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Ethics in Operations Research and Management Sciences: A never-ending effort to combine rigor and passion[☆]

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ABSTRACT

From practice to theory, we introduce a state-of-the-art stream of papers that promotes an inclusive and complementary consideration of both analytical methods and ethical values in Operations Research and Management Sciences (OR/MS). We suggest a perspective according to which, the consideration of ethics in OR/MS constitutes an enrichment of our discipline as well as a contribution to a more sustainable future in general.

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1. An introductory background

Although primarily trained in using applied mathematics in our academic research we, the editors of this Special Issue, were always passionate about ethical issues in Operations Research and Management Sciences (OR/MS).

By ethical issues we mean a wide range of concerns from environmental sustainability to social justice and human values.

It is our conviction that proper integration of such concerns in the mainstream of OR/MS constitutes an enrichment of our discipline as well as a contribution to a more sustainable future in general.

The issue then is to discover what “proper integration” actually means, and this is not unrelated to mentioning our

mathematical training. In fact, we believe that the traditional rigor and search for objectivity that has characterized OR/MS since its inception should not be seen as a barrier to the integration of ethical concerns, even if such concerns are particularly difficult to define objectively, to measure quantitatively, and to translate smoothly into practical prescriptions. In our experience, this is indeed not an easy endeavor. On the other hand, the richness of an inclusive and complementary consideration of both analytical methods and ethical values is worth the effort, if only for the sense of professional relevance and self-accomplishment it brings.

Considerations of ethical nature are far from being novel in management. For instance, sociologists such as Rakesh Khurana argue that the history of business education has rather shown a decline in the consideration of ethical values. Professional and moral ideals that once animated and inspired Business Schools would have been displaced by the perspective that managers are merely agents of shareholders, supposedly held accountable to the cause of share profits

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only [1]. A similar perception of this historical trend can be found in Amartya Sen, always keen to remind us that Adam Smith also wrote about moral sentiments as a legitimate and noble source of motivation [2].

It is nevertheless striking to observe how ethical discourses pervade this first decade of the 21st century. It appears the time is right to revisit the topic by calling upon our fellow scholars to give us a state-of-the-art perspective on ethics and OR/MS.

This special issue builds on earlier efforts such as the pioneering 1994 book edited by William Wallace [3]. As the reader will recognize, this heritage is shared by most contributors to this Special Issue, quoting from this book and actively building on it. Another apparent milestone is a workshop we organized at INSEAD in 2003 with a small number of colleagues, to reflect upon ethical issues in OR/MS. To a large extent this workshop followed a call by Jean-Pierre Brans to the members of the European Association of Operational Research Societies (EURO) to sign an Oath of Prometheus (a short description of which can be found in the article by Saul Gass in this Special Issue). Brans, with a lot of energy and enthusiasm, has promoted reflection and discussions on ethical values, by organizing small conferences and leading the EURO Working Group on OR and Ethics. This Working Group is now headed by Fred Wenstøp, who is also contributing a paper to this Special Issue.

In the next section, we introduce the sequence of articles in this Special Issue. We selected to start this issue with rather practical and institutional topics and to finish with articles exploring more philosophical considerations.

Even in the relatively small group of scholars writing about ethical issues in OR/MS, the reader will appreciate the variety of approaches, methods and recommendations. Clearly, ethics in OR/MS is not a mature field composed of a well-defined set of concepts, methods, prescriptions and a shared culture. However, it is filled with passionate researchers who spend genuine efforts to convey their commitment. We wanted this Special Issue to reflect this diversity and passion.

A second objective was to look for an integrative and coherent perspective that would give the reader a good sense of the state-of-the-art, assuming this would be useful to researchers and practitioners looking to better integrate ethical concerns in their work. We also hope this will be helpful to scholars interested in doing research on ethical issues, by giving them access to a vast range of up-to-date references and helping them identify potential avenues for research. Finally, we would be pleased if this Special Issue motivated some to initiate institutional and practical initiatives for our profession.

