topics covered therein or relevant to the legal aspects of improving water development and management.

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TABLE OF CONTENTS

	Page
Conference Officials and Conference Proceedings	i
Abstract	ii
Part	
1. Introduction	1
2. Objectives	2
3. Conference Theme	3
4. Developing an Analytical Methodology	5
4.a. Spectrum of Alternatives	5
4.b. Paths to Solutions	6
4.c. Relevance to New or Improved Laws	6
5. Convening the Conference	9
5.a. Location	9
5.b. Conference Program	9
5.c. Conference Support	16
6. Water Resources Law--A Summary of the Global Water Law Systems	16
6.a. Introduction	16
6.b. Review of the Systems	17
6.c. Summary Comments	27
7. Interdisciplinary Relationship to the Law	28
7.a. Law and Technology	28
7.b. Law and Society	29
7.c. Law and Economics	29
8. Conclusions and Considerations	30
Footnotes	32
Appendices	
1. Table of Contents--Proceedings of International Conference on Global Water Law Systems	33
2. Hosts and Participating Spanish Authorities	36
3. Conference Registration List	38
List of Figures	
1. A Descriptive Map of Proposed Examination of Major Legal Systems and Their Variations or Paths of Influence	4
2. Spectrum of Alternatives and Processes of Choice for Water Law Systems	7
3. Path of Solutions	9
4. Conference Program	10
5. Structural Diagram of Final Panel Discussion	14

Abstract

THE INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS

The International Conference on Global Water Law Systems was convened in Valencia, Spain, with the intent to focus upon particular basic issues to analyzing and improving water laws in light of the role and function of the law and its relationship to other disciplines and sectors of socioeconomic activity. The Conference was an effort designed to: (1) build upon the materials assembled in past meetings and publications while attempting to establish a systematic foundation of knowledge of major water law and administration systems around the globe; and (2) to develop an analytical methodology for the interface of interdisciplinary, intersectoral and intergovernmental inputs to new or improved laws and codes.

Among the water law systems reviewed were the Spanish, French, British, Italian, Soviet, Hindu-Bali, Moslem, Latin American, Israeli, and the variations found in the United States and select Asiatic countries. The relationship of water law to the human and physical environment was discussed from the social, economic and technical perspectives. Concluding presentations covered national water planning, drafting water codes and multi- and bilateral assistance available to developing countries in preparing or revising water codes and administrative arrangements.

Water laws must be dynamic and, thus, ought to be the product of evolutionary processes. However, the water laws and organizational structures that at one point in time were designed to be solutions to particular problems often become the problem. Through inflexibility, lack of explicit policy provisions and gaps in subjects included, constraints to the introduction of new technologies and improved water management practices frequently occur. Three key issues or problems identified as impediment to water resources optimization were discussed in light of needed changes in the law--allocation and reallocation of water supplies; integration of water quantity and water quality control; and, management and conjunctive use of ground and surface waters.

THE INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS

A SUMMARY REPORT

1. INTRODUCTION

The International Conference on Global Water Law Systems was convened in Valencia, Spain, with the intent of focusing upon particular basic issues for analyzing and improving water laws in light of the role and function of the law and its relationship to other disciplines and sectors of socioeconomic activity. The Conference was an effort designed to: (1) build upon the materials assembled in past meetings and publications while attempting to establish a systematic foundation of knowledge of major water law and administration systems around the globe; and (2) develop an analytical methodology for the interface of interdisciplinary, intersectoral and intergovernmental inputs to new or improved laws and codes.

In the past there have been several regional conferences directed toward the legal aspects of water resources.[1] These meetings and those sections of other conferences dwelling upon the law of water resources have been a major contribution to increasing the understanding of water law and disseminating this knowledge to other legal specialists and those of other disciplines constantly affected by the law.

The field of water resources law, however, has now become a topic of high national and global priority due to new and increasing demands upon the resource and countervailing efforts against the diminution of water quality through present uses. The general consensus of opinion is that we have the technologies, and we can determine their practicability, economic feasibility and physical/social consequences of use. But often, a major constraint to technological implementation is adequate legal machinery. Specialists in water resources fields have the responsibility to individually and collectively improve upon the legal and administrative mechanisms. It is not just a task bestowed upon lawyers.

The ICGWLS* was the first of three meetings to be convened in a planned sequence.[2] It was to lay a foundation of the basic concepts of water law and administration by which the subsequent efforts could focus upon particular problems and issues. The idea for convening the Conference originated in 1972. Part of its motivation can be traced to prevailing difficulties experienced by practitioners in the field of water legislation and administration in locating appropriate material and insightful information on alternative water management control practices and systems. Although many reports were available describing water laws of particular countries, these materials did not concentrate upon a unified theme and

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* In this report, ICGWLS refers to the International Conference on Global Water Law Systems.

were either local or regional in perspective. Faced with the proposition of taking a "traditional" approach; i.e., that of providing advice based primarily upon knowledge of one's own system, the alternative of gathering relevant materials on other systems in order to provide a range of choices was preferred. This involves the creation of a spectrum of alternative legal approaches to [illegible] particular water resources problems and insure appropriate resource development and management. Through the strong interest and support of many agencies and foundations, and the enthusiastic response from the Government of Spain to host the Conference, the first of the three-stage program was underway.

2. OBJECTIVES

A quick review of water activities around the globe clearly indicates that this resource has rapidly become one of the critical elements in determining local, national and regional growth. In the past three decades, particularly the last five years, the trend has been away from treating water as a free good, subject to near unrestricted control, to a recognition of the resource as a capital commodity whose spatial and temporal availability dictates policy formulation and new directions in macro and micro planning and development. Nations of all stages of development have accorded control and management of water resources a high priority.

In retrospect, societies from time immemorial have been controlling water to some degree. Their approach was largely dictated by geoclimatic conditions. In arid areas the emphasis was upon allocation and use of a quantity of water; in humid areas drainage and water quality were the preoccupation.

Over time distinct regional or national systems emerged which reflect particular physical conditions and social goals. Elaborate water laws and administrative systems evolved where the greatest needs and most serious natural constraints existed. Through adoption or imposition many of these systems have also influenced or directed water use and control in other countries or regions; and, although retaining many of the basic characteristics of the original system, have incorporated modifications to meet indigenous conditions. (See Figure 1.)

The first objective of the Valencia Conference was to systematically describe a variety of these water law systems that have had a major contribution to the manner in which nations have managed and regulated their water resources or which exemplify unique features in response to specific water conditions or use goals. A uniform format was utilized by the experts reporting on these systems so that a comparison of features could be made between the systems. The second objective was to explore the social, economic and technical aspects of water resources use and management as these parameters related to functions and formulation of water laws. The final objective, and perhaps the most important, was to develop an approach to examining these legal alternatives in light of contemporary conditions and explicate a methodology for preparation of water laws that would bring about desired changes and maximization of water-related benefits.

Among the water law systems reviewed were the Spanish, French, British, Italian, Soviet, Hindu-Bali, Moslem, Latin American, Israeli, and the variations found in the United States and select Asiatic countries. The relationship of water law to the human and physical environment was discussed from the social, economic and technical perspectives concluding with presentations on national water planning, drafting water codes and multi- and bilateral assistance available to developing countries in preparing or revising water codes and administrative arrangements.

3. CONFERENCE THEME

To accomplish these objectives, the Conference organizers adopted the following philosophy--a water code must be direct, pragmatic, dynamic and the product of interdisciplinary and intersectoral interaction. Therefore, a systematic, logical and sequential program must be followed with legal presentations by experts from or specialists in the particular area reported on and interdisciplinary contributions based upon international experience.

Achievement of the Conference objectives depended upon the early establishment of an overall theme and an underlying logic concerning the general topic. This was followed by a discourse on the "Spectrum of Alternatives" and on the interrelationships exemplified in the Conference program.

The overall theme of the Conference can be summarized in the following interlocking propositions:

1. Water resources systems are centrally determined by a host of physical and nonphysical constraints and/or facilitators prevailing in each particular country (as exemplified in ecological configurations, historical antecedents, socio-economic conditions, etc.).

2. Existing constraints and/or facilitators shape major water resources allocation and use policies (local, regional, national, and international), resulting in major systems ranging from centralized control to relative autonomy.

3. Water policies are explicitly or implicitly incorporated into the legal systems (expressions of custom and long collective practices) with major manifestations in substantive laws (water doctrines and judicial interpretations) and procedural requirements.

4. Organizational arrangements for water management are the result of historical practices, legal requirements, and responses to ecological constraints and socio-economic conditions.

5. Environmental conditions, diversified resource policies, legal requirements, and organizational arrangements are important ingredients of the constellation of factors affecting national water resources development.

