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## CO-OPERATIVE MANAGEMENT AND DEVELOPMENT OF INTERNATIONAL RIVER BASINS

### CO-OPERATIVE MANAGEMENT AND DEVELOPMENT OF INTERNATIONAL RIVER BASINS

GENERAL REPORT  
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This General Report on Co-operative Management and Development of International River Basins has three objectives, all of which follow the guidelines provided by the Seminar organizers.

First, it presents some specific factors influencing cooperation among co-basin countries, and discusses in a more general way problems and issues affecting international water management organizations. Second, it views briefly a number of background reports and conference papers in the light of these factors and identifies illustrative types of resource situations from these and other sources. Third, it proposes a number of questions for consideration by the Seminar and its work groups with the expectation that the results of discussions will provide substantive material for the 1977 United Nations Water Conference.

#### FACTORS INFLUENCING COOPERATION

Cooperation is influenced by many factors, and a number that quickly come to mind are matters such as using and sharing a common natural resource; interdependency; variations in values; the policy and attitudes of independent national states; the maintenance and protection of the natural resources as well as its exploitation; water volume, usability and related physical characteristics; and problems external to water resources.

David LeMarquand of the University of British Columbia has organized these and other factors into three groupings in his paper (Working Paper No. 33) *International River Basin Cooperation: Some Factors Influencing Agreement*. Some of the essential ideas contained in his paper, and which are directly related to water resources organizations, are summarized in the following notes. Following these, additional factors are presented considering matters more generally applicable to the effective management of organizations, including water related types.

LeMarquand's paper immediately identifies political difficulties as the real barrier to co-operation by basin countries on shared water resources. He also finds that international water resources are not as efficiently used as national water resources. This suggests, perhaps, that since nations are recognizing increasingly that national air and

water resources are not "free" goods, we can look forward optimistically to a growing acceptance of international water resources as a scarce commodity to be husbanded carefully rather than wasted or discharged polluted into another country. This will not be easy, as LeMarquand points out in his three set arrangement. Before turning to the first of these, it is well to note an extreme condition he describes, which may be the applicable obstacle in many situations. "Controversies," he says, "that exist on international rivers where there is no intention on the part of one or more basin countries to cooperate in managing their shared resource are beyond fruitful analysis. Among all the basin countries there must be at a minimum a latent willingness to accept and reach agreement. Otherwise there is no basis for communication and without communication there can be no agreement." Thus, the matter of positive political will is the most significant aspect that must be dealt with.

*Hydrologic-Economic Incentives* represent the first set in the LeMarquand arrangement of factors. These are organized in order of least to higher obstacles.

① — Public goods: the situation where all copriarians have equal access to the use of the resource; can enjoy the benefits of development, to a point, without diminishing the benefits of other riparians (e.g.: navigation benefits — the Danube, Rhine).

② — Common property: the situation where riparian countries have equal access to the resource but use of the resource by one diminishes benefits to the others (e.g.: pollution discharges, water abstraction — Lakes Geneva, Constance, Great Lakes).

③ — Integrated development opportunities: the situation where projects in an upstream country provide benefits to both upstream and downstream countries (e.g.: dams, reservoirs, economies of scale, hydropower, flow regulation).

④ — An alternate situation to the above where a project in an upstream country provides little benefits, and perhaps only costs, to the downstream country, or the reverse (e.g.: Kosi River, Nepal—India; Skagit River, U.S.—Canada, respectively).



— Another situation where use of the resource by the upstream riparian diminishes benefits to the downstream country, who has no reciprocal power over the upstream country (e.g.: consumptive use of irrigation water, use of river for waste discharges).

*International Relations.* LeMarquand's second set suggests five international factors contributing to forming national policy. These are:

— Image: to be a good neighbor.  
— International law: country attitude toward international law.

— Linkage: the desire to achieve some tangential political objective from another riparian country.

— Reciprocity: a desire for mutual commitment and obligation.

— Sovereignty: a reluctance to enter into an international agreement since any agreement to some extent limits a nation's flexibility and reduces its sovereignty.

*Policy-Making and Implementation.* In considering a third set of factors LeMarquand proposes that realism be given full recognition, and I suggest that this is especially important at this Seminar. He describes two possible levels of support for a national policy dealing with international rivers. Where the active support of the national political leadership exists agreement among basic countries should be relatively easy to accomplish. The other support is that formulated by the national bureaucracy without strong political guidance. It is this latter type of support, LeMarquand notes, that would "... appear to more accurately characterize water resource politics in general and international river situation in particular."

This view has very important implications in relation to country decision-making on matters concerning international rivers. LeMarquand's third set of factors illustrates why this is so.

— Regional concerns: Water resources issues are usually of regional concern and tend to be sectoral or parochial. National political leadership may see nothing to gain by getting into such concerns, especially when issues of broader scope are on their agenda.

— International rivers as a foreign affair: Foreign offices have little direct expertise or interest in international river development. The interested bureaucracies can be diverse and fragmented and must be brought together by the foreign office. Unless there is strong direction from above, such offices are severely restricted in the policy options they can pursue.

— Leadership motivation: Country leaders may, for various reasons, escalate an international situation into one of outstanding importance which, then, has to be accorded added prominence by other country leaders.

These excellent specific illustrations from LeMarquand's work provide a realistic basis for viewing and better understanding the obstacles

that tend to prevent the development of agreements on international rivers. In a more general sense public water organizations, too, need examination in order to better understand how they can be more effective.

#### GENERAL PROBLEMS AND ISSUES

In the international arena water management problems arise because (a) water resources in nature do not correspond to political boundaries and (b) the rules guiding the rights, obligations, and arrangements for cooperation among nations sharing common watersheds have not yet been established.