The final section of this introduction to the Special Issue presents our personal standpoint. We candidly share our synthetic views on the contextual, emotional and methodological dimensions of ethics in OR/MS. Again, our intention is to suggest a perspective that would help the different voices to be heard rather than to hand the microphone to one in particular. We would also like this work to motivate some concrete actions, at the level of the individual (such as, for instance, increased awareness, self-reflection,

increased psychological autonomy in ethical analysis, enhanced knowledge of specific emotional reactions) or at the institutional level (increased salience of ethics in journal statements, more presence in conferences, less tense communications, participatory discussions about ethical guidelines in societies, etc.). We hope that the reader will trust that we do not pretend to hold a monopoly on ethics in OR/MS but merely intend to share our commitment to a subject that is increasingly important, extremely complex and very fulfilling.

2. A state-of-the-art stream of papers

2.1. General presentation

Our collection of articles starts with papers from Saul Gass and Warren Walker about ethical guidelines, codes of conduct and generally accepted best practices. These articles answer questions like: which ones are used? how can they foster ethical behavior? we then follow with two practical applications: a paper from Antony Cooper, Hans Ittmann, Theo Stylianides and Peter Schmitz and one by John Brocklesby. These are examples of OR analysts who attempted to diligently follow their ethical concerns in specific studies.

After this first set of papers, the question arising is whether guidelines, codes and generally accepted best practices are sufficient to guarantee ethical behavior. In fact, it can be tempting not to look too closely at ethical issues when faced with an otherwise interesting and perhaps lucrative OR study, or when there are some strong time pressures. Would a Research Ethics Committee help in such cases? How could this be more than a way to outsource ethical issues so we do not have to worry about codes or due diligence ourselves? This is where Leroy White's article comes in, which stresses the importance of the context, arguing an outside committee could indeed be a real support at times, without being the ultimate solution.

One could say the articles so far present potential "safety belts" (a professional code of conduct, a personal checklist, an outside committee): they can all help avoid ethical traps to some extent and are therefore useful in some conditions. Perhaps all of them together constitute the best shield against ethical traps.

The next two papers, by Felix Rauschmayer, Iordanis Kavathatzopoulos, Pierre Kunsch and Marc Le Menestrel and Pierre Kunsch, Iordanis Kavathatzopoulos and Felix Rauschmayer clarify why good intentions and best practices may simply not be sufficient. Situations are frequently too complex, dynamic and plural in their values. Perhaps ethical considerations should be incorporated from the start, using less conventional OR methods.

The next article, by Fred Wenstøp and Haavard Koppang, argues that many problems have high levels of value conflicts. This contrasts with the popular belief that OR applications are mostly value-free. One may therefore perhaps argue that for problems with low value-conflict potential the safety belts discussed above are good enough, but in more complex situations and/or value-loaded applications they need to be supplemented by other safe-guarding measures.

Finally, the article from Emmanuel Picavet lifts the discussion to a more philosophical level of prudence, art and science and poses a more fundamental question: is the primacy of efficiency an impediment to ethics in OR/MS because it tends to ignore the true diversity of values? The question obviously gained relevance after the recent financial crisis... .

2.2. *Ethical guidelines and codes in operations research, by Gass [4]*

This opening article reviews past efforts of OR Societies and institutionalized bodies to establish deontological principles with the aim of promoting ethics in the profession. The author considers these guidelines and codes necessary for OR to be a genuine profession of its own. Moreover, their absence at the level of INFORMS raises both a concern and a motivation for institutional action. The article provides solid benchmarking for such an endeavor and also constitutes a call for action.

2.3. *Does the best practice of rational-style model-based policy analysis already include ethical considerations? by Walker [5]*

To what extent do we really need ethical guidelines? This question lies at the heart of this second paper. Independently of whether or not tenets of good practice are indeed institutionalized as ethical guidelines, the author argues that OR analysts “will be acting in an ethical manner if they apply the generally accepted best practices of their profession”. Very much grounded in the scientific method, the author presents such requirements of best practice in great precision along the OR analysis process of which he is an eminent specialist.

