Educational Television; A New Frontier

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Abstract

The ERTI (Educational Radio and Television of Iran) has been continuously enriching its concepts of its most appropriate mission, organizational structure and professional activities ever since its beginning in 1967. Parallel efforts in dynamic systems modeling and the design of organizational structures have both led to new insights about the appropriate role of ERTI and served as a management educational activity. Brief descriptions are provided of the approach taken in the development of two related modeling and organizational development efforts, and simple diagrams of these models are presented. The implications of these efforts for organizational decision making are discussed.

The Development Needs of Iran

Government planning and developmental activities in Iran have accelerated rapidly in the recent history of the country. Within the past five years, the revenues from Iranian oil have jumped from one billion to 20 billion dollars per year. Almost all of this income (except what has been spent on foreign aid programs and industrial development within other countries) has been pumped into the industrialization and modernization of Iran. This increased expenditure was preceded by the analysis of social and political concerns, which brought certain elements of the population to the attention of the governmental planners: farmers, industrial workers, children and women. The recent developments have been intended to provide new opportunities for these people, for they have suffered various forms of social inequality in the past.

The new social investments have included plans for free universal education for all Iranians. This single reform effort has put a tremendous strain on those agencies and organizations which are responsible for the educational development of the country. The importance of this effort became even more clear when government planners and implementation project managers realized that more was required than just the investment of large amounts of capitol (as had been thought before the recent increases in oil revenue made this capitol available). To move the planned projects closer to their goals, the second critical factor was the need to allocate skilled manpower to the tasks of education. Thus it has been realized that the quantitative as well as the qualitative demands upon Iranian education have increased. Government agencies as well as private industry are searching to find the qualified persons required to carry out many, multi-million dollar, development projects. Both the government and the private sectors of the country are looking to the educational system to provide the skilled manpower required. This is a challenge to which all of us in education are responding.

Educational Television; Its Goals, Structure and Activities

Within the view of Iranian education suggested above, the Educational Radio and Television of Iran (ERTI), a division of National Iranian Radio and Television (NIRT), is continuously working to increase the quality of its mission, organizational structure and developmental activities.

The major goal or mission of ERTI, in the broadest sense, is to introduce innovation into the Iranian educational system. This broad goal was established in 1972 when ERTI (formerly Educational Television, ETV) was transferred from the Ministry of Education to NIRT. The detail objectives within this broad goal, and the activities needed to achieve these outcomes, are still evolving.

Early ETV Efforts Within Classrooms. Educational Television of Iran was initially established within the Ministry of Education in 1967. Television broadcasts were limited to the city of Tehran, and to a period of time ranging from 3-5 hours per day during the school year. These programs were broadcast in the after-school hours and evenings, and most programs presented a classroom teacher lecturing in front of a camera much as he would to a normal classroom. Little attempt was made to produce and distribute programs according to the principles of educational technology. But since 1972, ETV has made a systematic effort to introduce instructional systems development into Iranian educational television.

Functions and Structures Within ETV. As it was realized that new educational ideas were needed in order to provide the innovations called for in ETV's Mission statement, it became imperative to provide advanced training to ETV's program developers and producers. This awareness led to a sizable training program to develop the competencies needed for system development projects. The assumption was that an increase in the competencies of ETV professionals would lead to an increase in the effectiveness of ETV's educational developments and presentations. In turn, it was anticipated that this increased effectiveness would result in an increase in ETV's reputation in the eyes of both the public and government decision makers.

These assumptions became the basis for an early effort at modeling the activities and structure of the system within which ETV operated, using the methods of System Dynamics and the computer language of DYNAMO. This effort, which will be described briefly below, was undertaken in parallel with an organizational development activity designed to move ETV closer to its desired functions and goals. A review of this modeling effort and a description of the developing organizational structure follows.

ETV-1; A Dynamic Model of ETV and its Environment

Educational television is one component of a larger system, in the sense that ETV provides goods and services to elements in its environment which, in turn, act back upon ETV to influence its ability to provide those goods and services. It was recognized that it would be impossible to model the entire "system" of ETV and its environment; therefore, the modeling effort tried to identify those elements of the system which the analyst (and managers) believed to be (a) critically relate

to the impact of ETV upon its multiple audiences, (b) changeable as a result of ETV's efforts, and (c) economically feasible or within the scope of currently available resources. Thus, the purposes, problems and perceptions of the significant persons within the system determined the components, relationships and structure of the model.