Individual nations in general and the United Nations in particular<sup>1</sup> have become increasingly aware of the critical need to establish such rules as well as to develop the organizational and managerial ability to improve utilization of both national and international non-maritime waters. A significant number of international water management institutions are operating today and even more are under development. Such institutions vary widely and serve a range of programs from single function to multipurpose development. However, there has been relatively little critical appraisal of the effectiveness of such institutions.

Studies concerning administrative organizations in general and international water management bodies in particular have focused on two major perspectives: (a) public administration and (b) legal aspects of organizations.

These perspectives emphasize those principles, structural rules and guidelines (organizational and legal) that are expected to govern management bodies. Csermák<sup>2</sup> in his paper "Goals and Forms of Cooperation Among Countries for the Development of International River Basins" cites several such rules:

— each basin state is entitled to a reasonable and equitable share in the uses of the waters of an international drainage basin.

— the states are obligated to prevent any new form of water pollution or any increase in the degree of existing water pollution which would cause substantial injury in the territory of another co-basin state.<sup>3</sup>

It seems to us that at present, the major obstacle to better management of national water resources is not the lack of knowledge with regard to principles and rules that ought to govern the organizations or the construction of an ideal type of bureaucracy in the tradition of Max Weber. Rather, it is malfunctioning and dysfunctions of

<sup>1</sup> United Nations, *Management of International Water Resources: Institutional and Legal Aspects*, Natural Resources Water Series No. 1, Department of Economic and Social Affairs, New York, 1973.

<sup>2</sup> Csermák, Bela, "Goals and Forms of Co-operation Among Countries for the Development of International River Basins," UNDP/UN Interregional Seminar on River Basin and Interbasin Development, Budapest, Hungary, September 1973, WP. 19.

<sup>3</sup> *Ibid.*, p. 7.

and within the organizations themselves involving their actual behavior that stand as obstacles to the realization of organizational (and societal) goals. Given the built-in rigidities of both the classic public administration and legal approach to organization, especially when considering the emergence of new problems and changing conditions, an appropriate framework for the study of change and dysfunctions of organizations requires expansion beyond these classic approaches.

In these notes we suggest an approach that gives attention to the behavior of water management organizations. Our approach is directed toward improving our insights into the way organizations and suggesting problems or issues for further study or examination which may lead to a better understanding of the actual performance of institutions and recommendations for their improvement.

For the purpose of our analysis we distinguish between two facets of organizations: (a) the stated objectives and goals of the organizations and their various functions and (b) the structure and behavioral mechanisms of the organizations. Although the two are closely interrelated, they need to be analytically distinguished and critically examined. Furthermore, the question of the degree of compatibility between the two (whether or not one complements the other or whether they impose mutual structural constraints) needs examination.

The problem of goals and their formulation is, of course, important to organizational functioning and behavior. Clearly, the establishment of an international water management organization requires the formulation of goals and objectives. The Organization for Economic Development and Cooperation (OECD) Water Management Group has raised this as an issue because it is not always clear how best to establish them. The question which they posed was "What is meant precisely by 'objectives' when used in relation to water management?" "How are the respective objectives of many special interest groups made a part of the total management program? Are formal or informal organizational structures used to integrate these interests?" "What procedures exist to choose among a variety of alternatives which may be used to achieve objectives?"<sup>4</sup> Further questions which we believe ought to be raised with respect to objectives are: Are the goals formally and rigidly formulated to prescribe exclusively the functions of the organization or are they flexible so as to allow for the emergence of new functions and adapt to new and changing conditions and needs through their reformulation?

It is to issues such as these — the processes of goal formulation and how organizations really behave — that we need to give more attention as we begin to focus on organizational behavior.

<sup>4</sup> OECD, *Water Management, Basic Issues*, OECD, Paris, 1972, p. 6.

#### ORGANIZATIONAL BEHAVIOR

In addition to the formulation of appropriate goals, institution managers must be aware of the behavioral as well as structural mechanisms to ensure effective and efficient functioning of their institutions. Among the questions which arise with respect to organizational behavior are the following:

(a) How does the structure if the organization reflect its various functions? Are the strong interdependencies and interrelations between the various functions and issues confronting the organization reflected in the organizational structure, or is the organization rigidly compartmental?

(b) Does the structure allow for the adoption of additional functions when new problems arise? When new problems arise, does the organization "block" positive development when it does not "fit" the organizational structure? In other words, when confronted with new issues and problems unfamiliar to its past experience, does the organization adapt to the changing conditions or does it ignore or mold them to fit familiar patterns, thus stifling new developments. The United Nations panel on Water Resources has acknowledged that "the problem of organization and administration is never a static one but changes constantly within any agency and its program develops as staff members rotate, as changes take place in related fields of activity and as requirements change. Organizational objectives and arrangements which may be essential at one stage may not be appropriate at another."<sup>5</sup>

(c) How does the organization coordinate its two types of personnel — administrators on the one hand and technical (social and technologic personnel) on the other — and how does it solve the inherent frictions between the two?

(d) Ideally authority starts at the top and filters down through the organization, thinning out as it spreads itself over wider areas. The question is, however, how do the lines of authority normally exercised respond to and respect the two distinctly different types of authority represented by the two personnel types? "The growing use of staff specialists," says Berkeley<sup>6</sup> "and the growing specialization of line personnel is playing havoc with bureaucratic organizations. Authority is becoming even more diminished and confused. Not only are those above having an increasingly difficult time keeping abreast of, let alone controlling, those below but in a very real sense, it is becoming harder and harder to tell just who is below and who is above."

(e) What are the major communication channels within the organization and how do they function? Can distinct communication blockages be identified? Who is responsible for sorting out

<sup>5</sup> United Nations, *Integrated River Basin Development*, Report of a Panel of Experts, New York, 1970, p. 28.

