International Society on Multiple Criteria Decision Making

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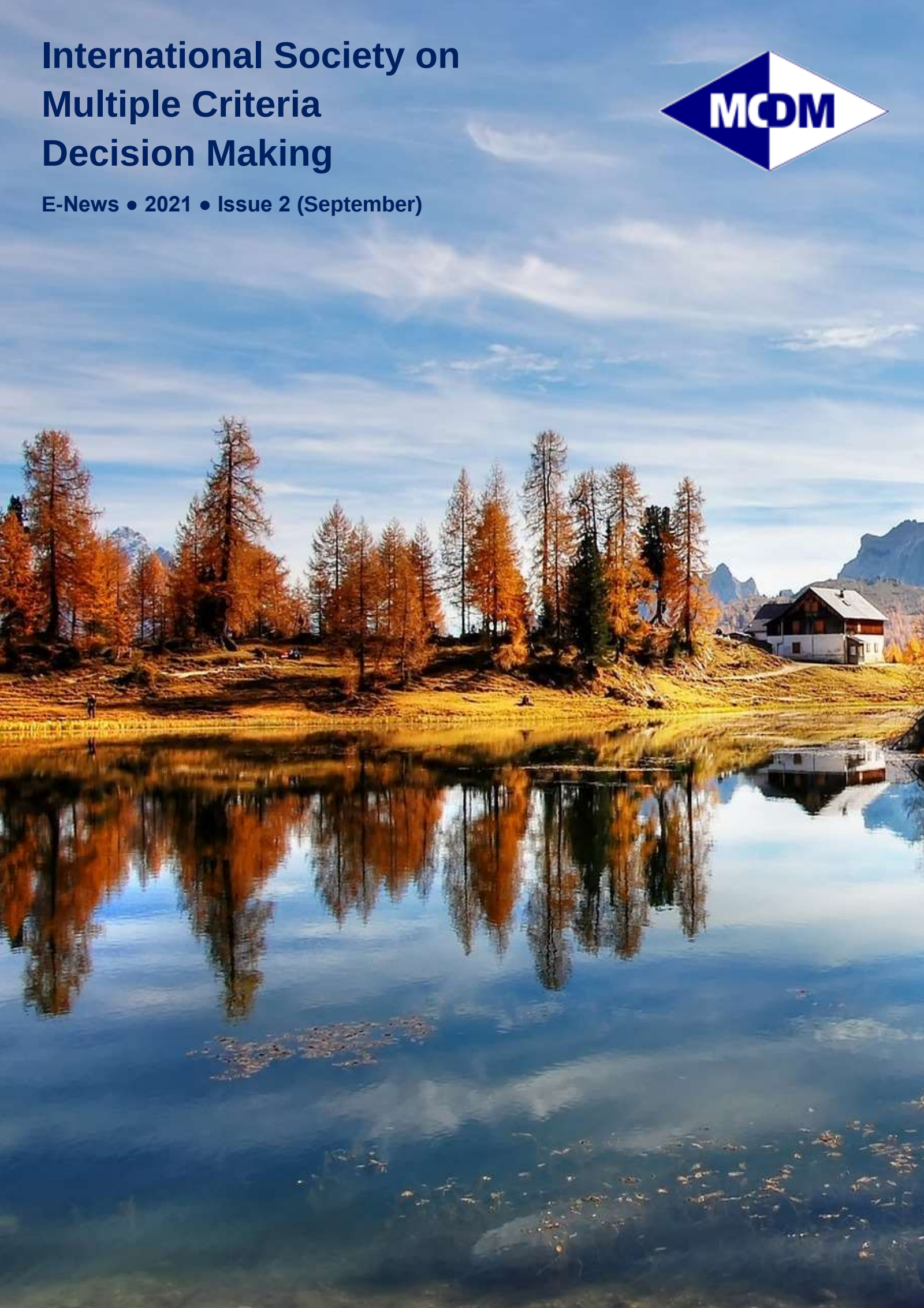

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Letter from the President

Dear Members of the International Society on MCDM,

this is my third letter during the pandemic, and again the world seems to have changed a lot. In the past few months, after lockdowns, times of being allowed to meet only few people outdoors, cancelled conferences and teaching to and learning from computer screens, some level of activity has resumed. This is largely due to an unprecedented success by science and industry in developing, testing, mass producing and deploying a vaccine against a virus that two years ago was completely unknown.

