

From EPFL to

Bureau d'Aide à la Décision

by

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Then an institute and now a company

For more than 15 years, the Institute for environmental engineering of the Swiss Federal Institute of Technology in Lausanne (EPFL) has been active in the MCDA field under the leadership of Professor Lucien Yves Maystre. Concrete application of the MCDA methodology to environmental issues, with a group, in Switzerland and in Africa has been the leitmotiv all along. When Prof. Maystre retired last year, the authors - two of his former collaborators - took over the activity in the MCDA field on a private basis, under his patronage.

Research activities and contracts

During the EPFL era, research activities and real-world contracts have been tightly connected. For example, in the mid-80', Jean Simos' thesis - which became a best-seller book - was based on a contract Prof. Maystre and a group of collaborators undertook for the County of Geneva about waste management. More recently, three contracts granted by the Federal Office of the Environment, Forest and Landscape (FOEFL) and various Swiss counties to Prof. Maystre and D. Bollinger gave a strong factual basis to their book that was published at the end of 1998.

For this reason, the switch from a public to a private-run activity was not as difficult as it could have been expected! Up to now, the major clients of the company have also been federal and county administrations. Even the everyday business at the Bureau d'Aide à la décision can lead to interesting questions: for instance, in a recent case, we dealt with a group of experts who had to agree on a common set of weights, for legal reasons. We found a solution (based on SRF, see below), which satisfied the group, but what about its theoretical foundation?

This connection with real-world problems influenced all the research at the EPFL, even for the research that was not linked to a contract. For instance, the thesis of Ousseynou Diop was an attempt to realise a parallel study in Dakar (Senegal) of Jean Simos' thesis (possibility of transplantation of MCDA in a different culture). More recently, J. Pictet's thesis - also published as a book - has been devoted to the definition of a MCDA framework for various environmental evaluation methods. Amadou H. Maiga's doctorate used MCDA to compare small cities water supply systems in different African countries.

The research reaped the benefits of the results on specific topics obtained by numerous undergraduate and postgraduate students at the EPFL.

All this research led to two major streams of results, which are connected:

- * Conditions and practical ways to deal with a group of people in the search for a common decision.

- * Practical tools for communication within a group, especially visual ones.

The first stream has been investigating the possible use, jointly with the MCDA approach, of different concepts of the social sciences, such as negotiation, search of a consensus, legitimisation, etc. This led to the development of a kind of "social engineering" which has been tested all along in practice. More recently, J. Pictet proposed, with Val Belton, a general framework to analyse the way of applying the MCDA methodology with a group, which is independent of a specific aggregation method. The second stream gave birth to different tools, among which we can highlight:

- * SRF: a visual weighting aid for outranking methods using a playing cards-like approach, recently improved and implemented on computer by Bernard Roy and José Figueira.

- * SURMESURE: a visual display allowing the overlay of numerous outranking methods results.

- * AGATHA: a visual analysis of the outranked alternatives impact on the outranking ones, by getting rid of one after the other (like in one of Agatha Christie's books, thus the name).

These concepts and tools are now the foundation of our activity at the Bureau d'aide à la décision.

Concerning the aggregation methods, a choice had been made up front to choose one method and to stick to it: the ELECTRE one, which is in fact, a family of methods. The choice has been strictly respected until recently. The knowledge of these methods led to a book in which all these methods are explained to non-mathematicians, along with practical tips and a short presentation of concrete projects.

On top of the books already mentioned, two others have to be added:

- * A recent one presents the use of MCDA to assess various alternatives, for several African projects in the field of sanitation; it is mainly based on Ousseynou Guène's thesis.

- * The other, in English, is the result of an Irish-Swiss collaboration and will address the connection between MCDA and environmental evaluation, also from a practical point of view.

One publisher has published all these books, but the last. Taking also into account the two books of Alain Schärli and the one of Antoine Andenmatten, this publisher (Presses polytechniques et universitaires romandes in Lausanne) could arguably be the largest in the MCDA field, at least in French!

The EPFL era is now over. Will the new millennium see the emergence of a new type of MCDA research: the private-driven one?

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