<sup>6</sup> Berkeley, George E., *The Administrative Revolution, Notes on the Passing of Organization Man*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1971, p. 22.



the flow of information? "There is always too much material to be communicated causing some selectivity and distortion to enter the filtering process as information journeys to the apex. There is a distinct tendency, also, for a lower unit to pass up information that it thinks the higher unit wants to have, but to suppress or change information which does not meet this standard. Furthermore, information that reaches the top is likely to be somewhat outdated by the time it gets there. This means (that) those who make the most sweeping and crucial decisions must act on information that is likely to be less reliable than that which is available to their subunits."<sup>7</sup>

Having dealt with a few of the realities of organizational behavior, the following section on decision analysis examines the matter of behavior in relation to these processes.

#### DECISION-MAKING ANALYSIS

There is growing recognition among scholars that organizational problems demand not only consideration of formal or "objective" analysis, but also of subjective values and trade-offs. Keeney and Raiffa<sup>8</sup> in an article, "A Critique of Formal Analysis in Public Decision Making," note the numerous advantages and disadvantages of formalizing the decision-making process.

"Formal analysis," they observe, "stimulates insightful thinking about the interactions of various parts of the problem and the interrelationships between the problem and proposed alternatives. It forces an explicit consideration of the entire problem, and this process can be a catalyst for generating new alternatives to be considered and helps pinpoint where additional information is needed for decision-making purposes. This facilitates the gathering, compiling and organizing of the data in a form useful to the decision maker. In addition, decision analysis can help promote more efficient interaction among group members working on a problem. Discussion can be raised above the level of just mentioning pros and cons of each alternative, and the substantive issues of balancing the pros and cons can be attacked."

Existing technical and methodological problems inhibit the use of formal analysis. According to Keeney and Raiffa, "There are not any systematic procedures for isolating problems." This they find is especially true in the public sector, "where there is an intricate web of overlapping and interacting agencies. Solving one problem invariably creates other problems."<sup>9</sup>

Another difficulty involves specifying the possible consequences of the alternative course of action. The costs and benefits are accrued at various

times in the future, and the individuals and groups that may be affected are sometimes not easily identified. It is extremely difficult to assess the judgmental probability distributions that describe the possible consequences when there are many measures of effectiveness.

More important in the decision-making process is the need to recognize the vital role that subjective information (e.g., the social, political and personal views of decision makers) plays in the decision process. Given this recognition, they suggest the need for better techniques to acquire and incorporate subjective information in to formal analysis. It is also important to quantify the value trade-offs of the decision makers, that is, to get an indication of how much achievement of one objective is worth in terms of achievement of another objective. The preferences of affected individuals, which may be directly assessed or revealed through their actions, are important inputs to the decision-making process. Improved and more reliable techniques and procedures are needed to obtain all the above types of information.

A number of questions arise with respect to encouraging formal analysis that deal with both objective as well as subjective matters. Who should undertake such analysis — outside consultants or an inside group? Where in the organizational hierarchy should the analysis team be located? What are the implications of this choice for institutional design? (It has been suggested that this latter question is presently a very real problem in many international river basins throughout the world.) How can subjective analysis be included in formal analysis (on this point, the Seminar may wish to consider the role of a form of assistance which would concentrate on social and political implications of international cooperation). These and other related points are indeed pertinent for seminar discussion.

Finally, the OECD has posed a critical question which is related to the rational judgment and preferences of individual decision-making groups: "How are information services integrated so that the appropriate persons have information they need for decision making?"

#### ↓ AREAS OF INTERNATIONAL CONFLICT

The problems raised above characterize bureaucratic organizations in general. When international organizations are involved as in international water basins, administrative operation is even more problematic. Neighboring countries which share a common water resource may have different needs, demands, pressures, and objectives. The geographic fact that they share this common water resource is not manifested in the international law as "rights" of the various parties. Being neighbors, even good neighbors, does not reduce the differences. The importance of achieving cooperation with regard to water management in

spite of these differences is crucial in the light of the fact that there is an intricate set of interdependencies between water resources and other natural resources and social areas. The development or utilization of water resources within an international water resource system has important effects upon other resources. Furthermore, the development or exploitation of water resources by one state may cause a substantial impact on water and other resources available for development by another state.<sup>10</sup>

Stainov<sup>11</sup> in his book *The International Law Aspects of River Pollution Control* opened a debate by questioning the theory of "the right of neighborhood" that was advocated by scholars such as J. Andrassy and E. Diez.<sup>12</sup> Thus, it may be concluded that mere recognition of legal rules and principles of the kind that were quoted earlier in the paper does not necessarily ensure cooperation between countries sharing common water resources. The recognition in principle of such rules only opens the floor for negotiations, bargaining and disagreements between the parties. These rules may be regarded only as the precontractual elements for a contract or an agreement between the parties.

The difficult process of reaching agreement upon specific operational issues — financial, administrative, and technical — and the priorities assigned to each stands as an obstacle to any bilateral contract. Negotiation and bargaining are the means by which this obstacle may be overcome. Despite the general agreement, in principle, on the need to negotiate, the process itself is a difficult one which deserves the focus of attention. It is through this process that agreements are reached, international organizations are formed, and operations are realized. This situation, of course, is usually recognized by all those who represent governments in such processes. But it was thought important to the discussion of this seminar, to raise these matters explicitly.

Not only do countries have different and, at times, conflicting interests, goals, and ideas regarding means for achieving goals, but those engaged in negotiations are subject to different socio-political pressures, demands and needs, and different governmental-political structures. Reaching agreement on issues such as budget allocation, priorities, and timetables is by far more complicated than arriving at technical conclusions. While for a technical subcommittee the process of arriving at technical conclusions is rather straightforward — they examine, evaluate and bring forth recommendations — the art of negotiation towards a *modus operandi* of the organization involves much more subtle and complicated processes and procedures.