At the (virtual) IFORS conference in Korea (it sounds weird to attach a location to a virtual event, but of course the people who made the virtual event real are in Seoul), Prashant Yadav gave a fascinating keynote talk about COVID-19 and the Global Supply Chain for Medical Products that highlighted the immense effort behind this success. So, finally, as is usually the case, there seems to be light at the end of the tunnel and I believe that our society can revert to our usual schedule of meetings, workshops, and co-operation across the many countries that are represented in our society again. I am confident that we will have the occasion to meet and discuss at the MCDM conference in Portsmouth, and to also interact with the next generation of scholars at the MCDM/MCDA summer school. This generation of MCDM professionals will face their own set of grand challenges as it emerges what the "new normal" will be post pandemic. They will be needed to shape this future.

This resonates with findings reported by Johannes Siebert in this newsletter. They have gathered empirical evidence suggesting that, firstly, good, proactive decision-making skills can be trained and, secondly, these skills explain a substantial share of the variance of life satisfaction. Taken together, by participating in decision-making courses actively, you can learn how to make better decisions, and as a consequence, you are more satisfied with your life. I end my letter with thanks to Lucie Galand, who has served many years on the editorial team of this newsletter (managing the articles harvest section). I am thankful for her work, and am sure many of you will be, too. Gilberto Montibeller und Alberto Franco have won the EURO Excellence in Practice Award with her project "Improving Global Risk Management of Emerging Health Threats with Facilitated Decision Analysis".

Matthias Ehrgott

President of the International Society on MCDM
6 September 2021
Lancaster, UK

President (at) mcdmsociety.org

1 Society News

1.1 CfP: 26th International conference on Multiple Criteria Decision Making "MCDM for a sustainable and secure future" June 26th – July 1st, 2022

We are very pleased to announce that 26th International Conference on Multiple Criteria Decision Making will be held at University of Portsmouth between the 26th June – 1st July 2022.

Important Dates

Event dates: June 26th – July 1st, 2022

Call for invited session proposals: October 1st, 2021

***Submission deadline for invited session proposals*: November 30th, 2021**

Call for abstracts: December 2nd, 2021

***Submission deadline for abstracts*: March 1st, 2022**

Notification of acceptance: April 30th, 2022

Early bird registration deadline: May 30th, 2022

Organizing Committee

Professor Alessio Ishizaka (Chair)
Dr Banu Lokman (Co-chair)
Professor Dylan Jones
Professor Ashraf Labib
Professor Salvatore Greco
Dr Maria Barbati
Dr Salem Chakhar
Dr Alan Tait

Venue

The conference will be hosted on the city-centre campus of the University of Portsmouth. The main venue is the Portsmouth Business School at the modern, purpose-built Richmond Building.

1.2 2022 EURO PhD Summer School on MCDA/MCDM

The 2021 EURO PhD Summer School on MCDA/MCDM (which was originally scheduled for 2020) has been once again postponed to 2022 due to the continued pandemic. It is going to take place in Ankara, Turkey, on July 18-29, 2022. PhD students interested in getting an in-depth understanding of the theoretical and applied aspects of MCDA/MCDM, interacting with some of the top scholars in the area, and conducting hands-on exercises/cases are welcome to apply. Although the priority is for PhD students, a limited number of Master's students may also be admitted. A total of approximately 50 students will be admitted to the summer school. Those who had been admitted and opted to apply their registration fees towards the postponed summer school need not apply again. All others, including those admitted and had not paid or had been refunded, will have to apply again. We have room for new applications as well.

There will be lectures on state-of-the-art multiple criteria methods, applications, and software. Teams of students will be formed to work on several case studies and will present their work at the end of the summer school. The venue is Bilkent University. The students will be staying in a dormitory of Bilkent University and will have the opportunity to interact with each other, as well as with the lecturers throughout the summer school. This is a great opportunity for PhD students to network among themselves and with the lecturers, and initiate collaborations and friendships that may continue for many years. Many of the current well-known scholars in the area have attended past summer schools.

In addition to the unique academic program, the summer schools are lots of fun. There are social activities throughout and the students enjoy spending time together. Many long-lasting friendships have been formed in past summer schools.

The lectures will be held at the Bilkent University campus. All meals will be provided and the activities of the social program will also be covered. Thanks to the financial support from the Association of European Operational Research Societies (EURO) and the International Society on MCDM, we are able to keep the registration costs low. There will also be an opportunity to apply for partial support for the registration cost for those who have limited funds, especially from developing countries.

The original organizers of the 2020 summer school, Gülşah Karakaya of Middle East Technical University, and Banu Lokman of Portsmouth University, could not continue to be involved in the

organization, due to other commitments. They worked diligently and documented everything so well. We are in their debt for all their efforts that make our job easier.