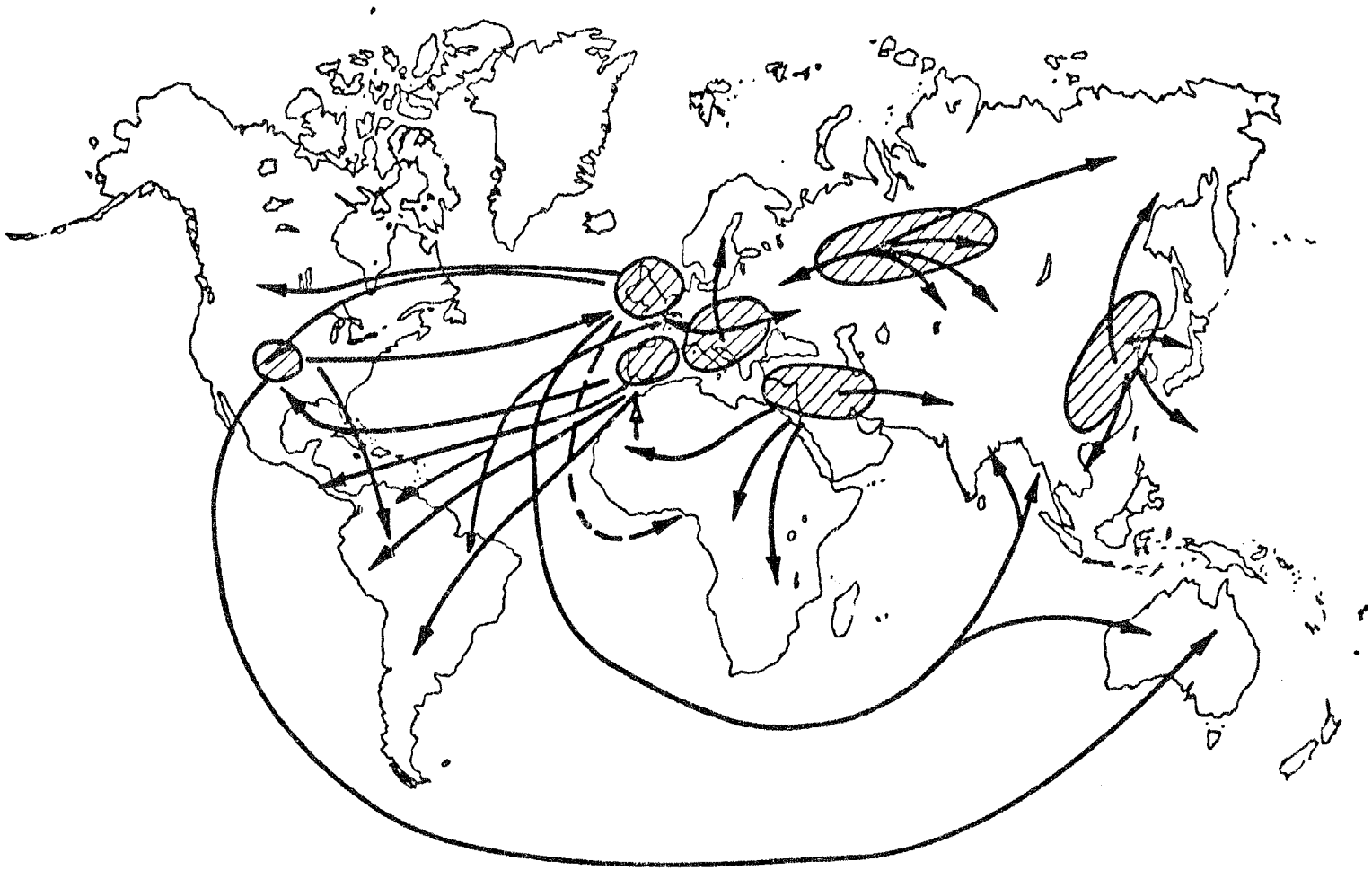

Figure I A Descriptive Map of Proposed Examination of Major Legal Systems ( ) and Their Variations or Paths of Influence ( ). (This is not an Exhaustive Description but Only Indicative Categorizations.)

Radosevich 1973

6. In order to meet such objectives and future demands, the central concern of integrated water management is the identification and reconsideration of legal alternatives and the implementation of innovative combinations of technological interventions and forms of social organization.

4. DEVELOPING AN ANALYTICAL METHODOLOGY

Past practices have, in many countries, created vested rights to a continued use in the source of water. In most cases, the extent of efficiency in transmission by the purveyor of water (which may be the sovereign) or the user of the supply is low due to costs of reducing seepage, evapotranspiration, percolation and other system losses. The task facing most water decision makers is now more of one related to water reallocation than allocation and how this can be done with a minimum of social disruption.

The problems and pressures are not only at the micro levels, but at the macro (policy and program) levels as well. The policy toward development and water resource use of one nation has a consequence upon its neighbors where hydrologically connected. A well-known example is the impact upon northwestern Mexico from the reclamation policy of the West in the United States. Further, technology has not only provided more efficient and effective means for using water in or out of the natural basin regime, but has placed an additional task upon decision makers to prepare programs and promulgate laws and regulations with scientific awareness.

The projections in water demands, as many proclaim, should not be bleak if rational remedial action is taken. It is not a matter of reaching a plateau of subsistence with our water supply. There is little reason why the development, use and management of available resources cannot take place harmoniously with an enhanced quality of life if the decisions executed and legal directives and controls enacted are systematically made, cognizant of alternatives.

4.a. Spectrum of Alternatives

Water law and administration consists of a wide variety of alternative approaches which have evolved over time and under different demand situations placed upon the existing resource. Identifying a set of these major systems provides the decision maker with a spectrum of alternative doctrinal and organizational variations to examine in preparing proposed legal machinery or evaluating present effectiveness in light of potential changes.

Figure 2 illustrates the Spectrum of Alternatives discussed at the ICGWLS. Evaluation of each system should include not only its present state of the arts, but also the process of change in the law that took place in response to or directed by stages of development of the nation. This point is considered essential since not every nation develops at the same rate. A water law system that may appear to have no relevance to particular needs in its present status may provide the very basis of a solution at some time in its evolutionary process. Thus, there are

not only alternatives in contemporary systems, but an important dimension of subalternatives in the growth of a particular system.

The lawyer, engineer, economist and other formulators of programs, policies and laws can enhance their potential for success through awareness of a wide range of choices.

4.b. Paths to Solutions

Having identified the range of alternative water law systems and uniformly examined the philosophy, policies, particular features of substantive law and the organizational arrangements and procedures for carrying out the law, the model, then, moves to an endogenous determination and description of specific national or subgovernmental inputs and objectives. The Types of inputs to be included and indicative objectives are portrayed in Figure 2.

The analytical methodology developed at the Conference require the interdisciplinary, intersectoral and intergovernmental contribution in formulating resource policies and systematically examining and evaluating the spectrum of alternatives represented by the doctrinal and organizational variations. This process permits the identification of basic paths to solutions (Figure 3) in preparation or revision of a water law system.

These alternative "paths" are paradigms of the major theme of the ICGWLS--the linkages of constraints and facilitators, policies, legal doctrines and organizational arrangements with the general quest for rational water resources allocation and use. They further demonstrate the validity in applying exogenous materials to creating endogenous output.

The paths of solutions to issues or problems only serve as the framework upon which the system of water law could be built. Again, it is with regret that too often in the past specialists have implanted a set of laws and agency functions from another country or from their preferred model rather than develop a system based upon specific conditions and needs of the recipient country. Also, too often, a new law or administrative structure is the effort of only one discipline and not the combined accomplishment of specialists and others working with the resource and related activities.

4.c. Relevance to New or Improved Laws

The analytical methodology is not foolproof. In fact, to many it may appear an unnecessary exercise in learning about other legal systems for water control. It is proposed that an examination of the inadequacies proclaimed in the majority of national or federated water law systems arose from the failure initially to: (1) define what objectives were sought; (2) transform these objectives into explicit policies to be used as guidelines for management and control; and (3) be objective rather than subjective in formulating legal provisions and organizational machinery. Many times, our awareness of only our own systems serves as a constraint to creatively developing more logical and acceptable solutions.

FIGURE 2

"SPECTRUM OF ALTERNATIVES" AND PROCESSES OF CHOICE FOR WATER LAW SYSTEMS

Inputs, Constraints, and/or Facilitators	Range of Policies	Doctrinal Variations	Organizational Alternatives	Selected Objectives
Ecological Configurations Climatological Topographical Hydrological Socio-Cultural Characteristics Demography Normative Resources Social-Stratification Etc. Economic Conditions Technology	Functional Single-Purpose Development Multi-Purpose Development Integrated Comprehensive Development Input Labor Intensive Capital Intensive Spatial River Basins Regional Development Local Development Temporal Short-Term Long-Term	Roman Law Res/publica Res/privata		Enhance Individual and Collective Well-Being Promote Optimum Use of Water and Related Resources Stimulate Labor Consuming Jobs Increase National Output Protect and Preserve Environment ↓
		English Riparian Permit	River Basin Authority	
		American Appropriation Riparian	Institutional Control - National Surveillance - Autonomous State Control - Private and Public Associations and Agencies--Shareholders	
		Chinese* Duty	Central Government Control Communes	
		Russian Collective	Central Government Agency Cooperatives	
		Spanish Public waters	Tribunal of Waters Sindicatos	
		Moslem Community Property	Central Water Administration Local Control	
		Other Israel	Strict Regulations and Recording	

*Not discussed at ICGWLS but extremely important in the total range of optimal choices.