An appropriate arena for negotiation is, we feel, a joint commission. As the UN panel on Integrated River Basin Development<sup>13</sup> observed, "The true concept of integrated planning in any development calls above all for continuity of organized cooperation and the only way to achieve this is by establishing a permanent joint commission."

#### COMMISSION STRUCTURE

Two types of organizations ought to be distinguished with regard to permanent joint commissions: project oriented on the one hand and conflict resolving on the other hand.

Project oriented commissions are defined here as organizations designed a priori to solve a specific problem or problems. Its power is delegated by the countries involved and its jurisdiction is limited to the problem areas specified.

A conflict resolution commission operates on a much wider base. The commission serves as a standing organization to whom the governments can refer various emerging problems. The commission is granted the power to negotiate between the parties, study the issues, formulate strategies — or "plans or attack" — for solving the problems and bring forth recommendations.

The wide range of problems that the latter tackles and its rich experience enables the establishment of a wide information base on the specific regional problems and issues concerning water management and related problems. Three major factors support this type of commission. The first is the changing conditions and needs that characterize the management of international water resources. New problems and controversies continuously emerge creating a demand for new and more complex solutions and resolutions. As Senator Elihu Root, who in 1909 signed the treaty as US Secretary of State establishing the International Joint Commission between the US and (then) Great Britain on the United States-Canada boundary, claimed "I do not anticipate that the time will ever come when this Commission (I. J. C.) will not be needed. I think that as the two countries along this tremendous boundary line become more and more thickly settled the need for it will increase."<sup>14 15</sup>

The second factor which favors the conflict resolution type of commission is our growing knowledge and understanding of secondary and tertiary consequences of water-related policies and programs. Finally, the growing complexity of current operations and programs in contrast to those of the past further illustrates the need for this type of commission.

In a doctoral thesis undertaken at Cornell University and completed in 1973 Colonel John F.

<sup>7</sup> *Ibid.*, p. 20.  
<sup>8</sup> Keeney, Ralph L. and Raiffa, Howard. "A Critique of Formal Analysis in Public Decision Making", in: *Analysis of Public Systems*, edited by Drake, Kenney and Morse. The M.I.T. Press, Cambridge, 1972.  
<sup>9</sup> *Ibid.*, pp. 69-70.

<sup>10</sup> United Nations, Natural Resources/Water Series No. 1, *op. cit.*, pp. 14-15.  
<sup>11</sup> Stainov, Petko S. *The International Law Aspects of River Pollution Control*. Publishing House of the Bulgarian Academy of Sciences, Sofia, 1964, pp. 147-149.  
<sup>12</sup> *Ibid.*, p. 148.

<sup>13</sup> United Nations, 1970, *op. cit.*, p. 27.  
<sup>14</sup> Root, Elihu, 45 Congressional Record 4172 (1913).  
<sup>15</sup> Boundary Waters Treaty of 1909, 36 Stat. 2448 (1910) Preamble.



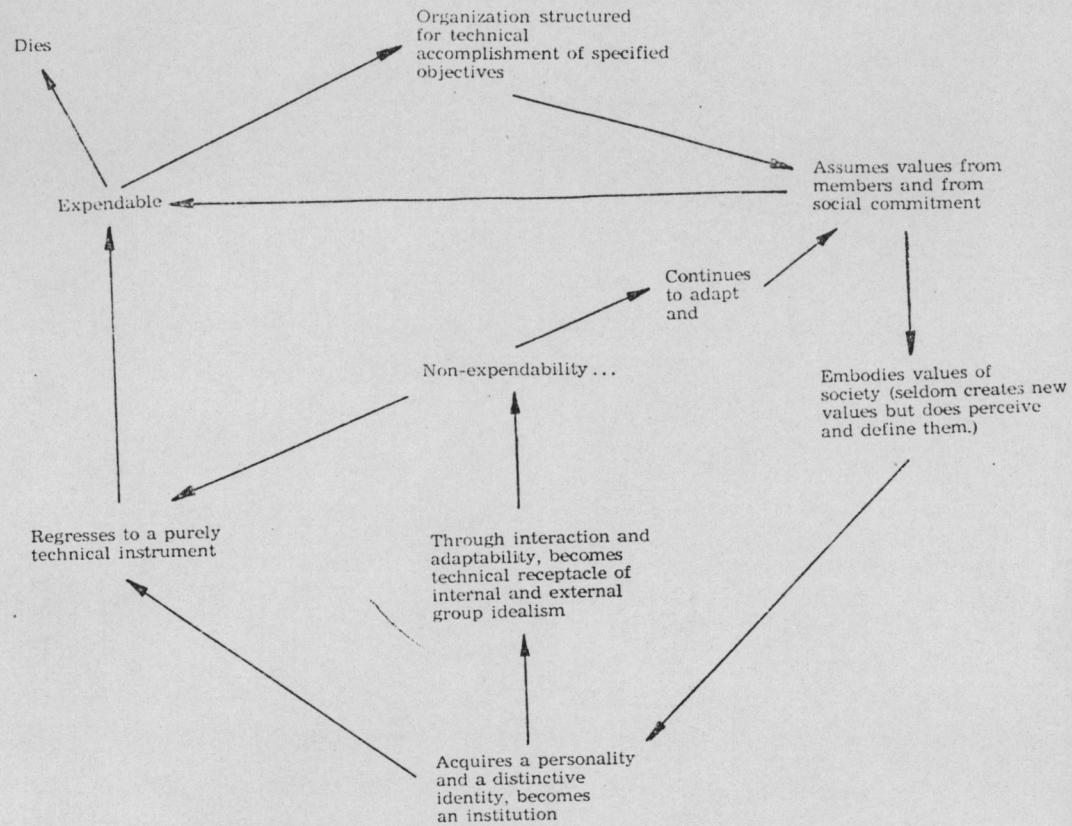


Figure I. Process of "Institutionalization" (or Life Cycle of an Organization — Adaptation, Change Responsiveness). (Adapted from concepts by Selznick, *Leadership in Administration*.)

