Foreword

Gilbert Levine

Investment in irrigation in developing countries by the major lenders during the past half-century has generally been more economically successful than comparable investment in other agricultural programs. Nevertheless, many of the efforts in the past three decades have not achieved the desired results, and at least some would be considered failures. Why, with all of the professional expertise, with all of the money invested, and with major needs, has this occurred?

I suggest that there is a two-part answer. The first is exemplified by this quote from H.L. Mencken: ‘For every complex problem there is a simple solution . . . and it is wrong.’ The second is the failure to believe in the concept of necessary fallibility.

Realization of the very complex nature of the problems associated with irrigation system design and improvement is relatively recent, though recognition that more needs to be considered than the physical works and the training of operators is not new. Both research and experience have suggested that greater attention should be given to the non-physical aspects of water capture, delivery, and use, but the internal objectives and constraints of major donors and related national agencies have often limited such consideration. In place of designs and implementation tailored to individual situations, models that simplify the complex problems have been used. The Taiwan model of irrigation association, with rotational irrigation as a centerpiece, was prevalent in the 1980s with limited success. More recently, the ‘Mexico mode’ of water user organization has been the basis, often with a token emphasis on the experience of farmer-managed irrigation systems. The results have frequently been less than anticipated. Even the application of these models has been problematic because those involved in planning and implementing improvements were often constrained in their ability to carry them out. Terms of reference, whether by the international lenders and donors, or by the
responsible national offices, not infrequently imposed time limits for planning and implementation that prevented appropriate interaction with the end users; unrealistic requirements for user participation resulted in *nominal* rather than *actual* participation; conflicts of interest, especially when the agencies and individuals involved may be adversely affected by the results, have delayed and prevented implementation. However, even as understanding of the need to address the problem of the complexity of the human-irrigation environment has grown, the acceptance of our inability to fully do so has not.

This brings me to necessary fallibility. In many areas of human endeavor, there is either insufficient information, or understanding, or available resources, individually or in concert to bring about successful action. Nowhere is this more prevalent than in the area of irrigation system design and improvement where there are multiple smallholder users. The cost of obtaining the necessary information of the physical environment as well as the social environment at the scale required for successful design would be prohibitive, even if we knew what information was necessary and the methodologies for obtaining it were available. Thus, under these constraints, there must be recognition that the initial efforts *necessarily* will have mistakes and inadequacies. The first implementation, unavoidably, will be an ‘approximation.’ To permit appropriate modification in a ‘second approximation,’ sufficient monitoring, feedback, and resources should be included to identify and to implement corrections and changes.

As the irrigation community moves from the era of oversimplification to acceptance of the complexity inherent in the sector, research such as that presented in this book provides understanding that, at least, will help to make the ‘first approximation’ a better one. At best, it provides an approach that addresses both the complexity and fallibility problems.

*Gilbert Levine*
*Professor Emeritus*
*Mario Einaudi Center for International Studies*
*Cornell University*
*Ithaca, NY*