Bilkent is located on a beautiful campus in the west side of Ankara (https://w3.bilkent.edu.tr/). Ankara, located in central Anatolia, is the capital of Turkey. It connects east and west parts of the country, and is the second largest city of Turkey. The city has great museums including Museum of Anatolian Civilizations, which was elected as The Museum of the Year in Europe in 1997. Please check the following link for more information about Ankara:

https://www.goturkeytourism.com/destinations-turkey/ankara-city-in-turkey.html.

Although the pandemic is not over yet, multiple vaccines that have high efficacy results are being administered in many countries. There are strong indications that some of these vaccines that currently have emergency use authorizations will be granted full authorizations soon. This, together with increased availability of vaccines worldwide, will hopefully make it safe to get together face-to-face for the summer school in July 2022. The new dates related to the summer school are as follows:

Important dates

- **Deadline for Application: February 1, 2022**
- Notification of Acceptance: February 15, 2022
- Early registration deadline: March 15, 2022
- Late registration deadline: April 15, 2022
- Beginning of the summer school: July 18, 2022

We will keep the summer school's web site up-to-date and make announcements at relevant discussion lists when necessary.

Tentative List of Lecturers (in alphabetical order)

1. Adiel T. de Almeida, Federal University of Pernambuco, Brazil
   Multi-attribute Utility and Value Theory (MAUT/MAVT), Multi-criteria Group Decision Making (MCGDM)
2. Matthias Ehrgott, Lancaster University, UK
   MCDA/M Community, Multiobjective Combinatorial Optimization
3. Jose Rui Figueira, Technical University of Lisbon, Portugal
   Outranking Methods
4. Carlos Fonseca, University of Coimbra, Portugal
   Evolutionary Multiobjective Optimization
5. Salvatore Greco, University of Catania, Italy
   Robust Ordinal Regression
6. Milosz Kadzinski, Poznan University of Technology, Poland
   Decision Deck
7. Özlem Karsu, Bilkent University, Turkey
   Case Work
8. Ralph L. Keeney, Duke University, USA
   Problem Structuring, Value-Focused Thinking
9. Murat Köksalan, Middle East Technical University, Turkey and University of Michigan, Ann Arbor, USA
   Behavioral Aspects of Decision Making, Interactive Methods of Multiobjective Optimization I
10. Serpil Sayın, Koç University, Turkey
    Multiobjective Optimization Theory
11. Roman Slowinski, Poznan University of Technology, Poland
    Decision Rule Approach, "Meet the editor"
12. Jyrki Wallenius, Aalto University, Finland
    Interactive Methods of Multiobjective Optimization II, History and Traditions of MCDM
13. Constantin Zopounidis, Technical University of Crete, Greece
    MCDM Applications in Finance

The most up-to-date information regarding the application process and all other developments about the summer will be available at https://www.ie.bilkent.edu.tr/mcdm/. Please check frequently. The finalized summer school program will be published in February 2022.

We look forward to an exciting summer school in Ankara!

Contact address: mcdmss21@bilkent.edu.tr

Organizers:

Özlem Karsu
Industrial Engineering Department
Bilkent University

Murat Köksalan
Ross School of Business
University of Michigan, Ann Arbor

1.3 Lucie Galand Stepped Down as Editor of the Article Harvest Section

After almost ten years of service to our MCDM community, Lucie Galand stepped down as editor of the article harvest section.

Many of you have interacted with Lucie during this time and have seen that she has always done an excellent job. As Head of the Editorial Team, I never worried about the contribution in her section all these years, knowing that Lucie always met the deadlines. Dear Lucie, thanks again for your excellent service.

Johannes Siebert

1.4 Call for New Editor of the Article Harvest Section in the International Society on MCDM Newsletter and in the Newsletter of the Euro Working Group on MCDA

Now that Lucie Galand has resigned, we are looking for a dedicated, motivated, and reliable editor for the article harvest section in the International Society on MCDM newsletter and in the newsletter of the Euro Working group on MCDA. Especially for Ph.D. students or young postdocs at the beginning of their career, it could be an exciting opportunity to interact with our members and become known by many members. Out of my own experience, I can tell you that this could be very beneficial. Some discussions started with "hey, you are the guy with the newsletter with the nice pictures on the cover….lead to many things which were very helpful in my career;-). In addition, voluntary work is highly appreciated by comities, funders, juries, employers.