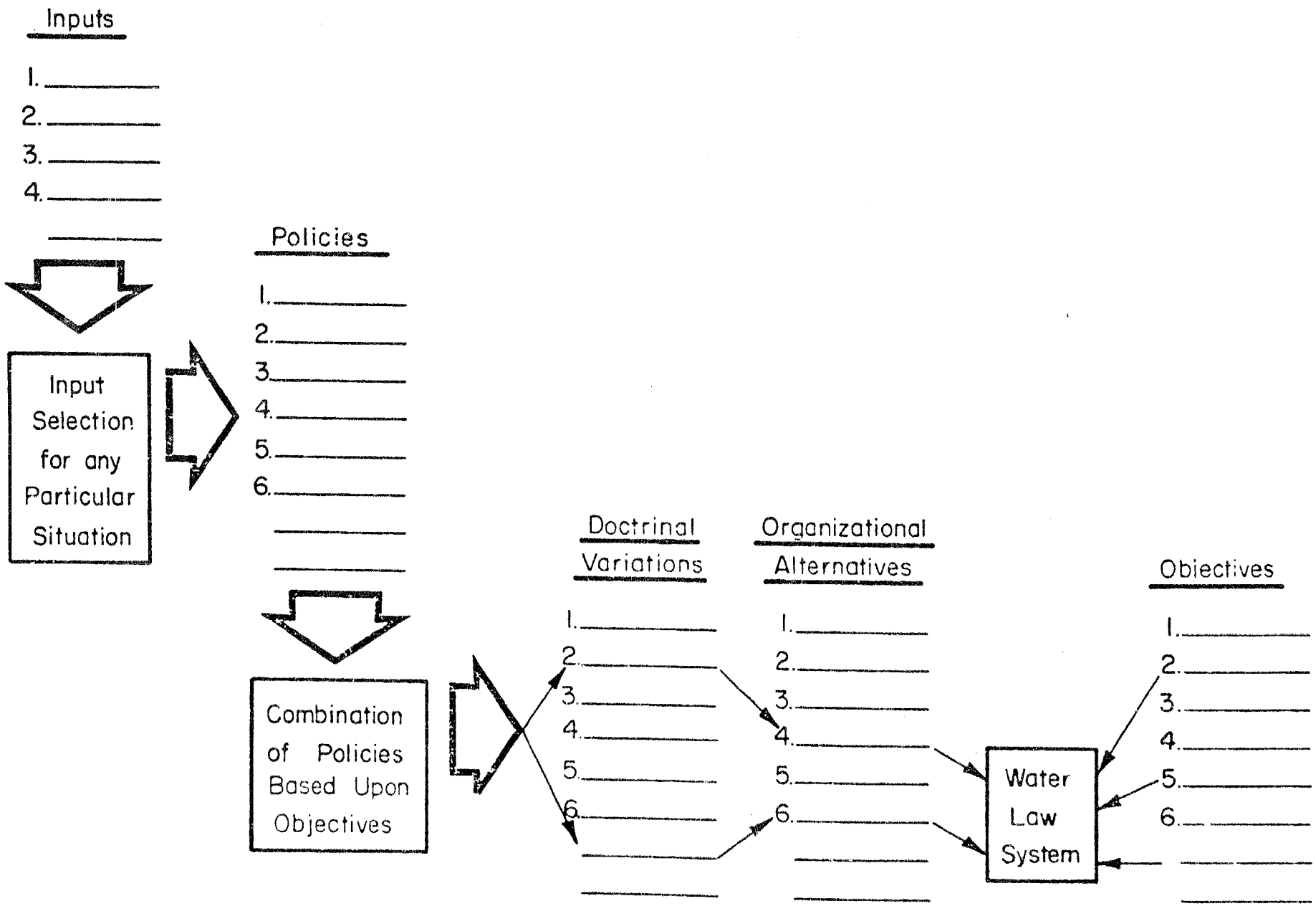

Figure 3. "Path of Solutions" in Using The "Spectrum of Alternatives" for Determining The Most Desirable "Water Law System" for Any Particular Case.

The other most common constraint is the failure to periodically review the laws in light of conditions that have changed since its promulgation.

This methodology attempts to serve as a means to develop or improve water laws regardless of the stage of economic development that has been reached.

5. CONVENING THE CONFERENCE

5.a. Location

The ICGWLS was held in Valencia, Spain, from September 1-6, 1975, at the Faculty of Law, University of Valencia. One hundred eight-six persons from 37 countries attended. (See Appendix 3 for list of attendants.) Approximately 30 percent of the attendees were lawyers, the remaining 70 percent consisted of economists, engineers, and water decision makers at various levels in government and private activities. It is this feature that made the Conference a success. As previously stated, several reports, books, etc. exist which set forth the water laws of particular countries, but this was an opportunity of not only examining a host of systems, but also of getting feedback from a wide range of disciplines and nationalities as to what the law ought to be and considerations that the drafters should take into account.

Valencia, Spain, was selected as the site for convening the Conference. This beautiful and historic city sits at the crossroads of three major water law systems--the Spanish, Roman and Moslem, with the impact of each readily observable throughout the physical and institutional components of the irrigation system. Valencia has an active and effective system for local water distribution and management, and a unique and ancient institution, the Tribunal of Waters, for resolving water disputes summarily and inexpensively. At the same time, the physical terrain in the Valley of Valencia provides a poignant example of the role of water management in transforming, through appropriate socio-legal interventions and technologies, a semi-arid ecosystem into a highly productive agricultural and industrial area.

With this setting, accompanied by the gracious support and hospitality of the Spanish people, the theme of the Conference became a realistic extension of the local environment.

5.b. Conference Program

The Conference was scheduled over a period of six days, specifically arranged to generate enthusiasm and response. The human capacity to absorb a sustained, intensive program of presentation and exchange had been accounted for. An attempt was made to interweave the various parts of the Conference in such a way as to prevent "conference overkill." The limited time for presentation was part of the emphasis in the Conference to allow dialogue and participant exchange.

FIGURE 4

INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS

Program

Hour	31 August Sunday	1 September Monday	2 September Tuesday	3 September Wednesday	4 September Thursday	5 September Friday	6 September Saturday	7 September Sunday
0900		Registration	PART II - (Cont.) F-French G-Soviet H-North American Coffee Break I-Asia & Australia J-Hindu-Bali K-South American L-Israeli Discussion	Tour of Valencia's Water Use and Administration System	PART III - (Cont.) E-French F-Soviet G-North American Discussion	PART IV - (Cont.) E-Transmountain Diversions F-Water Resources Economics G-New Technologies Coffee Break H-Integrated Systems I-Resources Plan. J-Water Legis. K-Code Assistance	PART V - Panel Seminar	Tour From Valencia To Irrigation Project In Western Spain (OPTIONAL) 7-11
1000		PART I - A-Opening Remarks B-Delineation of Conf. Objective C-Role of Water Law D-Tribunal of Waters			Film & Observation: Tribunal of Waters			
1100								
1200					Lunch		Summary & Concluding Remarks	
1300	Registration And Tours of Valencia (Optional)	Luncheon Banquet	Lunch			Lunch	Luncheon Banquet at Hotel Monte Picayo by the Municipality and Deputies	
1400				Lunch at Gandia				
1500		PART II - Substantive Water Law A-Ancient Systems B-Roman/Italian C-Spanish D-Moslem E-United Kingdom	PART III - Organizational Alternatives A-Roman/Italian B-Spanish C-Moslem D-United Kingdom	Cultural Exhibits	PART IV - The Environment & Water Management A-Socio-Cultural B-Agricultural C-Urban/Rural D-Conjunctive Use	Workshops & Discussions		
1600								
1700						Role of IAWL		
1800						IAWL Meeting		
1900								
2000								

INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS

Conference Program

Date	Hour	Subject	Speaker	Index Ke
Sunday, August 31	1300-1700	Registration & Tour of Valencia (Optional)		
	1800-1900	Social Hour		
Monday, September 1	0900-1000	Registration		
		Part I - Moderator: Dr. Vicente G. Boira		
	1000-1015	A. Opening & Welcoming Statement	Dr. Pendán	
		B. UN World Water Conference	Mr. Oliver	
	1015-1030	C. Objectives of Conference	Dr. Radosevich	
	1030-1040	D. Water Rights & Administration	Dr. de Zúñiga	
	1040-1100	E. Closing Statement	Dr. Pendán	
	1100-1130	Coffee Break		
	1130-1215	F. Role of Water Law & Administration	Dr. Cano	A
	1215-1230	G. Tribunal of Waters, Valencia, Spain	Dr. Fairen	B
	1230-1500	Luncheon Banquet by Tribunal of Waters		
		Part II - SUBSTANTIVE WATER LAW Moderator: Dr. David R. Daines		
	1600-1630	A. Ancient Water Law Systems	Dr. Caponera	C
	1630-1700	B. Modern Italian System	Dr. Burchi	C
	1700-1730	C. Spanish System	Dr. Arrieta	D
	1730-1800	D. Moslem System	Dr. Maktari	E
	1800-1830	E. United Kingdom System	Dr. Richardson	F
	1830-1900	Discussion		
Tuesday, September 2		Part II - SUBSTANTIVE WATER LAW (Continued)		
	0900-0930	F. French Water Law System	Dr. Despax	G
	0930-1000	G. Soviet System	Dr. Kolbasov	H
	1000-1030	H. System of Water Law in United States	Dr. Radosevich	I
	1030-1100	Coffee Break		
	1100-1130	I. Asiatic & Austrailian System & Administration	Dr. Clark	J
	1130-1200	J. Hindu-Bali System & Administration	Dr. Wohlwend	K
	1200-1230	K. South American Systems & Administration	Dr. López	L
	1230-1300	L. Israeli System & Administration	Dr. Tamir	M
		Discussion		
		Part III - ORGANIZATIONAL ALTERNATIVES Moderator: Dr. George E. Radosevich		
	1600-1630	A. Roman/Modern Italian Water Administration	Dr. Caponera	C
	1630-1700	B. Spanish Water Administration	Dr. Arrieta	D
	1700-1730	C. Moslem Administration	Dr. Maktari	E
	1730-1800	D. United Kingdom Water Administration	Dr. Richardson	F
	1800-1830	E. Spanish System of Water Law	Dr. Alonso	
Wednesday, September 3	0930-1400	Tour of the Water Use and Administration System of Valencia		
	1400-1600	Lunch at Gandia provided by the Hydrologic Confederation of the Júcar River		

Thursday, September 4

Part III - ORGANIZATIONAL ALTERNATIVES (Continued)

0900-0930	E. French Water Administration	Dr. Despax	G
0930-1000	F. Soviet Water Administration	Dr. Kolbasov	H
1000-1030	G. U.S.A. Water Administration	Dr. Daines	I
1030-1100	Discussion		
1100-1230	Film & Visit: Tribunal de las Aguas	Dr. Giner	
1230-1500	Lunch		

Part IV - THE ENVIRONMENT & WATER MANAGEMENT Moderator: Dr. Evan Vlachos

1600-1630	A. Socio-Cultural Aspects of Water Management	Dr. Vlachos	N
1630-1700	B. Agricultural Practices & Water Control	Eng. Skogerboe	O
1700-1730	C. Urban Water Supply Systems	Dr. Triandafyllidis	P
	Rural Water Supply Systems	Dr. Andu	P1
1730-1800	D. Conjunctive Use of Ground & Surface Waters	Dr. Arrieta	Q