In a sequence of meetings with the members of ETV's Planning Unit and ETV Department Managers, several preliminary verbal models and structural diagrams were prepared which attempted to relate ETV's resources, activities and outcomes. It was commonly agreed that there was a feedback loop from resources, to activities, to educational outcomes, and back through ETV's reputation in those government ministries which allocated resources to ETV. The results of this discussion led to the causal loop diagram indicated below (and referred to in Dr. Root's earlier paper). In this diagram, four types of resources are identified as:

Professional competence of ETV personnel,
Professional time allocated to activities,
Management competence which coordinated these activities, and
The materials and facilities used in these activities.

These resources were allocated to two major types of functions: the preparation and distribution of broadcast materials, and the distribution of equipment and services to customers (primarily schools). These two types of activities were shown as influencing audience learning and government reputation (because these broadcasts are also watched by officials). Of course, these same officials also hear about the outcomes of ETV's broadcasts and services through reports from the schools. The feedback loop was completed as these government officials allocated resources (budget) to ETV.

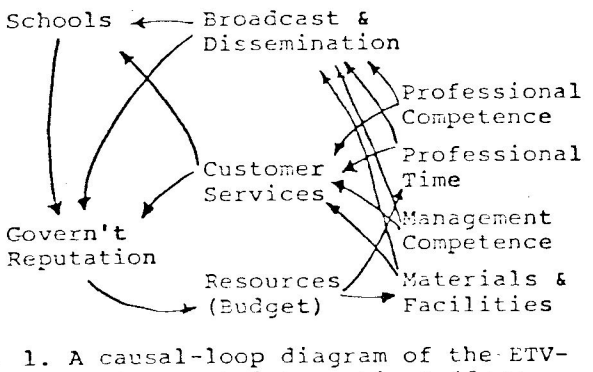

Fig. 1. A causal-loop diagram of the ETV-environment interactions (from Salamation and Root, 1976).

When the Planning Unit and participating managers came to agreement on the basic structure of Fig. 1, the diagram was translated in the symbols of system dynamics and the computer language of DYNAMO. After considerable debugging, the computer model was run under conditions thought to simulate the then-current conditions. The plot of the model's performance indicated that ETV's reputation started from an initial level of 20 (on a scale from 0-50) and steadily declined over a two-year period. In approximately 1½ years of simulated time, reputation had fallen sufficiently that the allocated budget was not sufficient to maintain the facilities and personnel, effectively closing down ETV. Although there were many reasons to assure ETV that it would not suffer the fate suggested by the model, nonetheless it was felt that the model's performance could be substantially improved by policies that would be likely to have constructive effects if implemented in the "real" system. Thus, several modifications were attempted in the model's structure in an effort to find a combination of factors that would improve the performance of the model in ways that would have realistic implications for the real system.

Model Modifications. In a series of computer runs, three basic changes were found that caused the model to grow rather than decline, and appeared to have positive implications for the larger system: (1) redistribute the human resources to allocate approximately 40% to customer services, (2) provide internal training programs to increase professional competence, and (3) conduct seminars and courses to increase management competence. Steps were initiated toward all three of these changes. At the same time, several changes in focus were being forced upon ETV, as will be described more fully below. These environmental pressures have led to a renewed attempt to model this new set of goals, activities and structures.

New Directions for ERTI

One of the early assumptions of ERTI had been that the Ministry of Education (MoE) would eventually develop the utilization system necessary to receive and put into use the services provided by ERTI (formerly ETV). After four years of efforts to cooperate closely with the MoE, it became apparent that this assumption could no longer be held. The structures within the MoE which would be required for the utilization of ERTI's services were not developing. The question then became one of the degree to which ERTI's success should depend upon the performance of another organization. Instead, it was argued that radio and television could also serve selected audiences outside of the formal classrooms of the MoE, and provide those audiences with important educational and instructional services. Further, a number of Learning Resource Centers (LRCs) located throughout the country could be used to facilitate community learning from these radio and television programs. At the same time, this type of non-formal educational network would not inhibit the MoE from using any of the materials and services if it wanted them.