Your task is to collect relevant publications of our members in the field of MCDM several per year. By now, the collection is done by hand. However, automated processes in which authors upload to a database are also possible. If you are interested, please send a brief letter of motivation and your CV by November 30th email to Johannes.Siebert@mci.edu and salvatore.corrente@unict.it.

Johannes Siebert and *Salvo Corrente*

2 Upcoming Events, Call for Papers, and other News

2.1 Call for Papers - *Socio-Economic Planning Sciences* - Special Issue: Methods and techniques for assessment of health care performance

Socio-Economic Planning Sciences invites submissions that focus on theoretical contributions and innovative application frameworks to assess efficiency, quality, and access to health care systems (HCS) worldwide. For this Special Issue, we are seeking papers that address innovative methods and application frameworks to measure the performance in the health sector in terms of efficiency, quality, and access dimensions, including but not limited to the following topics:

- Measuring the impact of public policies or social programs related to health care systems' performance;
- Health care systems' performance in a variety of scenarios, such as in wealthy and developed nations, or impoverished and social excluded regions;
- Theoretical and methodological challenges in understanding the determinants of health care systems' performance;
- Patterns and trends in health care systems' performance, across time, contexts, and demographic groups;
- Social determinants of health care systems' performance as they relate to demographic changes;
- Contextual determinants of health care systems' performance and health disparities;
- Cross-national perspectives in the examination of health care systems' performance.

The deadline for submissions is **December 31, 2021**. Authors should submit their papers online at https://www.editorialmanager.com/SSM/default.aspx. When asked to choose article type, authors should stipulate 'Special Issue: Methods and techniques for assessing hospital performance.' In the 'Enter Comments' box, the Special Issue title should be inserted along with any further comments to the editors. All submissions should meet the Socio-Economic Planning Sciences Journal author guidelines.

Early submission is encouraged. The referee process will start upon submission of the paper. Accepted papers will be published individually online as they are accepted before print publication. All inquiries concerning the submission to the special issue will be addressed directly by the Guest Editors. For any query, please contact the Key Guest Editor Diogo Ferreira.

The Guest Editors of this Special Issue are:

Diogo Ferreira (diogo.cunha.ferreira@tecnico.ulisboa.pt), Ana Camanho (acamanho@fe.up.pt), José Rui Figueira (figueira@tecnico.ulisboa.pt).

Important dates

Submission deadline	December 31, 2021
Editorial and publication	September 30, 2022

Detailed information available at the following URL: https://www.journals.elsevier.com/socio-economic-planning-sciences/call-for-papers/methods-techniques-assessment-of-health-care-performance

2.2 Information about the INFORMS Section on MCDM

Dear Members of the International Society on MCDM,

as president and vice-president of the INFORMS Section on MCDM, we would like to encourage you to join the MCDM Section of INFORMS (https://connect.informs.org/multiple-criteria-decision-making/home). The annual fee for non-members of INFORMS is 10 USD (INFORMS members pay 7 USD and students/retired pay 2/5 USD).

The purpose of the Section on Multiple Criteria Decision Making (MCDM) is to promote and disseminate research and applications among academics and other professionals interested in theory, methodologies, and applications of MCDM.

The Section has an interdisciplinary and broad focus on different methodologies, such as multiple objective optimization (including Goal Programming and Evolutionary Multiobjective Optimization) and discrete choice problems (including Multi-Attribute Utility Theory-based methods, Outranking methods, and Optimization-based interactive methods), as well as the support for the decision maker and the decision making process in such problems with computer-based models.

We look forward to welcome you in the MCDM Section of INFORMS!

With all good wishes,

Roman Słowiński and Salvatore Greco

2.3 2021 Behavioural OR Online Summer School

The **3rd BOR Summer School 2021** will be held **online** during the **week commencing on 20th September 2021**. The event will consist of 4 half-days spread over the week using the format below:

<table>
<tr><th colspan="2">Time (BST*)</th><th>Mon 20/09</th><th>Tue 21/09</th><th>Wed 22/09</th><th>Thu 23/09</th><th>Fri 24/09</th></tr>
<tr><td colspan="2">0830-1230</td><td></td><td>Session 2</td><td rowspan="3"></td><td></td><td>Session 4</td></tr>
<tr><td rowspan="2">1230-1630</td><td>1230-1330</td><td rowspan="2">Session 1</td><td rowspan="2"></td><td rowspan="2">Session 3</td><td>Feedback session</td></tr>
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*BST = British Summer Time

We welcome registrations from anyone interested in learning about behavioural issues in modelling and decision support. Experience in behavioural studies is not a prerequisite for attending the Summer School. Participants can come from any area of operational research and be at different stages of their career (e.g. students, post docs, assistant/associate/full professors, practitioners). We also welcome participants from other disciplines such as the behavioural, social and computational sciences. Knowledge of OR is not a prerequisite – interdisciplinarity is in a key role in BOR.