Friday, September 5

Part IV - THE ENVIRONMENT & WATER MANAGEMENT (Continued)

0900-0930	E. Transmountain Diversions	Ing. Mendiluce	R
0930-1000	F. Water Resources Economics	Dr. Nobe	S
1000-1030	G. New Technologies for Improved Water Management	Dr. Duckstein	T
1030-1100	Coffee Break		
1100-1130	H. Integrated Water Systems	Dr. Biswas	U
1130-1200	I. National Water Resources Planning	Dr. Useche	
1200-1230	J. New Water Legislation	Dr. Trelease	V
1230-1300	K. Multilateral Water Code Assistance	Mr. Alheritiere	W
1300-1500	Lunch		
1500-1730	Workshops & Discussions		
1730-1800	Introduction to IAWL (AIDA)	Dr. Martin-Retortillio	
1800-1900	IAWL Meeting		

Saturday, September 6

Part V - PANEL SEMINAR

Moderators: Professor Gaylord Skogerboe
Dr. Vicente Giner
Dr. George Radosevich

0900-1200 Theme: COMPARATIVE ANALYSIS OF MAJOR WATER LAW SYSTEMS & SOLUTIONS TO KEY WATER PROBLEMS

Topics:
A. Meeting Water Demand: Allocation & Reallocation
B. Conjunctive Use of Water
C. Water Quality Control Through Water Use

1200-1220	Achievements of the Congress	Dr. Giner
1220-1230	Closing Remarks by the President of AIDA	Dr. Cano
1230-1245	Congratulations for the Achievements of the Congress	Dr. Pendán
1245-1300	Closing Statement	Dr. Roldán

Luncheon Banquet - Hotel Monte Picayo provided by the Municipality & Deputies of Valencia

Cultural Events

Saturday, September 6 0900-1200

Part V - PANEL SEMINAR

A nontraditional approach to panel presentation and discussion was used to examine (1) the possibility, manner, flexibility, and rigidity of the various legal systems in providing solutions to hypothetical but realistic water allocation, development, and management problems faced by developing countries; and (2) the socioeconomic, technological, and sectoral interdependencies.

The panel consisted of three moderators (M) who presented hypothetical situations to a panel of eight water law experts (W). Each in turn--as designated or selected--explained the merits of their particular system in coping with the situation. A second panel consisting of speakers representing related disciplines and affected sectors served as a juridical body (JB). Conferees queried either panel to interject real world particulars. This method of panel discussion is illustrated in Figure 5.

The moderators opened the discussion by describing a hypothetical but realistic situation. The description included socio-political, cultural, environmental, and economic conditions, as well as present technological development. These elements serve as the inputs, either in the capacity of constraining or facilitating desired development and management. Also, the objectives to be attained were described. (The relationships of Inputs-Objectives to the "Spectrum of Alternatives" is illustrated in Table 2 and Figure 3.) Having identified the objectives and inputs peculiar to the case situation, "paths of solutions" emerged as policies. Doctrinal variations and organizational alternatives were selected by the moderators (M) and discussed by the experts (W) for adjustability and flexibility in response to "probing" by the juridical body (JB).

Through the use of this "paneling" technique, the Conference Directors wished to illustrate the range of alternative solutions available under the present systems of law and organization, the areas of constraint to rational water management, and the importance of a true interaction of disciplines to carry out improved water allocation and control for integrated water uses--agricultural, municipal, industrial, recreational, aesthetic, etc. The panel results established "ranges" or "paths of solutions" available to nations embarking upon water code drafting or reorganization. These alternative "paths of solutions" are paradigms of the major theme of the Conference--linking constraints and/or facilitators, policies, legal doctrines, and organizational arrangements with the general quest for rational water resources allocation and use.

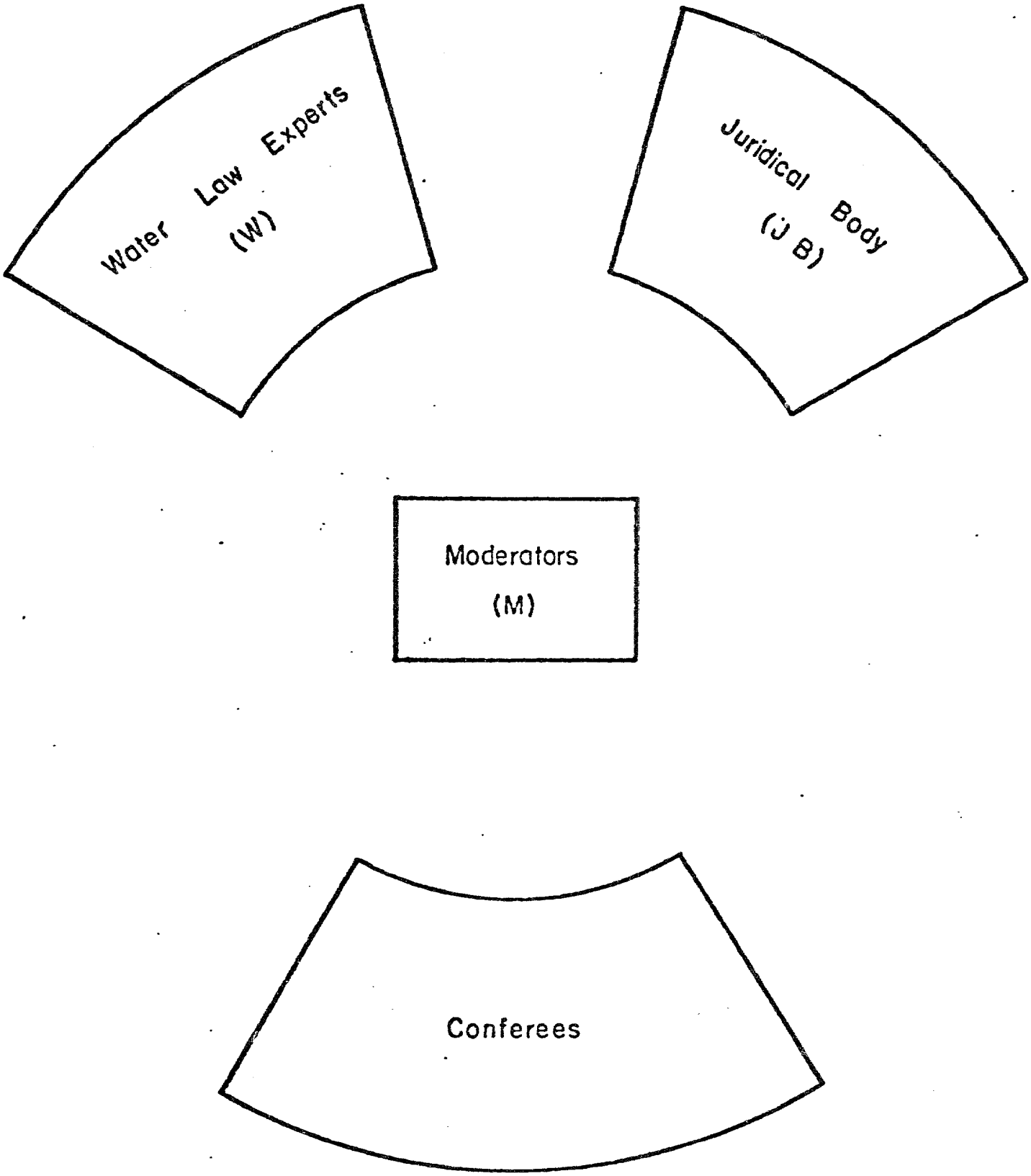

Figure 5. Structural Diagram of Final Panel Discussion.

POST-CONFERENCE TOUR

During the last thirty years, there have been constructed in Spain more than 600 dams for the conversation of a total of 40,000 million cubic metres of water, preventing its loss into the sea, and programming its use for planting 3,000,000 hectares of newly irrigated land, as well as providing the maximum possible supplies of drinking water to cities and towns in Spain.

A sample of these works, both completed and under construction, was be put on view to those attending the International Conference on Global Water Law Systems in a post-Conference tour which lasted from Sunday, 7th September, until Thursday, 11th September, 1975, with the following arranged programme:

Sunday 7th September	Departure from Valencia to visit the "Tajo-Segura Transvase" (Transmountain Diversion Scheme) with its canal piping 35 cubic metres of water per second from the River Tajo to the lands of Murcia, situated in the south-east of the Peninsula, the most arid and driest area in all Spain. Lunch at one of the biggest reservoirs in Europe, Entrepeñas and Buendia. Late afternoon arrival at Madrid for the overnight stay. Hotel Melià Castilla.
Monday 8th September	Free morning in the Spanish Capital for visiting the Prado Museum, Royal Palace, etc. Lunch was taken at one of the reservoirs which supply drinking water to Madrid.
Tuesday 9th September	Departure from Madrid to visit the Badajoz Project. Lunch at the reservoir of Orellana and a visit to the dams of Zújar and Cijara. Visit to the Vegas Bajas (Lowlands) of the River Guadiana and overnight stay in Badajoz. Hotel Zurbarán.
Wednesday 10th September	From Badajoz travelling up the River Guadiana to visit the Vegas Altas (Highlands). Lunch in Mérida and visiting the dam of Proserpina, constructed by the Romans in 75 A.D. and today still in use. At night arrival at Sevilla and overnight stay. Hotel Colón.
Thursday 11th September	A visit to the new irrigation lands of Sevilla, supplied by water from the River Guadalquivir.

In this city, the projected tour terminated, allowing those who so desired to visit the neighbouring city of Granada, in order to see the incomparable beauty of the Alhambra, and other historical reminders in the city. Overnight stay in Hotel Melià Granada.

