

# **THE MANAGEMENT OF THE FUTURE ETHICS IN OPERATIONAL RESEARCH : Respect, Multicriteria Management, Happiness**

by

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As Physics is modelling Natural Real World situations, Operational Research is modelling Human Systems. I strongly believe that, for that reason, OR will have a major role to play in the future. The Human Systems, especially the socio-economic ones, are becoming day after day more and more complex, even hypercomplex. Everyday new regulations arise: local, regional, federal, national, international ones. Every day new markets break out, others close. Every day new opportunities suddenly appear. Every day new needs, new claims, new demands are expressed. Every day new technologies are finalised. Every day some raw materials exhaust,... Moreover the evolution of such systems is chaotic, unexpected discontinuities are taking place, new components emerge, new trends are initiated,... so that the future is unpredictable. It is no longer possible to manage qualitatively Human systems only by appreciation or by feeling. Like in Physics, quantitative tools are now also more and more requested to describe, to understand and to manage our Real World human environment. Only modelling, organisation and structuration tools will provide the decision-makers with a clear view of how to make the appropriate decisions. It is the field of OR.

On the other hand the future of mankind is extremely worrying. Two thousands years ago, say at the time of the Greek and Roman civilisation, human beings had no significant influence on the evolution of Earth. Presently, the industrial development is so strong that Man can decide on the future of our planet. Human beings are becoming more and more numerous, natural resources exhaust, waste is increasing, human behaviour pollutes our environment, the temperature of the atmosphere increases, ice on earth is melting, the sea level could possibly rise with 100m so that 90 % of the agricultural area would disappear,... Our planet is in danger ! However let us be optimistic: human beings are clever, very clever. Fantastic tools are now at their disposal for analysing, investigating, simulating and managing the future, new tools can be developed, research is progressing. I strongly believe that an appropriate management of the future can harmoniously secure mankind for thousands of year, but a non appropriate one could bring us into insuperable difficulties very soon, possibly in a fifty years from now.

OR is now facing a bifurcation point. An Ethical behaviour for the management of the future is requested ! Everybody is involved, everybody has to contribute. It is a major challenge for all OR people.

What is requested ? Ethics in OR for me means: Respect, Multicriteria management and Happiness.

**Respect:** At least four main communities are involved in decision making: the Industry, the Economy, the Governments and People. An Ethical behaviour implies that each community should respect the other ones when decisions are made. Without respect the harmonious management of the future would be strongly jeopardised.

**Multicriteria Management:** Each community has its own objectives, its own optimisation criteria. The Industry has technological ones, the Economy financial ones, the Governments social ones and People environmental ones. People request sustainable development, a proper future for their children and for the children of their children.

Among the set of possible decisions, each community has at any time an optimal solution according to his own optimisation criterion. But the notion of optimal solution is very weak, probably the weakest ever produced in OR. Change the objective function and you have another optimal solution ! Most of

the concerned people have in mind that the optimal solution is the absolute best one. This is wrong ! Definitely wrong ! Each community has its own objectives, its own optimal solution. They are all different ! The notion of optimal solution is extremely unstable and fragile. Moreover, it is often the case that the optimal solution of a particular community brings the Earth into danger: “maximum production” implies exhaust of natural resources, “optimal financial strategies” imply less money for social affairs, optimal environmental programmes threaten research, experimentation and technology. What we need is to integrate all the objectives, the criteria of all communities. We need compromise solutions, no longer optimal ones. Up to now the only tool to reach compromises is Multicriteria Analysis. Ethics requests a pluralistic view, a multicriteria management.

Happiness: It is crucial for each community to feel happy with the compromises reached. It is a matter of respect with regard to others. It is beautiful and great to feel happy when you know that the point of view of all parties have been taken into account. If one particular group doesn't feel satisfied with compromises and starts manoeuvring to move the decision to its own optimal one, then a war starts. A bad war ! No happiness, no welfare is possible with such wars. No harmonious future can be reached if all the decision actors don't feel happy with compromises. Feeling happy with the decisions, which take all the point of views into account, is also a question of Education and therefore OR should also be involved in Educating People.

Ethics including Respect, Multicriteria Management and Happiness consists in the bifurcation point OR has to face now. If we don't succeed, our future is in danger.

This message has been diffused during the 12th Mini Euro conference (Brussels, april 2002). OR has a brilliant future if we succeed in enriching our models with Ethics. This is also the major goal pursued by the Euro Working Group Prometheus on Ethics ([www.prometheus.vub.ac.be](http://www.prometheus.vub.ac.be)).

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