Planning and the Role of Cybernetic Models

Within the past 11 years, this is the third time that the Iranian government (and the second time that NIRT) has attempted to find the most appropriate role for educational television in Iran. Based on intuition, NIRT managers are confident that if ERTI can adopt the "right" policies and establish the "correct" relationships with the other systems in its environment, it would make an important contribution to social change through improved education. However the intuitive assumptions of the NIRT managers can only be tested when policies based on those intuitions are put into effect--and even then, 2-3 years of experience is required before feedback information either supports or repudiates those policies. In order to test some of the assumptions and intuitions underlying ERTI policies, and to increase the likelihood that decisions will have a favorable impact upon intended audiences, a second System Dynamics model is being con-

structed and analysed.

Simultaneous Organizational Development and System Modeling. Now, as was true when the first ETV model was prepared, system modeling is going on at the same time as a new effort in organizational development. This parallel effort is necessary because of the current reorganization efforts of NIRT within its other divisions, which is beginning to result in the formation of two separate radio and television networks, RTV-1 and RTV-2, each with its own mission, goals, staff and facilities. Within this new NIRT organizational structure, the role of ERTI (which is still emerging) will probably be to develop and operate a third radio and television network. The remaining portions of this paper will describe the activities and outcomes of efforts to define the functions and structures of this third R/TV network.

As currently visualized, the functions of the three NIRT networks are approximately as follows: (1) NIRT-1 focused on Iranian news, music and recreation, (2) NIRT-2 focused on Iranian and international culture, and (3) ERTI emphasizing non-formal education and instruction for selected members of the community. In addition, it is expected that this third network (ERTI) will include two rather distinct components: (a) a system of Learning Resource Centers (LRCs) throughout the country which will provide a type of community learning environment which will facilitate learning from radio and television broadcasts, as well as from the books and printed materials provided: and (b) a semi-commercial sub-division which will produce the quantities of non-electronic materials and products that will be needed to support the total ERTI teaching-learning system.

In the process of developing and exploring the new functions of ERTI and the appropriate organizational structure to support those functions, a new model of ERTI was generated. A description of that process and its outcomes follows.

A Model of the New ERTI. To develop a model of the new ERTI, as visualized by the Directors of the three NIRT networks, they were invited to a 3-hour meeting. Very briefly, the sequence of activities at that meeting was:

1. A discussion which led to a simple PROSE model of the factors that influenced the community-learners;

2. The clustering of the factors in the PROSE model, and the preparation of a CROSS-IMPACT matrix, in which the three NIRT Directors estimated the relative impact of each factor on all others (with the results shown in Fig. 1);

CAUSES \ EFFECTS	A	B	C	D	E	F	G	H	I	J	Row Col. Sum
A. ERTI Actions		0	2	10	10	10	3	3	0	10	86
B. Learner, Audience	0		4	0	1	1	0	0	0	7	52
C. Cultural Background	0	10		2	7	6	3	1	6	4	45
D. LRC	4	2	0		2	2	1	0	10	3	52
E. Radio Brdcast	10	6	0	2		2	4	3	5	0	68
F. ETV Brdcast	10	6	0	1	3		3	3	7	0	67
G. Books & Print	3	5	0	5	3	3		5	2	0	45
H. Newspaper	3	1	0	1	3	3	5		7	0	41
I. Face-face Interactions	0	9	0	3	2	2	0	2		5	60
J. Evaluation Network	8	0	0	4	5	5	0	1	0		52
Column Sum	38	39	6	28	36	34	19	18	37	29	

Fig. 1. A cross-impact matrix for the relative influence (on a scale from 0-10) among components of the system affecting learners within Iranian Communities provided with educational radio and television programs.

