

## Plenary session summary of theme b

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Following are the edited version of the transcribed remarks  
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There were numerous interesting and important ideas, both theoretical and practical, presented in the papers and generated in the discussions of Theme B. We will present here just a few of the key points which emerged from this set on papers.

The most important single idea from Theme B is that we are emerging from an era of infrastructure to an era of management. That is, the dominant concerns are no longer how to expand the infrastructure of transportation but are how to manage the system effectively. We have of course seen some of this emerging, for example, in the increasing emphasis in both public and private sectors on short-run concerns, on small-scale projects, on operating and pricing strategies, and so forth. What is new is the depth to which this can influence the choice of research problems, the types of research skills required (for example, understanding organisation behavior), and the need for new kinds of professional and technical skills in transportation. To amplify this point, I will discuss some of the major directions for research and management concerns which were presented, as well as some of the gaps which were not presented.

Operations and service planning of transportation operators was discussed extensively, both for urban mass transportation and other modes. This topic was discussed in two different ways. First, operations and service planning was discussed as a technical methodology, with strong links to demand modelling, but a heavy emphasis on computer applications and technical methods of route planning and forecasting. Second, it was discussed in terms of its organisational and institutional dimensions. Representatives of transit operators emphasised that the fundamental issues in getting significant changes in routes and schedules accomplished were organisational and political, and that effective strategies required "packages" combining multiple actions to meet the needs of different interests, with participation of affected interests, with participation of affected interests in the planning process, and with support by top management and with well - coordinated internal processes within the organisation.

This theme of duality, of the need to deal with both technical and organisational issues in parallel, is an idea that runs throughout almost all of the Theme B sessions.

In the area of technical methods of analysis, there were discussions of what we should be trying to model on the supply side, to complement the development of powerful demand models, and reports of information systems developments for various modes and for both the needs of users as well as operators. Here the key theme that emerged was that information systems become important not only as technical tools but also as powerful aids to management decision-making, not simply for long-range planning as has been the traditional concern in transportation planning, but most importantly for current planning and current service delivery management. Several papers dealt with the question of needs of users within the organisation and how to meet them through better analysis tools and better information systems capabilities. Especially important was the problem of gaining user acceptance of improved tools or systems. It was emphasised that the issue was not simply to develop a better algorithm but how to develop good user interfaces which enable the user to interact effectively and in a human way with the tools provided. There was discussion of distributed processing and microcomputers as ways in which optimisation methods were packaged to gain acceptance and be effective.

Another issue that was discussed was the need for an explicit emphasis on service to users. Important questions here were, how is service determined, by whose actions in the operating organisation and by what interactions with the users. Again, the traditional emphasis on service has been as an abstract, technical concept, something to be measured and incorporated in technical models. One paper presented at the conference described the service attributes which the customer of the system perceives as being jointly established by the interactions of the clerks and the passengers. This paper raised important questions about characterising service and measuring it. The delivery of service requires coordination of marketing and operations, and effective management of different types of resources. To actually achieve management targets in service requires not simply information systems and models, but also having the ability, through theory and practical knowledge, to improve the organisation by changing attitudes and procedures at management and at working levels.

The approach which is emerging is that, in this era of management, the relevant theories and methods for both practical and research work include not only the analysis and information systems techniques with which transportation professionals have been comfortable in the past, but also techniques of management and control, which are new to this community and which may be an era for substantially-increased coverage at the next conference.

In the policy arena, the central concern is how governments can (or perhaps, whether they should) affect the decisions of transportation organisations. Several papers dealt with regulatory and other aspects expanding economic theory in this regard. Several other Papers examined policy analysis from organisational and institutional perspectives and demonstrated how these techniques could be applied to analyse

alternative organisational forms for the delivery of services. Here again we see the development of systematic frameworks and methods which can add a sound basis to decisions on organisational design. More examples of systematic policy analysis of organisational and institutional choices for delivering transportation service would be highly desirable at a future conference.

A last topic concerned the issues of education and training, both for transportation technical professionals and for managers and workers in the transportation enterprise. This was not addressed explicitly by papers, but was implicit in all of the above observations. There is a need to examine transportation education, for both professionals and managers, to see if they are being given the appropriate theoretical and practical knowledge necessary to operate effectively in this new era of transportation management. Second, there is a pressing need to bring into discussions in the research community, such as this conference, the perspectives of workers and of managers as the nature of the work environment and of the management control strategies change. After all, if researchers and practitioners are to become more effective at changing transportation organisations, then they should be engaged in active dialogue with those who work in those organisations and who will be affected by proposed changes. Third, although some papers touched on the application of these ideas in developing countries, it is clear that while these ideas are indeed applicable in the third world, there are significant differences in applying them in these contexts. Thus priority should be given in the next world conference, not only to the general theme of improving transportation management, but also to the specific aspects of doing this in developing countries.

To summarise: the shift to an era of transportation as management has only just begun. The development of relevant and productive theories, and of useful practical techniques, is only just beginning. The papers presented under theme B suggested some of the directions of productive research, but there is a substantial amount that needs to be done before research in this area becomes as well-developed as that in other areas such transportation systems analysis and understanding consumer behavior.