5.c. Conference Support

The Conference was hosted by the Government of Spain with direct financial and logistical support from the Ministry of Public Works, Madrid; the Province and City of Valencia; and the Communities of Irrigators of Valencia, individually and through their representation on the famed Tribunal of Waters of Valencia. (See Appendix 2 for list of hosts and participating Spanish authorities.) The Faculty of Law, University of Valencia, provided the Conference facilities in their modern and spacious building which served as an ideal setting for the Conference theme and objectives. Simultaneous translations into the two Conference languages (Spanish and English) was efficiently and accurately provided under contract by Agrupacion de Interpretes de Conferencias de España. This support and the gracious hospitality of the Spanish people in Valencia, and throughout the post-conference tour enabled the technical objectives and pre-conference activities to culminate in a successful meeting.

One of the critical factors of any effort to bring together experts and others working in a field is that a solid foundation of material be presented and discussed. Thanks to the Rockefeller Foundation, financial support was made available to prepare key reports on the topics to be discussed. Major financial support was also provided by the United States Agency for International Development. Other financial and technical support was provided by the National Science Foundation, Consortium for International Development, Colorado State University, and Utah State University. The Conference was convened with cooperation from the International Law Association and the International Association for Water Law, with participation by the Center for Natural Resources, Energy and Transport of the United Nations Secretariat of New York.

6. WATER RESOURCES LAW--A SUMMARY OF THE GLOBAL WATER LAW SYSTEMS

6.a. Introduction

The following summary of selected systems of water law and administration is based upon the reports prepared for the ICGWLS. (The Conference proceedings contain the full text and abstracts of the reports written by the specialists. See Appendix 1 for the Table of Contents to the Proceedings.

A classification has been made of the various systems into three categories: customary, traditional and modern water law systems. It is interesting to note the correlation between the classification and the reporting approach of the authors. A philosophical approach was used in describing the two customary systems--Moslem and Hindu-Bali. The traditional systems were descriptively portrayed reflecting the length and thoroughness of traditional codes. A variety of approaches were applied in delineating features of modern codes and laws. They ranged from defining the theme of the code as set out in policy with emphasis either on public interest or economic forces of the marketplace to analytical approach with emphasis upon the dynamic nature or failure of the law and the changes that have or ought to occur.

6.b. Review of the Systems

6.b.1. System of Religious Customary Base

These systems are represented by conceptualization of the Moslem systems of water law and the Subak system for water administration in Bali, Indonesia. Both systems have in common their religious origin. In both, water is treated as part of man's cosmogony, and in neither is water subject to private appropriation. Water is the object of a right to use, not ownership of the corpus, with the exception of the cases in which the Islamic law recognizes private rights on waters. This recognition is limited to small volumes of water contained in well-defined boundaries, like the water contained in a cistern.

The Islamic water law is not a national system of water law in the western style. Rather, it is a system of religious and traditional doctrines and uses. It goes beyond country boundaries pervading local customs. In turn, the religious element which gives commonality to the system is influenced by the particular uses of each place and locality. In this respect, it should be stressed that Islam did respect local practices, as long as they were not in opposition to the basic set of religious rules. The basic equalitarian concept of Islam prevails throughout all aspects of Moslem water law and is easily identified in the common water ownership and equitable proportionment principles of the law.[3] In this way, for example, the policies of Yemen are to spread the water as much as possible, in order to irrigate the maximum possible area of land. Another reason is that taxes are based on irrigated land. In Medina there is a policy of fair distribution of the waters, and water rights are attached to the land. With the spread of Islam, the appurtenancy principle spread to Spain and to regions of North and South America.

The trade centers of the desert developed notions about public uses of the waters. These notions were a requirement of the particular situation of these points of obligatory passage to all travelers. Also in these centers some concepts about wasteful use of the waters began to develop. The tribes of the desert also developed the notion of "harim," by which a territorial claim was made to land surrounding a water hole. Under the general conception that water should be freely available to all, each person had the right to use the waters for domestic and personal uses. Wells were declared free to use for all travelers, and endowments of water for public use were encouraged. Under the preaching of the Prophet, water was to be supplied also to beasts (domestic animals having preference.)

Great rivers are absolutely common property. Small natural rivers are predominantly for the use of the riparian, and artificial rivers are for the common use of those who dig them. Surplus waters are to be always offered for the use of other persons.

Water for irrigation is to be allocated based on: (1) the crops; (2) the season; and (3) the local customs and the quality of the water.

It is allocated by time and volume and the order of preference is: (1) thirst; (2) domestic uses; (3) irrigation and commerce; and (4) industry.

Rules against abuse and waste pervade the use of the waters and any member of the community can claim judicial redress to establish or protect a water right on Subak water. River banks are protected through the harim and the use of public waters is supervised by the state.

Maktari points out that beyond and against the principles of the Islam there are problems for the rational uses of the water rights. Most constraints stem out of social inequities such as abuses on the side of the most prosperous farmers, in prejudice of the smaller water users.

The most rational use of wells is restricted because every person does have the right to drill a well on his land, even when it affects the rights of other water users.

Islamic principles on water administration are not very relevant; that is, the law says very little about high levels of administration. The Islamic law, as a prevailing system of belief and tradition does not offer solutions for centralization of water management, but it has had a fundamental influence at local levels, where it results in a local authority controlling water rights.

Thus, administration and organization results from local and ancient customs. Local water masters carry out water administration. Maktari remarks that under the Islamic system there has been a breeding of conservatism and traditionalism even against technological change. Problems of abuses and corruption sometimes adversely affect the system. These problems, however, are not exclusive propriety of customary systems.

The other system of customary-religious based law that was presented at the Conference is the Subak. The Subak is the traditional water management technique of Bali in the Indonesian Archipelago. It is based on the Hinduism cosmogony. It survived the brief domination of Buddhist dynasties and was modified only slightly by Islamism, which reduced the unit for water administration to the level of the vill . The Subak included not only one, but several villages for water inistration.

The Subak is basically a community of farmers which irrigate. The common bond is irrigation and for this reason it encompasses several villages. The limits are not set by the village boundaries but by the irrigated lands. It is governed by rules of customary law.

Administration is through a Subak meeting (assembly) which has sovereign water jurisdiction and whose decisions are implemented by a chief water master. The latter is assisted by deputies, by assistants and by criers, which control respectively, each subunit of the water network, the end of the water network, and the distribution of water to individual users.

Water can never become an element of appropriation; it is only subject to rights of use. Water is distributed in proportion to crop needs.

6.b.2. The Latin American Systems and Their Problems

In Latin America there are two systems of water law. The first is the traditional system, influenced by the riparian system of France and by the system of the Spanish Water Law of 1879.

Second are the modern water laws, inspired by principles of comprehensive water management under the control of the state. These laws have attempted to translate principles of water management into principles of water law. They are the laws of Mexico, Panama, Columbia, Peru, Ecuador and Chile.

The laws of each country in this vast region are easily the topic of a regional conference, so it is preferable to quote five paragraphs from the paper by Dr. Joaquin Lopez to illustrate the range of differences that exist. It must be said that Dr. Lopez did not feel comfortable with his description of the Latin American systems even in a three hundred page report because there are still topics of importance that were not included.[4]

> *"The countries of South and Central America which were colonized by Spain and Portugal have a system of water law with particular features. The judicial regulations of these countries have similarity of principles, norms, institutions, origins and customary uses respect waters. The system was influenced by the colonial legislation, the metropolitan legislation, the Civil Code of France and the constitution of the United States. The laws for Indians, the laws of the "Siete Partidas" and the Spanish water law of 1866 were also influential. In Brazil the metropolitan legislation was constituted of several ordinances; the Alfonsianas of 1447; the Manoelinas of 1521; and the Philipinas of 1603."*

> *"The different legal criteria between the Spanish and Brazilian legislations determined the existence of marked differences between the system of the water law of Brazil and the system of the water law of the other Iberoamerican countries."*

> *"In the former colonies of Spain prevailed the principle by virtue of which the waters were common to all the people, modified in some degree by the principles of the French Civil Code; in Brazil, instead, the riparian system, of French and Anglosaxon ascendancy was followed."*

> *"Regarding their constitutional organization, some countries adopted a federal regime, while others adopted unitarian systems of government. Among the former, despite their federal systems, there are some countries in which the domain of the waters and the jurisdiction to regulate their use appertains to the Federal Government; and there are other countries in which these attributions correspond to the provinces."*

"The administration in the unitarian countries is carried out by decentralized national organisms, by autarchical entities, or by the central government. In the federal countries there are some which maintain centralized systems of legislation and administration of the waters; while in others the provinces are attributed broad faculties regarding water."

The greatest problem in Latin America is the system for the administration of water resources. In most countries it is highly fragmented. There are problems of interference and duplication of functions. The problem is twofold: on the one hand, lack of united decision making processes; and, on the other, lack of adequate input from the water users. There is a significant lack of effective channels of communication from the users to the highest levels of administration. In most of the countries there is a lack of general coherent policies which, translated to the water resources field, would give criteria for the guidance of the particular activities of each national water agency.

Significant attempts to overcome these constraints are represented by Mexico in which united decision making is combined with the maximum possible user participation. Also in Cuba where there is an autonomous institute for water administration and Ecuador, which has implemented a comprehensive scheme for water administration.

Water administration can be carried out by federal and state agencies, like in Argentina or at a centralized center of autonomous decisions, like in Mexico. Attempts of regional structures for water administration are carried out in Brasil, where the input of the central government is very significant. In Venezuela, an attempt for comprehensive planning and management is at present being carried out. Peru has most of the responsibility for water management carried out by the General Directorate of Waters and Irrigation.

Examples of countries in which water administration is divided among several institutions are Uruguay, the Dominican Republic, Paraguay, Nicaragua, Guatemala and El Salvador. In Chile, there is a proposal for the creation of an Institute of Water Resources which would be charged with the coordination of all water resources activities.