3. The preparation of a very simple CAUSAL-LOOP diagram displaying only the major impacts shown in the CROSS-IMPACT matrix (see Fig. 2); and

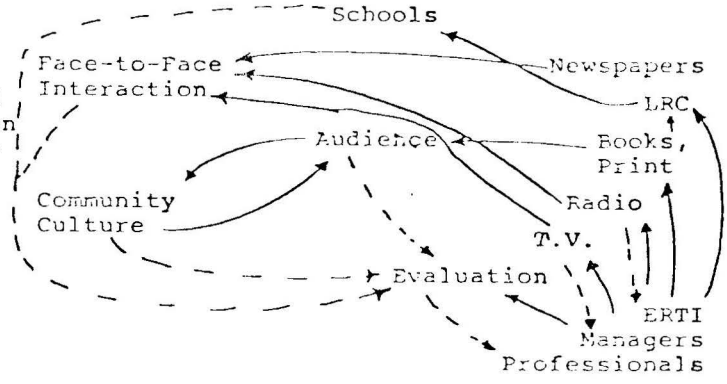

Fig. 2. A causal-loop diagram of the community-ERTI interactions.

4. A discussion of the implications of this causal-loop diagram for the structure and activities of the different units within a revised ERTI.

The three major concepts that appeared to arise from this final discussion can be summarized as (a) the complex functions that need to be performed by the LRCs are considerably beyond the simple operation of libraries or information systems, (b) the need to coordinate the multiple messages and information channels to the community-learners, and (c) the appropriateness of an organizational structure which emphasizes a "Project" mode of operation in which persons with different specialized skills cooperated in the design and distribution of coordinated program through multiple channels.

An Organizational Structure for the New ERTI. The older organizational charts for ETV and ERTI (see Fig. 3, showing the evolving structure), were not considered adequate for these new concepts of the roles and functions of ERTI, since they represented a "functionally oriented" system in which the success or failure of each unit depended upon all preceding and following functions, each standing in a linear relationship with the others. The outcomes of the model described above pointed out the need for a more flexible and dynamic organizational structure.

Through a series of interactions among the NIRT Planning Office, the ERTI Planning Unit, the ERTI Managing Director and a consultant, the organizational structure shown in Fig. 4 was developed. As was suggested by the NIRT Directors from their observations of the causal-loop diagram, this structure emphasizes

a "Project Organization: by showing the Project Managers across the top of the chart, under the supervision of an Operations Manager who reports to the Managing Director. On the left of the chart are shown the "Functional" managers, reporting directly to the Managing Director. Each Functional Manager is responsible for a "pool of professional persons who are assigned to work on Projects under the supervision of the Project Manager.