2.4. *Ethics and operational research: ethical issues in tracking cellular telephones at an event, by Cooper et al. [6]*

This third article is a practical example of a team of researchers eager to integrate ethical considerations in their field research project, much in the spirit of Warren Walker. In the context of their experiment to track cellular telephones, they draw from available material and support such as their ethics committee, ethical guidelines, and literature to assess whether their practice of OR is conforming to ethical standards. As conscious and concerned scientists in search of improving their peace of mind, they aim to be fully aware of the ethical issues and to be able to validate their work throughout the process. By doing so they provide a good example of how one can carefully and explicitly address ethical concerns in the process of OR.

2.5. *Ethics beyond the model: how social dynamics can interfere with ethical practices in operational research/management science, by Brocklesby [7]*

Grounded in another practical application, this article presents a structured process of self-questioning ethical peace of mind. The author identifies the many aspects he considered ethical at first glance but that would merit more

critical appraisal after contradictory experience. His main argument is that the context of specific situations may easily override good intentions. Important ethical issues can be missed, not because of a lack of concern, but because the complexity, subjectivity and emotional discomfort of dealing with the shadow part of ethics may blind us. A case in point is the definition of the OR project. It is often hard to question the wider strategic perspectives and requirements of a proposed study and we tend to accept it as is, which in the author’s case was “professionally naïve and ethically suspect”. This article provides many down-to-earth lessons for OR/MS practitioners who want to learn ex ante about the ethical traps in which we are so prone to fall.

2.6. *Challenge of Research Ethics Committees to the nature of operations research, by White [8]*

This paper focuses on two aspects essential to Cooper et al. and Brocklesby. The first is the rising importance of Research Ethics Committees, frequently the institutional process confronting researchers and practitioners to ethical issues. The second concerns the influence of the situational context. The author stresses the point that ethics can certainly not be reduced to ethical versus unethical individuals since the institutional context shapes ethics in the profession to a great extent. The paper ends with a series of practical points that should be raised by Research Ethics Committees, thereby providing a useful benchmark.

2.7. *Why good practice of OR is not enough—ethical challenges for the OR practitioner, by Rauschmayer et al. [9]*

This article proposes a systematic analysis of the argument that good intentions and best practices, even when they conform to ethical standards, may not be sufficient to guarantee an ethical practice of OR/MS. The complexity, subjectivity, ambiguity and emotional content characteristic of ethical issues raise a wide range of challenges. The authors attempt to structure these challenges and link them to state-of-the-art research literature at the fringes of OR/MS, which could therefore easily be overlooked. Of particular interest are, for instance, their presentation of a typology of uncertainty and the psychological distinction between heteronomous and autonomous ethical thinking.

2.8. *Modeling complex ethical decision problems with operations research, by Kunsch et al. [10]*

If one wanted to integrate ethical considerations in OR from the start, how would one proceed? This paper reviews the different prerequisites and techniques for modeling complex ethical decisions in OR/MS. The authors show how open OR models can be when addressing ethical issues. It is clear they believe OR should at times be “less conventional” to genuinely meet the ethical challenges of sustainability, social justice and diversity of values, and demonstrate that many techniques are readily available.

2.9. *On operations research and value conflicts, by Wenstøp and Koppang [11]*

If one doubts “conventional OR” indeed tends to shy away from ethical challenges, this paper demonstrates the extent to which OR applications show a preference for “value-free” problems. The author uses an assessment of a sample of OR applications with a value-conflict scale to make his point. The paper then digs into the issue of emotions when confronted with what the author terms “high-level conflicts of values”. This results in five clear norms worth reflecting upon when engaging in values-loaded OR applications.

2.10. *Opportunities and pitfalls for ethical analysis in operations research and the management sciences, by Picavet [12]*

This last paper paints the big picture where ethical issues in OR/MS are understood as instances of “the basic enduring questions concerning prudence, art and science”. Inherently at the interplay between scientific modeling and the application of models in social contexts and practices, OR/MS are best understood against a background of ethical questions. This view results in practical recommendations, making the pitfalls that could prevent the ethical maturation of the profession explicit. In particular, the author suggests that OR/MS will have difficulties to fully address ethical challenges without questioning the primacy of the efficiency goal and truly embracing the diversity of values.