In South America there is a growing awareness of the importance of water resources for the developmental process. There are serious attempts of implementation of new legal systems for the most correct management of the resource. There are, however, difficulties created by the particular socio-economic structures of the Latin American countries. The subject deserves special attention, for the new draft of new legal codes cannot be severed from the conditions of each country. If abstraction is made of the facts the seeds for failure will accompany any intent of legal change. The law is not only an instrument for the change of a particular socioeconomic milieu; it is also a consequence of it.

6.b.3. Select Systems of Water Law in Europe and the Mid-East

A brief summary follows of the system of water law in the United Kingdom, France, Spain, Italy, Soviet Union and Israel. These systems were selected for discussion at the ICGWLS due to their global influence on unique and potentially transferable features.

In the United Kingdom statutory regulations have been enacted in the public interest. England has placed a high premium on water and the resource needs have transformed the plentiful commodity to an item of scarcity.

For this reason, Common Law has been substituted by statutory law. The provisions which have evolved from traditional common to modern laws have been designed: (a) to secure an adequate supply of water both in quantity and quality; (b) to satisfy all needs and prevent waste; (c) to secure water quality and pollution control; (d) to promote flood control and land drainage; (e) to clean the rivers of the country; (f) to assure recreational and wildlife and fisheries opportunities; and (g) to protect the interests of affected water users.

Under common law the rivers are considered public juris which cannot be owned. Ownership is significant only in relation to waterbeds. The beds of tidal rivers are owned by the crown. The use of water in riparian land is an incident of the right of ownership. The quality and quantity of the water cannot be diminished, unless authorized by grant, statute or prescription. Rights regarding artificial water courses are always required by grant or arrangement. Underground water can be freely used, according to the English absolute ownership rule. Many changes were made in the common law after the enactment of the Water Resources Act of 1963 and its coming into operation on July 1, 1965. It is now necessary to obtain a license for the use of inland underground waters. Exceptions are given for small abstractions, riparian domestic or agricultural uses, and abstraction of underground water for household use. The Act has substituted for the common law rights of the riparians a system of compulsory licensing. Rights to the use of waters are legally protected and administered. Water authorities are given broad powers for the control of the use and abuse of water rights. Under the common law water was not to be impaired in quality. Water pollution control laws have been enacted which strengthen and further define the common law concept in the context of new and projected uses.

Administration of water in the United Kingdom is most interesting in terms of how a system evolves. From the 1945 and 1963 Water Resources Acts to the present 1973 and 1974 Acts, the concept of the river basin authorities have developed and been tested under centralized to decentralized control. All functions associated with the water cycle are under the control of a single authority in any one region which attempts to closely correlate to a natural hydraulic unit. This leads to an integrated system of water management combining water quantity and quality control and conjunctive use of ground and surface waters. The guidelines of these control and management activities are set by water policies elaborated by the Secretary of State and by the Ministers of Agriculture, Fisheries and Food. The intent is to jointly promote a water policy for water management in England and Wales. The regional authorities execute the policy.

There is a National Water Resources Council which consists of a chairman appointed by the Secretary of State, the chairman of the water authorities and other members appointed by the Secretary of State, and the Minister of Agriculture, Fisheries and Food. The Council assists

and gives advice in water-related matters to the Ministers requiring it, assists and controls in the effective performance of duties of the water authorities and must elaborate a scheme for training and education in water-related functions.

There are nine regional water authorities in England and one in Wales. The area of a water authority may be different for the performance of different functions, but the intent is to organize around natural watersheds where possible, with, however, alterations in the boundaries where social and economic reasons prevail. Water authorities are presided over by a chairman appointed by the Secretary of State, and consist of two or four members appointed by the Ministry of Agriculture, and a variable number of representatives of the local population. The Water Authorities provide an integrated control system for water within the confines of national policy laid down by the ministries and can take every necessary action to insure the best use and administration of the water.

In France the waters are considered a source of life and the legislature has admitted, with reluctance, the private appropriation. Common rights have been readily recognized in favor of the riparian owners of water courses. The need to legislate pollution control has produced a deep change in the system of water law as well as in the system for water administration. France has abandoned the old system of water classification which was based on the navigability or floatability of the waters. Waters were public that were navigable or floatable. At present, water resources can be declared public because of their utility of importance for uses considered vital by the state for the socioeconomic well being of the population. Waters can be declared public because of their relevance to agriculture, industry, domestic uses, and navigation as well as for their damaging potential, as when the waters can produce dangerous floodings (Act 1, Law of December 16, 1964.) This new classification includes the waters that were considered public in the old system; and, at the same time, broadens the category to include waters that, even when nonnavigable or floatable, do have public importance, either for their utility or for their dangerous potential.

There are also "mixed" water courses in which the waters are public and the beds are private. Public and mixed water courses are part of the general category of public waters. Private waters are a residual category. They are what is left after the former two categories have been determined.

Private property rights are recognized over springs and underground waters, but with important limitations. These limitations derive from several facts. For example, a landowner cannot make free use of spring water that, even when arising on his land, is used by towns or other domestic needs. The use of underground water is subject to health regulation. The right to underground water is only acquired in the abstracted water. The consequences are quite similar to the application of the English Rule. Flowing, nonpublic waters are common waters subject to common use. For the use of public waters authorization is required. Navigation does always have preference.

France has also developed an extensive system of water protection against pollution. Water administration at the national level is spread among several ministries due to the public or nonpublic nature of the waters because of the uses to which they are dedicated. For concrete management it is unified at basin level. The interministerial coordination is carried out by the Ministry of the Quality of the Human Life (Decrees of March 2, 1971, and June, 1975.) The important decisions are taken by the "Interministerial Committee for the Action for Environment." Final decisions or arbitrations are taken up by the Prime Minister. At the basin level water administration is carried out by Basin Agencies in which local interests have representation.

Spanish water law proclaims all water flowing in natural beds are public property. The category of flowing waters is widely interpreted including large as well as small rivers and arroyos. Spring waters flowing in natural beds are also considered public. Also classified as public waters, fluent or not, are waters located on lands of the public domain, or lands affected by public water works. The waters, which do not flow in natural water beds, and which are located in private lands are private property. The Spanish water law thus combines two criteria: (a) waters flowing in natural water beds are public; and (b) if the waters do not flow in natural water beds, their condition depends upon the legal condition of the lands in which they are located.

The allocation of public waters for individual or private uses is by concession from the Ministry of Public Works. These concessions are not required for limited domestic or natural uses such as water for thirst and washing, but are a necessary prerequisite to uses of "special developments." A priority in allocation is set out in Article 160 of the Water Act of 1879, placing in the following order--towns, railways, irrigated agriculture, navigation channels, mills and other factories, and acquatic life and habitats. Public waters are totally administered by the Ministry of Public Works through the Directorate of Water Works. The country is divided into ten basin administration entities which provide logical management consistent with the natural flow regime.

The Agencies for Water Administration at basin level are: the Water Commissioner and the Hydrographic Confederation, integrated by the individual users, Communities of Irrigators and Central Syndicator of the Basin. It can be said that, through this system of organization, Spain has greatly harmonized the need of unified decision making at central level with the requirement of participation of the local water users. Central decisions are conveyed in each river basin through the Water Commissioner. User and local institutional inputs are furnished through the Hydrographic Confederation. The disputes on water can be solved by Special Administrative Courts, by the Civil Courts, or by the Criminal Courts, depending on the kind of issue.

In spite of a very workable system for water allocation and management, it is important to take note of changes in the Spanish law. Conditions and demands have so significantly developed in the country that, with the advances of technology, the law is required to evolve to a new plateau. Presently, a draft of a modern Spanish water code is being discussed which places emphasis upon the two major deficiencies under the old law--conjunctive use of ground and surface water and integration of water quantity and quality control. Thus, Spain is rapidly moving toward a more modern system of water law.

Italy defines as public all the waters which have or can have qualities useful for satisfaction of needs of public and the general interest. This classification is influenced by the magnitude, volume, flow or width of the waters, as well as for their relationship to the hydraulic system of which they form a part. The administrative authority determines the particular condition of each corpus of water, trying to assure adequate protection to pre-existing water rights.

The public waters are listed in registers of public waters. Non-public (private) waters are a residual category whose use is also regulated by the laws. These waters are springs or waters wholly within lands under private ownership. Public waters are allocated to use through a permit system which includes an elaborate review of the application to determine the appropriateness of the use and quantity requested.

Water administration is distributed throughout different levels: the nation, region, provinces, and municipalities. The centralized administration of pre-war Italy gave way to a more fragmented system. Nevertheless, a resources approach has been retained in the juridical arena: Italy's water courts are composed of a Supreme Tribunal for Public Waters, and eight regional courts.

It was pointed out by Dr. Caponera that even though the Italian water law functions well, the lack of continuity between basins as physical units for water control and the political entities of water administration acts as a constraint for the best use of the water. This constraint remains even though the existence of a Ministry of Public Works offers a unitary center of decision.

The basic principles of Soviet water law are contained in the Fundamentals of Water Legislation of the U.S.S.R. in force from September 1, 1971. They have the highest legal force. They contain the basic concepts and conditions for water use and control. In their elaboration, 15 water codes have been adopted by the Republic of the Union. There are, in addition, many subsidiary normative acts.

The law regulates state agencies, state and public enterprises, organizations, and individual citizens in connection with water ownership, management, use, conservation, control, and protection against the harmful effects of the waters. Thus, regulation refers only to water resources available as separate natural water bodies. When waters are no longer part of the environment they are regulated by other bodies of law.

The policies are to ensure the most rational and economical use of the waters; to preserve, maintain, and improve water bodies; and to prevent the harmful effects of the waters. The basic principles of the law are: (1) exclusive state ownership; (2) national and comprehensive use; (3) priority of domestic uses; (4) strict requirement of water pollution control; (5) development of technology for water conservation; (6) registration and control of water uses; (7) adoption of the basin as hydrologic unit for water administration; and (8) active participation of the population in water uses. It is considered fundamental that water resources, within basins, form a definitive and economical unit. Water administration is carried out through several levels of government, and through agencies of general state administration, agencies of special state administration, and agencies of branch administration.