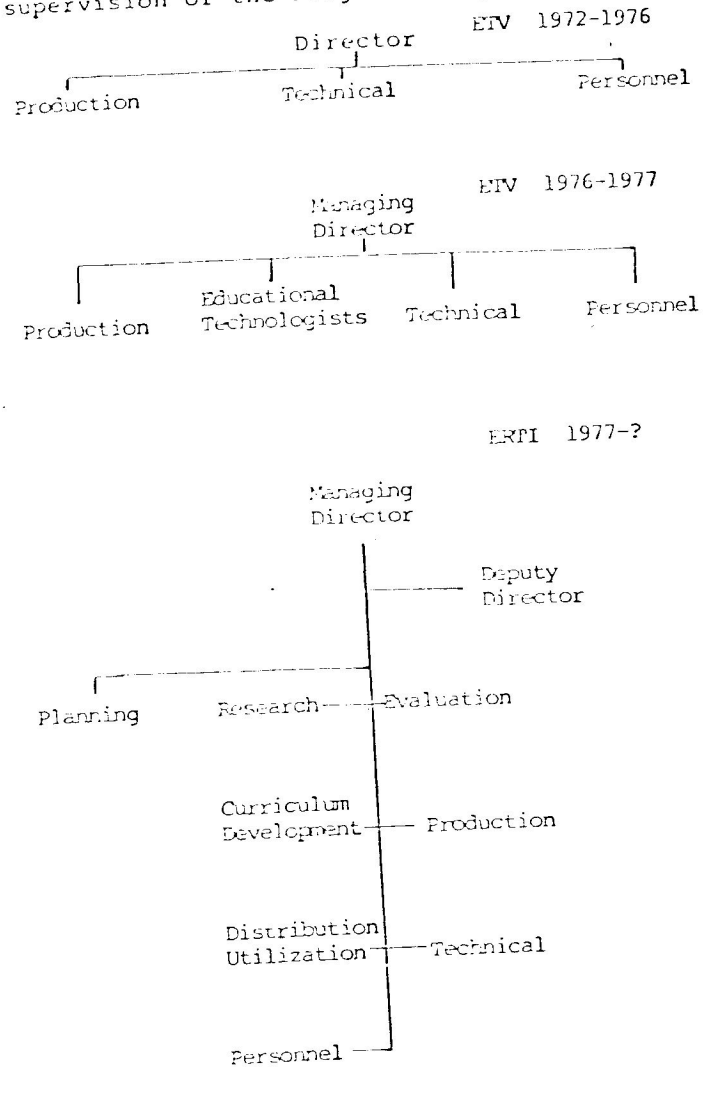

Fig. 3. The evolving organizational structure of Educational Radio and Television of Iran (ERTI).

Proceedings of the International Conference on Cybernetics and Society, Institute of Electrical and Electronic Engineers, Washington D.C., 1977.

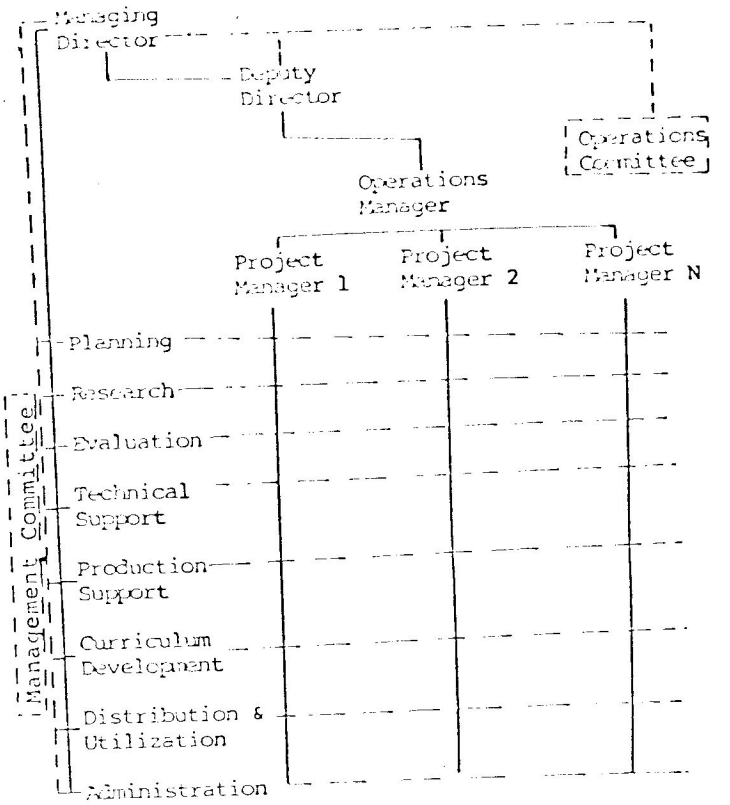

Fig. 4 A proposed "Project Centered" organizational structure for ERTI, 1977.

Summary

Over the past 11 years, Iranian educational television has evolved from an infant organization to a complex, "mature-but-still-developing" network. This organizational development has occurred through various stages, using various approaches. A primary emphasis has always been on the use of seminars with ETV staff members on the ways and means to grow into a highly technological system. Out of such seminars, dynamic models and different organization charts have developed. In this paper, it has been shown how systems modeling coupled with organizational structures have assisted National Iranian Radio and Television in the development of innovative educational approaches to meeting the demands of a rapidly developing country. Systems modeling and organizational development have not only been used as tools for estimating the future behavior of ERTI. It has been evident at the end of each effort in modeling and organizational chart development, the participants have gained new insights into the functions and relationships among the sub-systems of the many inter-related organizations, as well as their own roles in relation to these functions, sub-systems and overall system performance.

References

Root, G. and Salamation, D. A Dynamic Systems Model for Educational Television of Iran. An unpublished report of ERTI (available from the authors of this paper), 1976.