3. Where do we stand?

Reflecting on the history of ethics in OR/MS, it is striking how much this has been an on-going process. Ethics is not a problem to be solved. There is no definitive answer to ethical issues in OR/MS that can be nailed down in an academic article, a special issue or a book. Rather, ethics is nourished by the passion of people who discover in the promotion of ethical issues a self-fulfilling motivation and thereby hope to positively contribute towards others.

Looking into the future, this calls for some prudence in setting goals and prescriptions about how the OR/MS community should continue its on-going relationship with ethics. It is in this resolute spirit of both enthusiasm and prudence that we share our personal reflections below, building on the idea of alleviating barriers to the natural flourishing of ethical concerns [13]. We first address issues of contextual nature, then move to emotional ones, and end with conceptual and methodological reflections.

With the caveats mentioned earlier, the context for considering ethics in OR/MS may never have been as favorable as today. It has become both a necessity and an opportunity. The efficiency of mankind in producing goods and services is now so well developed that other concerns become more prominent, like issues of distributive social justice underlying accessibility to these goods and services. Similarly, the fundamental belief that this efficiency is naturally compatible with a sustainable future is significantly shaken [14]. Finally, young talents are increasingly concerned about self-

accomplishment, striving for a more comprehensive and inclusive approach to social issues.

Hence, this is no longer the time to posit that ethics is not relevant for OR/MS. At best, this would be an illusion created by a lack of awareness. At worst it would be denial, bearing the risk of being perceived of bad faith. We believe there is plenty of room to remove the barriers such a blind spot can create. In terms of practical action, the creation of forum initiatives within leading journals in the field, the explicit acknowledgement of the variety of ethical concerns and the legitimacy of a wide range of approaches, would send a positive signal that integrating ethical concerns can contribute to academic success. Moreover, an institutional adoption of ethical guidelines appears to be a desirable project to enhance the professionalism of the discipline in dealing with ethical concerns. The process by which this could be achieved, for instance within INFORMS, would certainly matter as much as the content.

Procedural concerns are indeed much related to the psychological and emotional dimensions of ethics. Although self-elected promoters of ethics tend to emphasize the urgency of their cause, we believe there is also wisdom in relaxing and taking the time to address these issues with rigor and patience. Ethics within the OR/MS community cannot be promoted in an atmosphere of frustration, guilt and conflict. If ethics is a matter for all, it is essential to choose processes that build upon the goodwill and good intentions of all rather than nourish the emotions associated with a dichotomy of good versus bad. To alleviate emotional barriers to the promotion of ethical values in our discipline, individual actions where one reflects on own feelings with an intention to mature such self-relationship and welcomes dissenting perceptions in group situations may be useful. As most ethical concerns are of interpretive nature there is no single legitimate ethical perception of a given fact. As we learn from many of the papers in this Special Issue it is a matter of deliberation, inter but also intra individuals, rather than a matter of calculation and then confrontation of results. The rise of group decision-making methods and decision-making aids may offer increasing possibilities for OR/MS analysts to become experts in values-loaded situations.

The limitations of the “scientific method” to deal with interpretations that are inherently subjective lie at the root of the potential tensions between OR/MS and ethical issues. In [15], we proposed to structure that tension by looking at ethical values outside, within, or beyond OR models. Dealing with ethical values outside OR may be scientifically comfortable but, as we pointed out, bears the risk of a defensive approach. Integrating ethical values within OR models raises the issue of weakening the objectivity of the OR methodology, the scientific grounding of the discipline and its prescriptive power. Incorporating ethical values beyond the OR methodology calls for more understanding of, and specific attention to the articulation of objective and subjective values. It is a way to look at these methodological aspects that seems specially promising to us.

In our view OR/MS is an area of scientific development where today such articulation of objective and subjective

values is one of the most relevant and most studied. OR/MS combine mathematics and experimental methods, economic and psychological analysis, natural and social sciences, material and immaterial motivations, and so on. As exemplified in some of the papers in this Special Issue there is room for objective methods to analyze the subjectivity of ethical judgments in OR/MS. Likewise, there are needs for theoretical research on the measurement of ethical concerns and how they relate to the measurement of the “conventional” objective function. Such integrative approaches would contribute to offering perspectives to OR/MS researchers and practitioners and to making our discipline part of the solution for the ethical challenges ahead.

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