An examination of the water laws and administrative organisms of Israel provides an excellent opportunity to observe the dynamic role and process of change served by a legal resources control system placed under extreme needs to optimize scarce water supplies. Many other examples exist in national or subgovernmental jurisdiction in the case of federated systems, but the laboratory process of developing water laws found in Israel illustrates the ultimate role in extensive and intensive water control through formalized laws and regulations. All waters, regardless of their form or location, are under the strict control and jurisdiction of the State. The State holds the water in trust for the citizens of Israel and is duty bound to allocate and administer this limited resource in the most beneficial and efficient manner possible. This power and duty is placed with the Ministry of Agriculture and under the specific jurisdiction of the Water Commissioner.

The water being public property as a general proposition, entitles every citizen of the country to the right to use the resource. However, an important feature of this right is the conditions placed upon its exercise. Water is allocated for use by term and reviewable permit. The process of application and final actions for water use insure the proposed use is beneficial to the individual and country. The results of the use are within the range of maximum output and other users will not be unreasonably affected if the proposed use is approved. All water rights are registered which enables effective administration and the ability to prepare appropriate water plans and projections. The important feature of this modern code is the policy declaration which provides the basis for subsequent administrative operation. The policy reflects the national goals as water serves as an input to achieving them.

Administratively, the law enpowers the Water Commissioner or his agents the right of exclusive control over withdrawals as provided in the permits. The Commissioner can cancel, or amend any permit and permanently or temporarily alter or suspend uses under it. All water use is metered and water fees charged according to volumetric uses with rates varying throughout the country to reflect different uses and use conditions. The Water Commissioner also has full power to prevent degradation to the nation's water quality. Water pollution control is imperative and infractions are quickly dealt with.

In addition to the Water Commissioner, there are numerous boards and authorities to provide advice and assistance in water matters. Water users play an important role as members of many of the entities. Disputes are under the jurisdictions of a Special Tribunal for Water Affairs. Any person who feels aggrieved by the actions of a government official or other water user can bring his case before this Tribunal.

6.b.4. Water Law in the United States

Water law in the United States is a federated system of complex proportions. Federal (national) and state water laws exist in both the water quantity and quality aspects of this resource. At the federal level, jurisdiction over water originates with the Constitution. The Property, Commerce, General Welfare, Treaty and Compact Clauses provide the basis for federal involvement in navigation, pollution abatement and allocation and management of water resources. Particular laws have been

enacted to provide the substantive control and organizational structures to carry out federal policies and programs.

State water laws are less cognizant of the hydrologic aspects of water resources. Each state, being an autonomous political entity has rights to develop policies, laws and organizations according to local and state needs. Thus, there are virtually 50 separate water law systems for quantity and quality control, often with the lack of uniformity between states causing interstate conflicts. The states are primarily concerned with methods of allocation, distribution and administration of ground and surface waters given the particular and wide range of geographical conditions in the country.

Ownership of water is either public as in the case of the federal government jurisdiction over certain classes of water, or public or state in the case of rights over water vested in state control. The use of water depends upon the state systems of water law and ranges from common law right in the riparian system to a permit, license or decree under the appropriation system. A form of contract water rights is becoming increasingly popular.

The past ten years have witnessed the emergence of federal involvement from water development to management in the national and regional interests. Population shifts in a mobile society, industrialization, energy development, increased needs for food and fiber, conflicts and complementarities of water use with the interface of economic sectors, and new techologies have brought about this involvement. States, faced with the same issues at a more concentrated and grass roots level, have likewise been experiencing a significant evolution in their quantity and quality control laws with an emphasis upon developing planning and management capabilities to make conscious decisions based upon an evaluation of alternatives, impacts and opportunity costs.

Water administration at the federal level is under the jurisdiction of the Water Resources Council and a multitude of ministerial land departments and departmental agencies, bureaus, and authorities. State administration is hierarchical from central control at the political jurisdictional level down to such levels of hydrologic units within the state. Normally water quantity and quality control is vested in different agencies. The water law systems in the United States are in a dynamic and evolutionary process brought about by changing conditions, and can constantly benefit by an awareness of experiences in any nation.

6.b.5. Asiatic Systems

Professor Clark, a well-known expert in water law systems of Oceania and Asiatic regions, has repeatedly proclaimed the difficulty of summarily discussing this topic due to the great diversity that exists between countries in the region. This topic was the subject of a meeting held in Bangkok in 1967, of experts in the field convened by ECAFE and under the formulation and direction of Dr. Caponera, FAO, Rome.

In a paper prepared for the ICGWLS Mr. Clark prepared the following abstract of his report:

Water legislation in Asia has been profoundly influenced by Common Law, Civilian and Roman-Dutch models. There is thus great diversity in the theoretical bases for water administration, but a common pattern of relying on administrative bodies to allocate and adjust private rights to use water. In this sense, systems of judicial apportionment of rights, through litigation, are most uncommon.

There is remarkable simila ity in the techniques used for granting and controlling rights to water, although the primary emphasis of the legislative schemes naturally differ with the hydrological problems encountered. There is increasing reliance on techniques of multi-objective planning, but care must be taken in adapting systems of environmental planning to the different economic and social goals of developing countries.

The range of features in the law extend ownership from state to public to private; acquisition of rights according to custom without administrative intervention to systems granting permits or concessions; allocations according to a nonpreference or to limited preference of user classes; and administration under centralized to decentralized systems. A major concern of many systems is with water removal as in flood and drainage programs rather than water allocation.

6.c. Summary Comments of Water Law and Administration

From an examination of the systems, the following statements can be made:

(1) There is a clear tendency towards the public ownership of all water. This tendency is dramatically exemplified by the legislature amendments of France and the United Kingdom. The public character of the waters has always been a strong component of the Spanish, North American and Israeli systems. As water resources became relatively scarce, public pressures for regulation demand more state activity in the field. The opposite of public ownership of water in the realm of state activity is state ownership as found in the Soviet Union. The conclusion is, however, the same--a direct correlation between the degree of state control and "scarcity" of resources regardless of ownership.

(2) The basin as a unit of water management is recognized as an imperative for improved and rational management.

(3) Where water users have a voice in the decision-making process by means of direct input at various levels of that process, greater continuity and realism exists in resources use.

(4) The value of a unitary, or coordinated system of water decision making is discernable from the documents analyzed. It is observed that unitary decision making does not imply the subjugation of local interests at provincial, state or regional levels. Adequate mechanisms for harmonic integration can be devised.

(5) Some countries, like Italy, Spain and Israel, do have special courts for water problems. As water conflicts become more technical and complex, and water issues involve more people and interests, the need for special water courts is more apparent.

(6) The increase in the role of the state in water resources management coupled with the publicization of water law, and the growing relative scarcity of water demands a redefinition of the concept of "acquired" water rights.

(7) The problems of improving water use effectiveness demand, especially for developing countries, the development of new forms of compensation for the condemnation of land and water-related resources. Vested rights should not be a permanent constraint to optimum water use.

(8) In light of the growing complexity and interrelatedness of water problems, it is imperative for water law specialists to have an interdisciplinary foundation and communication network.

7. INTERDISCIPLINARY RELATIONSHIP TO THE LAW

The contribution of the non-lawyers selected by the Conference committee was based on the need to evaluate water law and technological change, water law and society, and water law and economics. In the following paragraphs a very condensed brief is made of the interdisciplinary input to the Conference.

Although a major portion of the Conference dealt with the various legal systems of water control and administration around the globe, this emphasis cannot overshadow the importance of the interface between the law and various other disciplines and sectors of water development and management.

7.a. Law and Technology

Water laws have historically developed as instruments for the settlement of water disputes, not for the optimal use of water resources. There is a basic difference between the extreme viewpoints about legal and public engineering decisions. The former are mostly concerned with past events, few parties, settlement of disputes, incidental and temporary, of unpredictable results and immediate solutions. Public engineering decisions, on the other hand, are concerned with future events, many or all affected parties, prevention of disputes, optimal and semipermanent, and predictable and direct, long-range solutions.

New technological solutions imply and demand changes in the institutional system for water regulation. Legal constraints are becoming increasingly problematic for the implementation of new technologies. The issue is how to combine the dynamics of technological change with the legal constraints created by requirements of user security in continued water supply. New means of providing user security and water allocation need to be developed.

7.b. Law and Society

Natural resources must always be analyzed within the context and in relation to a surrounding sociocultural milieu. Water has meaning and value where it is socially used for the achievement of certain objectives. As part of a social system, water uses must be controlled through a set of institutions. Water law systems are affected by the sociocultural environment in which they are located, and also by the specific ecological characteristics of a given region. The legal system is the written specification of the set of rules governing a resource.

We cannot expect that the transplanting of the technological and legal institutions from one country to another will produce the same effects, in the recipient country, that it produced in the country of origin. Technology without relevant data, organizational planning, human skills, capital, and above all, a clear understanding of the motivation of the people who are to employ it, can become a futile task of minicry with no organic connection to the life of a given region. To meet harmonization of economic and social goals, strong political mechanisms must exist that can translate directives into action and remove discrepancies between social intentions and actual performance.

Successful development of water resources requires more responsive institutional and organizational arrangements. A segmentary system of water administration, disconnected from the whole apparatus of the state, is quite likely to be inefficient. Water law systems should be responsive to the specific people and cultural conditions found in a given region.

7.c. Law and Economics

There is a natural association between law and economy. Scarcity in economics is property in law; legal and economic systems are interdependent. Institutions are a resultant of scarcity and conflict. Through the institutions the society tries to give security to the individual, and at the same time preserve the interest of the society at large. The justification of private property is made upon the fact that it will ensure maximum production and economic growth. However, conflicts can arise between the desires of the individual and the social objectives. The rights of the society maintain that individual rights are established and enforced for the collective social welfare and that individual rights always remain subject to the absolute power of the state. Water rights follow the same pattern as other rights.