Wall<sup>16</sup> studied the nature of organization life in relation to its effectiveness. A few of his findings are pertinent to our topic and further contribute to an understanding of the factors about which we need to be aware in formulating new cooperative international river basin management agreements.

LeMarquand pointed out that international agreements tend to be agreed upon reluctantly since they tend to limit a nation's flexibility and reduce its sovereignty. When agreements are entered into, however, it would be desirable to have a useable frame of reference to observe and judge the work of an implementing organization.

Figure 1 (from Wall) describes the life cycle of an organization. This comprehensive view of how an organization may behave helps to establish a realistic view of the potential of an international

<sup>16</sup> Wall, John Furman. "The Civil Works of the United States Army Corps of Engineers: Program Modernization." (583 pages and appendices). Doctoral thesis. Cornell University, Ithaca, New York, 1973.

body, and of the different routes such an organization may take as it develops over time.

After looking at a wide range of suggested criteria to use in formulating a framework to assess an organization's value, Wall selected those elements shown in figure II. (The notes attached to the figure define the terms and phrases of figure II.

Wall's study implies a number of points which have a further bearing on the general nature of organizations. These are:

— Inexactness: the difficulty of maintaining close executive control, as it may pertain to an international body; how to insure initiative while maintaining reasonable restraint on the organization.

— Professionalism: the importance and value of technical professionals, whose responsiveness is determined as much by the views of their professional colleagues and peers as by bureaucratic supervision, nationally and internationally.

— The issue of comprehensive water resource and land and economic development: water re-

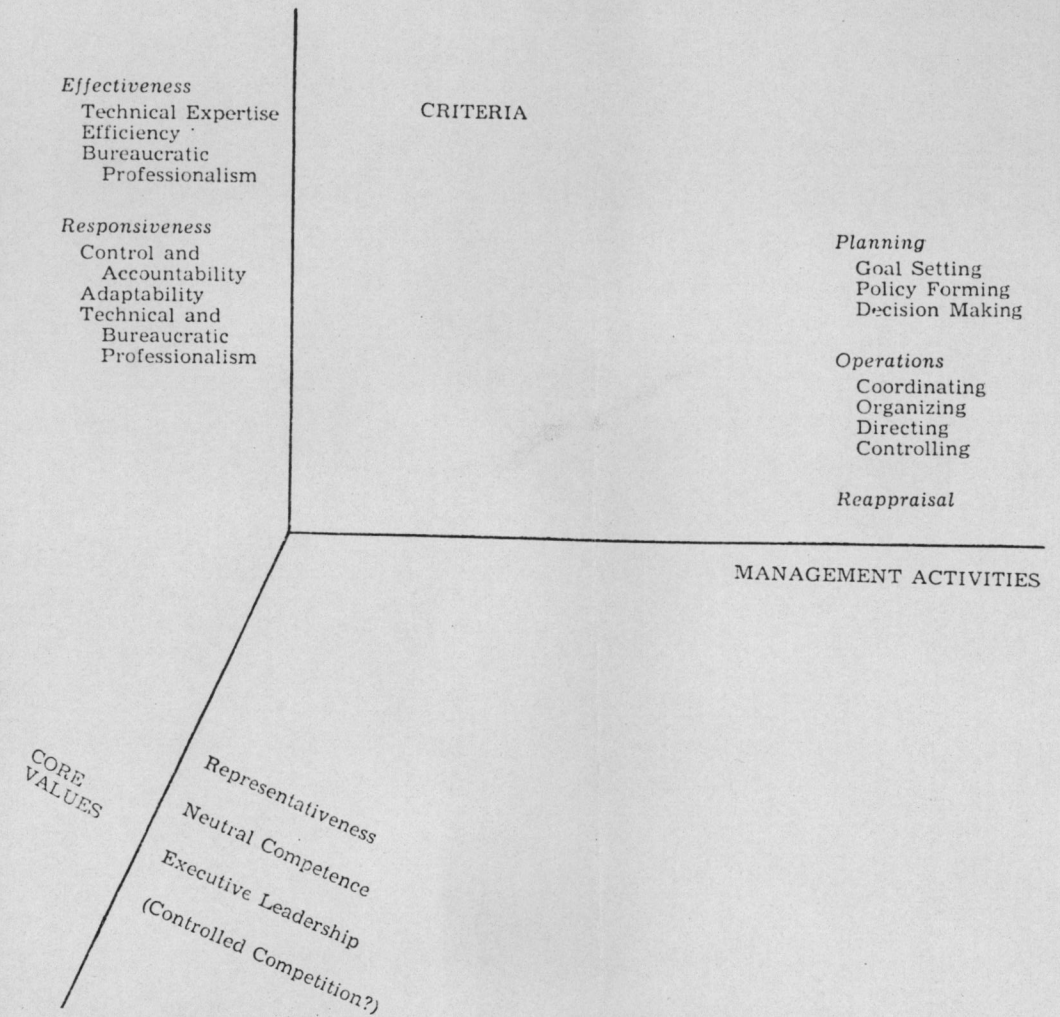


Figure II. Threedimensional framework of assessment

Notes Pertaining to figure II.

