DISCUSSION

Hugh Rudnick and Enrique Fernandez (Universidad Católica de Chile, Santiago, Chile): The author is to be complimented for bringing the attention to the "new paradigm" of power systems. Significant developments (conceptual, economical, mathematical) have to take place to adequately face and manage the paradigm, where transmission management and pricing is the focus of attention.

We regret the author does not place the Chilean experience in the adequate perspective in his international comparison. Chile, although with a very small electric power system (mainly hydroelectric, with 2500 MW maximum demand in the central grid in 1992), was a leader worldwide in the changing of the shape of the power industry, deregulating, privatizing, establishing competition and creating an open access of transmission systems. The experience started in 1978, when the Chilean government began adapting the electric power sector to the open and competitive market economic system being established since 1974 in the country as a whole [1]. A systematic restructuring of the power sector was initiated, marginal pricing implemented in 1980 and a new electrical law passed in 1982, several years before Ms. Margaret Thatcher published her white book "Privatizing Electricity" in March 1988, that lead to the changes of the UK electric sector in April 1990. A whole restructuring of the Chilean sector was achieved, with clear and stable defined rules and operational experience, before any extended privatization took place.

Some major actions taken, aiming to deregulate the sector, decentralize it and introduce competition and private capital, were:
- design of a new price system on the basis of marginal supply costs. The system establishes explicit generation to distribution sale prices, transfer prices between generating companies, rates applicable by distributing companies to small end-users, and, finally, freedom of prices for large consumers.
- state companies were divided between generation-transmission and distribution, before privatization took place.
- implementation of a "generator's club", the Economic Load Dispatch Center, to coordinate the operation of generating companies with installed capacity over 2% of the total system, to obtain the minimum overall operating cost of the system. This Center provides the framework for competition in generation.
- the high voltage transmission system is operated on an open basis with access to all, with a common pricing scheme. The distribution networks are also open to all.
- prices are regulated for consumers under 2 MW. Prices are evaluated as the combination of generation-transmission marginal costs and distribution average costs.

The new structure and pricing system has been operating adequately, all the distribution and transmission installations are fully private, with only a small presence of the State in generation. An improvement in the transmission pricing scheme took place in 1990, with a law incorporating the "areas of influence" concept (mentioned in your discussion on Argentina). Nevertheless, this is an area where an adequate solution is still searched for. Independent of the ownership of the grid (held by ENDESA, with an administrative separation taking place), difficulties still arise with the transmission pricing scheme. The significant differences in payments among different generators and consumers, the economies of scale involved in the generation-transmission sector, the complexities in determining the areas of influence, the lack of adequate economic signals for transmission development are some of the issues being discussed. Different groups (the government included) are looking for improvements to the law and 1993 is seen as a crucial year to overcome the lack of consensus. The discussers are working with local utilities to analyze alternative schemes [2].

An excellent discussion on concepts and frameworks for transmission access is provided in a paper by Dr. Ignacio Pérez-Arriaga [3], who has been working with us in studying the Chilean scheme.

The Chilean experience has been studied with interest by other Latin-american countries, Argentina taking the lead, and as you mention, Peru following. A recent draft of the new Peruvian electrical law follows closely the Chilean scheme. Mexico has also been studying the scheme.

The author draws some conclusions and formulates some questions with reference to the United States electric power system which will surely stimulate further developments. We call the attention to the discussions taking place in Europe towards deregulating and creating third party access and competition in electricity [4], where similar problems are arising and valuable research and development interaction could take place.


Manuscript received March 12, 1993.

R. D. Tabors: Rudnick and Fernandez have provided an extremely useful addition to my paper. Their comments both correct errors in understanding on the part of this author and provide an expanded insight into the role that Chile has played as a leader in the development of the electric power marketplace that my paper argues will emerge in the decade ahead. The commentors point clearly to what this author believes to be a need within the power industry worldwide at the present time, the development of a more active forum for information exchange on the economic and regulatory developments associated with market based operations of electric systems, and more specifically of the transmission components of the systems. The author would like to thank Rudnick and Fernandez for their comments.

Manuscript received March 10, 1993.