Legal systems should allow the voluntary transfer of water rights in a quasi-market system. It should be understood that many times the old systems of water allocation, control and transfer became obsolete, rigid and crystallized no longer facilitating the ordered and beneficial use and transfer of water resources. The old rules were developed in times of low population density, limited inter-use competition, and when staggering costs in development of water and associated resources had not been made.

Water rights should promote certainty and flexibility of tenure. They ought to be defined in quantity, quality, and location of use. The system should allow the transfer of water rights between economic sectors.

Water rights should be defined in such a way as to make externalities as internalized as possible. Economic analysis of cost-benefit, taking into account other social values and policy goals, should be carried out. Failures of water projects, due to water quantity problems, should be the object of post-mortem analysis.

8. CONCLUSIONS AND CONSIDERATIONS

Distinct factors of the Conference to aid the legal specialist and others involved with improving water use and management are:

- Identification of a "Spectrum of Alternative" water law and organizational systems.

- Comparative analyses of unique features and functional aspects of the system.

- Multidisciplinary integration of the institutional framework to effective water resources utilization.

- Realistic testing of paths to solutions by international experts.

The attendance and composition of participants to the ICGWLS along with the questions and issues raised during workshops and discussion periods is a clear mandate that much can and needs to be done in the area of water law and administration. This field is a major factor in the constellation of inputs to appropriately developing and managing national and transnational water resources. The burden or task of insuring that this factor keeps pace with the socioeconomic needs and technological advances rests upon the shoulders of all water specialists, regardless of discipline.

The particular role of the water law specialist is to be the catalyst in synthesizing society's goals and objectives in light of environmental interrelationships with socially acceptable and economically feasible practices, programs and technologies for optimum water and related resource utilization. In carrying out this role, the lawyer should be the innovator and translator of clear and precise language into implementable policies, laws and procedures.

To this end, the Conference committee of the ICGWLS examined the reports and discussions of the Conference and formed the following general considerations. These points were presented at the final session of the Conference. They are "considerations" not "recommendations" as it is the philosophy of the committee that water laws ought to be the final consequence of endogenous efforts based upon examination and evaluation of exogenous information. As parameters of inclusiveness, these considerations are offered as a benchmark upon which this Second Congress of IAWL can further expand:

1. Water resources must be considered as one unit in the hydrologic cycle.

2. National priorities should be determined based on the natural and human resources and the objectives of the society, which should lead to the establishment of water resources planning,

development and management policies at the national and regional levels.

3. There is a need for a systematic set of laws and regulations for control of water resources which are flexible yet provide predictability for planning and management of the resources.

4. Water law should be an instrument for carrying out water policies and encouraging the introduction of improved and socioeconomically acceptable water use technologies and techniques.

5. Laws should direct the conjunctive utilization of ground and surface waters for optimum development of the resources.

6. Laws should provide for integration of water quality and quantity control but allow for maximum development with costs of pollution to be internalized by dischargers.

7. There should be a unity of administration first at the national level, second at the basin level and third at the local level. That is, the administration should be on a functional, not completely political basis.

8. The laws should provide for water users participation in water administration.

9. The preparation of water law should be dynamic and the result of interdisciplinary and intersectoral cooperation.

FOOTNOTES

1. A partial list includes: 1st Congress of the International Association for Water Law held at Mendoza, Argentina in 1968; United Nations Working Group on Water Legislation in Asia and Far East held at Bangkok, Thailand in 1967; Water for Peace Conference held at Washington, D.C. in 1968; United Nations Working Group on Water Policies held at Vienna, Austria, and New York City, New York in 1969 and 1971, respectively; United Nations Conference on Water Administration held at New Delhi, India in 1975; and the Seminar on Water Legislation of the Andian Pact Countries held at Quito, Ecuador in 1974. Proceedings or reports are available on each of these meetings.

2. The other two meetings are: (1) the Second International Conference on Water Law and Administration (II Congress of the International Association for Water Law) in Caracas, Venezuela in February, 1976, and (2) the United Nations World Water Conference in Mar del Plata, Argentina in mid-1977.

3. For a brief account of the Islamic water law influence in Spain see G. E. Radosevich, "Ley de Aquas Musulmanas Y Su Influencia Riego de Valencia," Proceedings, Scenario Paises Grupo Andino Leyes de Aquas, pages 71-77, Quito, Ecuador, INERHI, 1974.

4. Joaquin Lopez, "Water Law and Water Administration in Latin America," Proceedings, ICGWLS, Volume II, 1976, pages L-1 to L-300.

5. S. O. Clark, "The Asian Region," Proceedings, ICGWLS, Volume II, 1976, pages J-1 to J-33.

Appendix 1

Proceedings--International Conference on Global Water Law Systems

CONTENTS

Volume I

	Page
TABLE OF CONTENTS	i
FOREWORD	iv
LIST OF KEY TERMS (Eng./Span.; Span./Eng.)	vi
CONFERENCE PROGRAM	xxxiii
LIST OF HOSTS AND PARTICIPATING SPANISH AUTHORITIES	xxxviii
REGISTRATION LIST	xxxx
CONFERENCE OBJECTIVES AND PROCEDURES (By Conference Directors)	1
CONSIDERATIONS (By Conference Committee)	10
ABSTRACTS (Abstracts in order of Report Listing and Identified by Lower Case Letters which Correspond with the Upper Case Letters of the Reports)	11

REPORTS

Author	Report	Key	Page
Cano, Guillermo J.	Historical and Geographical Evolution of Water Law and Its Role in the Management and Development of Water Resources	A	115
Fairen, V. Guillen	El Proceso Ante El Tribunal de las Aguas de Valencia	B	136
Caponera, Dante A./ Caponera & Burchi, Stefano	Earliest Water Law Systems-Roman/ Italian Water Law System	C	159 193
Arrieta, Carlos C.	Esquema de la Informacion necesaria Para Realizar un Estudio Comparado Sobre Politica Administracion y Legislacion del Recurso Agua	D	234
Maktari, Abdulla M.	Islamic Water Law	E	295

Volume II

TABLE OF CONTENTS			i
Richardson, H. J.	System of Water Law and Organizations in the United Kingdom	F	309
Depax, Dr. Michel	The French Water Law	G	409
Kolbasov, O.S.	Soviet System of Water Law	H	416
Radosevich, George E./ Daines, David R.	Water Law and Administration in the United States of America	I	453

Author	Report	Key	Page
Clark, Sandford D.	The Asian Region	J	503
Wohlwend, Bernard J.	Hindu Water Law and Administration	K	536
Lopez, Dr. Joaquin	Water Law and Water Administration in Latin America (continued in vol. III.)	L	586

Volume III

TABLE OF CONTENTS			i
Lopez, Dr. Joaquin	Water Law and Water Administration in Latin America	L	699
Tamir, Mrs. Ora	Legal and Administrative Aspects of the Water Laws in Israel	M	849
Vlachos, Evan	Socio-Cultural Aspects of Water Management	N	912
Skogerboe, Gaylord V.	The Importance of Water Law in the Design and Operation of Irrigation Systems for Improved On-Farm Water Management	O	957
Triandafyllides, Stavros	Design and Operation of Urban and Rural Hydraulic Water Systems	P	973
Andu, Jibril A.	A Report on the Role of Water Law in Rural Water Supply Systems with Particular Emphasis on Nigeria	P-1	996
Arrieta, Dr. Carlos C.	Las Aguas Superficiales y Subterraneas en Espana	Q	1014
Mendiluce, Jose Maria Martin	Hydrographic Transfers in Spain	R	1058

Volume IV

TABLE OF CONTENTS			
Gray, S. Lee and Nobe, Ken	Water Resource Economics, Externalities and Institutions in the United States	S	1081
Duckstein, Lucien	The Role of New Technologies for Improved Water Management and Related Effects on Water Law Systems	T	1107
Biswas, Asit K.	Integrated Water Management: A Summing-Up	U	1149
Trelease, Frank J.	New Water Legislation-Drafting for Development, Efficient Allocation & Environmental Protection	V	1154
Center for Natural Resources, Energy & Transport, United Nations, prepared by	Water Law and Administration: The Contribution of the United Nations System	W	1185

	Key	Page
SPEECHES (Spanish/English)		1202
Speech of the General Director of Public Works In the Opening Session of the Conference of Valencia	S1	1203
The International Conference of Global Water Law Systems by Dr. Vicente Giner Boira	S2	1212
Speech by Senior Under Secretary of State, The Ministry of Irrigation, the Arab Republic of Egypt	S3	1217
CONTRIBUTED REPORTS		
J. W. Clark, Sharing Water Across an International Boundary	CP1	1220
Juan A. Sagardoy, Water Administration and Management Schemes	CP2	1229
Walter Kiechel, Jr., Evolution and Objectives of River Basin Commissions in the United States	CP3	1251
E. Y. M. Dzeble, The Legal Framework of the Volta River Authority	CP4	1257
Ralph W. Johnson, Comprehensive Management and the Water Parliament Concept in European Water Management	CP5	1262
Vicente L. Simo Santonja, Evolucion Historica de los Riegos en Sagunto	CP6	1291
Alfredo Rafael Bridge, Considerations on Some Basic Elements Which Should be Kept in Mind for a Planning Model of the Water Sector, with Special Reference to Underground Water	CP7	1298
Centro Interamericano de Desarrollo Integral de Aguas y Tierras	CP8	1307
Soediro, S. H., Water Legislation in Indonesia	CP9	1350
Jean-Marie Chardon, Los Medios y la Politica de los Poderes Publicos y el Dominio Del Agua	CP10	1386
Dr. Manuel Jordan Montanes, Water In the Classical Babylonian Law	CP11	1404
C. J. Kuiper, Multi-Disciplinary Approach to Conjunctive Use of Surface and Underground Waters - - Case Study	CP12	1411

Appendix 2

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