There is no precise method for evaluating agencies; there are many views and attitudes on what attributes are important. Figure II. summarizes a recommended framework of assessment. After examining briefly what others have stated to be essential criteria of a "good," well-behaved, or well-managed organization, a three-dimension frame-work was synthesized to gauge agency effectiveness and responsiveness not wholly as abstract ideals but against things every agency does (plan, operate, reappraise) and in relation to public administrative core values as defined. Although posited as of lesser importance, the relation and interaction of management functions, with core values of public administration are also considered of interest in the total assessment, scheme and in recommending future paths for organizational development.

Factors not explicitly addressed (legal authority to act, political power, availability of resources, and similar

factors) are included within the concepts of effectiveness and responsiveness.

*Core Values* of public administration apply to agency behavior in relation to its external environment are proposed to evaluate the agency over time. Representativeness conflicts with executive leadership; neutral competence has reinforced or detracted from the other values as administrative concepts shifted in time. It is contended that the following core values are again in a state of flux and that "controlled competition" may be a new emerging value.

Representativeness—means administration as an accessible system for various interests and views.

Neutral Competence—means administration as a politically valueless system.

Executive Leadership—means administration as a system responsible to the Executive Branch.



(Controlled Competition?)—If agency fails to meet changing demands, the availability of alternative political remedies.

*Criteria* by which to evaluate an agency in relation to its internal and external operation and actions are sometimes mutually reinforcing but often detract from each other. Responsiveness to many interests and over-reaction to suggested changes penalize effectiveness. Generally, it is suggested that some mixture of effectiveness and responsiveness is appropriate for a particular point in time. Criteria are:

*Effectiveness*—Organization as a well oiled mechanism providing efficient products and services to satisfy external requirements while maintaining internal values and goals.

*Responsiveness*—Organization as an adaptable and dynamic organism accountable to and controlled by proper internal external demands and by the public interest.

*Management Activities* consist of distinct, supportive, and generally overlapping functions agency leadership uses to develop, execute, and adjust its programs and systems. These are:

*Planning*—Management as a problem solving (goal setting, policy formulating, decision-making) function.

*Operations*—Management as a project program executing function.

*Reappraisal*—Management as a program-policy-goal questioning and adjusting function.

sources, even broadly conceived, may no longer be the focus for international action without attention in more depth to the land and its use (in addition to irrigated agriculture), to the protection and management of the environment, and the synthesis of these in economic development.

— The issue of developing effective organizational arrangements and implementing programs for the function of water, land, environment and economic development, recognizing the large number of public agencies involved in these interests, and the emerging question of whether one centralized government agency can provide the needed effective management.

— The issue of centralized multi-functional resource management in contrast to, or in stronger collaboration with, regional resource management arrangements.

— The issue of technical assistance applicable to a broad base of technical, social, legal and political problems by an appropriate body to co-basin countries.

Problems and issues of these general types, viewed under the realistic approach taken by LeMarquand, and dealt with by skilled persons oriented to regional (concerns including history and culture as well as technology and economics) could likely play an impressive role in facilitating on a continued basis the evolution of international water and related resource development organizations and programs.

#### REVIEWS: INTERNATIONAL ACTIVITIES: CASE STUDIES AND RESOURCE SITUATIONS

The rising concern over international river basins has to be rooted in the substantive importance of water to increasing development activity throughout the world. The response of the various United Nations organizations to this rising concern

has greatly enhanced the opportunity for intelligent action, the overtones of costly mistakes, and for international water and related resource problems to have a high place on national agendas.

Only two documents among many are touched upon in this review. The first, UN Natural Resources/Water Series No. 1; *Management of International Water Resources: Institutional and Legal Aspects, 1975*<sup>17</sup> is a major document on the subject. While it is very thorough, it tends of necessity toward statements that reflect how governments ought to act rather than how they might act. The following comments on a few sections of the document are intended to assist the Seminar in using it as an effective reference and, perhaps, as a point of discussion.

— In discussing The International Basin (page 9, item 30) under "Concepts engendered by the natural cycling of water across political frontiers" the manual notes "Wherever there is hydrologic interconnection . . . and more than one states territory is involved, the water resources . . . must be treated as international, . . ." The problem, of course, is that unless the states choose to do so the waters will not be treated as international within a bilateral or multi-lateral discourse. The manual does imply that states may have valid recourse to international courts if they do desire.

— Regarding the Interaction Between Water, Other Resources and the Environment (page 14, item 42) the manual properly calls attention to the need for understanding this interaction and proposes an assessment of the impacts of development on man's environment. The manual stops short of possible major obstacles preventing such action, such as the diffused assignment of responsibilities for various programs affecting resource development and the environment among many units of government and the difficulties involved in achieving horizontal coordination.

— On Relations to Other Agencies and Organizations (page 119, item 358) the manual expresses the need for newly established entities to function in harmony with other institutions within the participating nations and with other relevant institutions of an international character. Clearly, there is nothing wrong with such declarations. Yet the problem is how to accomplish the ends desired.

— On Technical Coordination and Technical Assistance (page 125, item 375) the manual points out benefits to be derived by seeking specialized aid from appropriate agencies or consultants. It calls attention to the need for an effective data base, and for other needs equally as well, such as for planning, water management and project engineering. But, as LeMarquand pointed out, and on which point I join him, the essential aspects of international river basin management are political. And while it is appropriate and strategic to first proceed with matters on which common agreement

<sup>17</sup> United Nations, 1970, op. cit., pp. 9, 14, 119, 125, 19.

can be most readily achieved, it would be useful to consider how effective technical assistance could be provided to facilitate these political and social pre-conditions for international cooperation that the manual calls for in another section (page 19, item 55). Such technical assistance poses an issue that the Seminar may wish to address.

The second document entitled *Water Resource Development—International River Basin Development*, Progress Report of the Secretary-General on related activities (March—April, 1975)<sup>18</sup> makes several observations that might usefully be highlighted for the benefit of the Seminar and for later consideration of pertinent issues.

For example page 5, paragraph 4 notes that "It is through direct cooperation among the interested co-basin countries that the problems and potentials of international river basin management and development are identified and dealt with. All other forms and contributions of international cooperation and assistance may essentially be regarded as supplementary to the direct collaboration of the parties concerned." This is a correct formal posture for the United Nations but I suggest that this seminar may wish to consider the question of how to make more effective the type of technical (and social and political) aid termed supplementary as a means of encouraging international river basin agreements.

The Progress Report calls attention to the increasing rate of development of international agreements up to about 1970—71. It also notes the uneven distribution of the treaties out of 236 treaties more than two-thirds relate to river basin in Europe and North America, two continents that contain less than one-third of the world's international rivers. It is highly probable that the strong movement toward economic development that is taking place in numerous countries as a result of changing natural resource management strategies and redistribution of wealth will have a strong impact on international river basin developments in areas outside Europe and North America. This, too, is a matter that the seminar may wish to consider.

In reviewing some 286 treaties, the Secretary-General Progress Report also concludes that of this number most have been concerned with preliminary surveys and planning, whereas construction and operation of joint projects are fewer in number. Also many of the arrangements reviewed relate to only parts of basins rather than taking a theoretically desirable basin-wide approach. The Seminar may wish to consider whether public administration and hydrologic theory are effective guides to encouraging practical political events in resource management. Another way to state the issue is to ask whether such theoretical approaches pose obstacles in that such approaches are difficult

<sup>18</sup> United Nations, *International River Basin Development: Progress Report of the Secretary-General on related activities*, E.C.7.46 31 January, 1975.

to achieve and may produce a sense of frustration in those engaged in negotiation on international rivers.

In preparing this General Report six conference papers have been reviewed and a number of observations have been drawn from them. Comments on Mr. LeMarquand's paper were included in the early part of this Report.

Professor J. C. Day of the University of Western Ontario, London, Canada, has been a close observer of developments in the La Plata Basin, a river second only to the Amazon River in South America (*International Management of the River Plate Basin*, Working Paper No. 31).

Professor Day has produced a strong critique of how international management is proceeding in an important case. Perhaps his most important contribution has been to provide a sympathetic, yet outside, view of what is what is not taking place. As a result, he has given us the opportunity to evaluate the Plate Basin experiment in two ways: (a) in terms of United Nations suggestions for integrated river basin management; and (b) in terms of what has actually happened from perspectives of history, national sovereignty and goals, and comparative efforts elsewhere.

It will be helpful to review the United Nations suggestions for integrated river basin development as stated by Professor Day, and on which the Plate Basin program was based.

— The suggestions, "argues that advances in human welfare based on the use of water and land resources can best be achieved under the direction of an international agency which plans, constructs, and operates water-related activities throughout river systems. Such a body would make or promote comprehensive assessments of physical parameters throughout the basin . . . (and) socio-economic assessments . . . In light of the absence of a universally accepted set of legal principles to guide international river basin management, the United Nations recommends joint decision making by nationals from each country involved founded on sound technical data to harmonize the development potentials and aspirations of all nations. Ultimately such a body should become a permanent international joint commission established by treaty" (from United Nations, 1970).

Under these guidelines, and in fact preceding them, the co-basin countries undertook an integrated river-management experiment in 1968. Professor Day's report indicates the following developments:

— The decision to emphasize points of easy agreement allowed (a) consideration of a wide range of topics of mutual interest among the five riparian countries which previously had not been discussed; (b) repeated meetings among a larger number of diplomats and technical representatives with counterpart personnel; (c) familiarization with hopes, fears and development priorities of copriarians.



— Provided a springboard to launch international consideration of other issues far exceeding physical basin limits, such as energy transmission, transportation, pipelines, telecommunications, radio, television, health and education.

His report also notes that joint actions to date have not considered explicitly the full range of issues important to integrated river basin development, including matters such as:

— Establish priorities for water use among competing interests.

— Procedures to regulate timing, amounts and stages of water flow from nation to nation.

— Water diversion possibilities and water quality standards.

— Control and reconcile competitive and conflicting land use developments throughout the basin.

— Important ecological matters.

— Irreplaceable scenic resources.

— The consequences of present decisions for future societies.

In addition, the most important developments pertaining to hydroelectricity and physical integration are occurring outside the joint program.

In terms of what has actually taken place in seven years, the record of this complex basin development task has many impressive indicators. The evolution of an institution as complicated as that on the River Plate Basin will require time. Sequencing and timing of projects is greatly influenced by national goals and political strategies and systematic arrangements have rarely been given precedence over "doing what is possible now." Although we have been able to improve the objective and systematic design of complex programs like the Plate Basin project in the past ten years, we are still bound to decision-making which of necessity leans heavily on subjective values of those with the power to make decisions.

For comparative purposes it is well to recognize that water pollution in the Great Lakes of Canada and the United States was well recognized by 1910. Yet an effective agreement was not developed until 1972, with intermediate and non-productive starts in 1912, 1946 and 1954. Similarly the cooperative development of the Columbia River, for only the two functions of flood control and hydroelectric power, was a result of long studies and negotiations.

There is no need for this report to cast a judgment as to progress on the Plate Basin development program. The facts are provided in Professor Day's report and each person may wish to make their own judgment based on the information provided. But clearly there are several ways to evaluate progress and it is this point that this reporter's notes wish to stress. Another point that requires consideration is the role and responsibility of each of the international agencies and the several funding agencies in becoming increasingly more demanding in requiring cross-over analyses on pro-

grams that are either physically, economically or socially linked in order to impress political decision leaders with the implications of relatively narrow or ad hoc decisions in contrast to giving greater credence to a systematic program view.

The River Plate Basin project was summarized in some detail because it seems to embody important lessons that require discussion during the Seminar. Other papers that contribute to the topic of cooperative management and development of international river basins have been prepared, are or will be in the hands of seminar participants, and reflect different issues from those noted by Professor Day.

For example, the paper by Mr. Ivan Z. Balló and Dr. István Orlóci on *Water Resources Development in the Tisza River Basin and Its Impacts on Socio-Economic Growth* (Working Paper No. 16) exemplifies water, land and environmental problems in a geographic setting which has a long history; is well developed; is part of one of the world's most international river basins, the Danube; and which, on the basis of accepted projections faces crisis conditions by the end of the twentieth century in agricultural production, pollution from non-point sources, low stream flow and other matters.

The build-up of background information; of joint plans and of schedules for integrating projects in an ascending order of complexity over time is a reflection of the strong interdependence that exists in the Tisza Basin amongst the co-basin countries. Notwithstanding the evident detail followed by the project so far, agreements are yet to be developed. The critical task remaining is well stated by the authors:

"The preliminary technical studies are expected to yield soon the fundamentals needed for the economic justification of the joint interest projects. *Sooner or later this will be extended to a political level and will demonstrate through integrated water management the maturity of the participating countries*" italics supplied by Reporter Dworsky).

This paper also provides an opportunity to more effectively gauge the progress of the River Plate Basin program by comparing historical time factors, degree of crisis and of interdependency, the relative size of the two programs and other program elements.

In contrast, the paper (Working Paper No. 28, *Inter Basin Transfer of Water Resources-Case Study of Indus Project*) by Mr. N. C. Syed illustrates one of the main early points made by Mr. LeMarquand — that of two countries where the political will was determined to follow separate paths. Even within the traumatic separation experience of India and Pakistan, however, it is important to recognize that some arrangement had to be undertaken to provide for the management of international waters. The importance of the role of a third party, in this case the World Bank, is

clearly indicated. The Seminar should give additional consideration to the question of the role of third party participants as well or who they might be.

Mr. Béla Csermák's paper (Working Paper No. 19, *Goals and Forms of Cooperation Among Countries for the Development of International Water Basins*) turns our attention to the need for codification of working rules to guide countries in coming to agreement on international river basin development programs. A few selections from his comprehensive paper provides some insight into several key problems:

— In his opening paragraph on Principles and Recommendations, Mr. Csermák also points to the fundamental matter that must be undertaken in reaching international accord, that — "The acceptance of such obligations depends upon the willingness of the countries..." This point has been stressed several times and it is noted again. In order to propose that the Seminar consider ways and means to establish processes to facilitate the acceptance of "country willingness to participate."

— Under the second paragraph of the section on Principles Mr. Csermák states that "...sovereignty of the countries is rather restricted than absolute...". By this I assume he means that in fact countries cannot ignore the attitudes and policies of their neighbors, and that countries will find some response to external ideas and views. An urgent task, he suggests, is to determine what in fact would be the extent of restrictions on state-sovereignty. This is important since it removes the discussion from matters of principle which are not likely to be argued (e.g.: state sovereignty) and replaces the principle with a pragmatic description of what, if any, the effect on state sovereignty would be.

— Mr. Csermák recognizes the principle of adjustment and flexibility and notes that "...problems... vary in time and space, ... contents of agreements cannot be uniform... it is desirable that agreements... be as a comprehensive as possible, ... serve integrated development of the drainage basin as much as possible."

#### PROPOSALS FOR SEMINAR DISCUSSION

This report has identified a number of problems and issues. The presentation of papers under the topic covered by this report will uncover additional questions. It is expected that these matters will help guide the initial discussions of pertinent seminar workshops. In order to facilitate discussion, some of the problems and issues resulting from this report are summarized below.

— How can the "political will" of countries be strengthened in order to encourage the early development of political involvement in international water and related resource and environmental problems?

— Classic organizational and legal arrangements for organizing international river basin activities are being challenged by the need to better integrate water, land, environment and economic development matters. What new or improved institutional processes can usefully contribute to such integration?

— It is not the lack of knowledge about the principles and rules that ought to govern national and international water organizations, but rather a better appreciation of the obstacles that prevent organizations from behaving as they should, that is needed. How can a better understanding of the behavioral problems of organizations contribute to the improved effectiveness of both national and international water organizations?

— How can both objective and subjective considerations be included to strengthen decision-making processes?

— How can conflict arenas within which negotiation and bargaining take place be strengthened in order to support the development of international agreements? What role can improved information management and analytical assessment processes (that include economic, environmental, social and political factors) play in this process? How can these elements be better utilized?

— How can evaluations of organizations and their efforts result in better international and national river basin management? What criteria should be used in undertaking evaluation?

— Are the interdependencies among water, land, environment and economic development, for example, becoming so great as to make agencies solely responsible for water resources incapable of contributing effectively to the several goals desired by co-basin countries, or incapable of effectively controlling the consequences of their actions?

— How can improved coordination efforts among international agencies (United Nations; specialized agencies; international development banks) contribute to international agreements?

— Should not technical assistance addressed to the social and political factors of international river basin management be offered equally with assistance in hydrology and other physical data collection efforts?

— Are regional teams of appropriate skilled persons (representing physical, biological and social sciences, and politically knowledgeable persons) who would be available under new arrangements through the United Nations or other auspices be helpful in maintaining constant attention to international river basin issues? What kind of new arrangements might be considered?

— What would be the contribution of independent (out-of-country persons) audits of both national and international river basin arrangements? Could regional teams make a contribution in this matter?