To register please go to the registration page

Deadline for registrations is 10 September 2021.

All registered participants will receive instructions by email on how to join the online sessions. Participants who attend all sessions will receive a certificate of attendance and access to the Summer School materials.

If you have any questions, please contact: i.leppanen@lboro.ac.uk

Below is the programme outline. The full programme can be found here.

Programme outline

Monday 12:30 -16:30 (BST)

Session 1: Behavioural considerations in the formulation of objectives

In this session, participants will learn about behavioural research that examines what people do when asked to think about objectives. In addition, they will experience the process of formulating objectives through an online interactive exercise set within the context of a decision they are currently facing. Finally, participants will have the opportunity to try methods designed to improve their ability to identify and structure multiple objectives.

Speakers: Johannes Siebert (Management Center Innsbruck, Germany); Ralph Keeney(Duke University, USA).

Tuesday 08:30 -12:30 (BST)

Session 2: Behavioural considerations in participatory modelling

In this session, participants will learn about behavioural research that examines what people do when asked to support a participatory modelling process. After an introduction to the role of leadership in participatory modelling processes, participants will explore the extent to which competences and behaviour affect the conduct of a participatory modelling process.

Speakers: Raimo Hämäläinen (Aalto University, Finland); Sondoss El Sawah (University of New South Wales Australia); Alec Morton (University of Strathclyde, UK).

Thursday 12:30 -16:30 (BST)

Session 3: Behavioural considerations in elicitation processes

In this session, participants will explore research that examines preference elements required for formal use in prescriptive decision analysis, specifically MAVT/MAUT. Insights from Behavioural OR studies concerning preference elicitation in a variety of settings will be discussed, including face-to-face interviews, group decision-making, and online preference elicitation. Participants will have the opportunity to experience some online preference elicitation processes. In addition, participants will learn about biases that matter in elicitation processes and how to avoid them.

Speakers: Judit Lienert (Eawag, Switzerland); Valerie Belton (University of Strathclyde, UK); Alice Aubert (Eawag, Switzerland); Gilberto Montibeller (Loughborough University, UK).

Friday 08:30 -12:30 (BST)

Session 4: Methodological considerations in the design and conduct of BOR studies

In this session, participants will learn about a sample of approaches to the design and conduct of Behavioural OR studies. After an introduction to different approaches to researching behaviour in an OR-supported context, participants will explore issues to consider in the design of behavioural experiments, pre-test and post-test evaluations, and process studies.

Speakers: L. Alberto Franco (Loughborough University, UK); Ilkka Leppanen (Aalto University, Finland); Etiënne Rouwette (Radboud University, The Netherlands).

2.4 Call for Papers: Special Issue on Multi-Objective Decision Making (MODeM)

In recent years there has been a growing awareness of the need for automated and assistive decision making systems to move beyond single-objective formulations when dealing with complex real-world issues, which invariably involve multiple competing objectives. The purpose of this special issue is to promote collaboration and cross-fertilisation of ideas between researchers working in different areas of multi-objective decision making and on the topics of interest below, and to provide a forum for dissemination of high-quality multi-objective decision making research.
The special issue (SI) targets high-quality original papers covering all aspects of multi-objective decision making, including, but not limited to, the list of topics below. Manuscripts that extend a previous conference or workshop publication are welcome, provided that there is a significant amount of new material in the submission (i.e. the manuscript should contain at least 50% new material).

Topics
The following is a non-exhaustive list of topics that we would like to cover in the special issue:

- Multi-objective/multi-criteria/multi-attribute decision making
- Multi-objective reinforcement learning
- Multi-objective planning and scheduling
- Multi-objective multi-agent decision making
- Multi-objective game theory
- Multi-objective/multi-criteria/multi-attribute utility theory
- Preference elicitation for MODeM
- Social choice and MODeM
- Multi-objective decision support systems
- Multi-objective metaheuristic optimisation (e.g. evolutionary algorithms) for autonomous agents and multi-agent systems
- Multi-objectivisation
- Explainable MODeM
- Applications of MODeM

Timeline
Submission deadline: October 1, 2021
Manuscript submissions will be considered for publication in the MODeM special issue on a continuous basis until the submission deadline. Submissions accepted for publication before the completion of the special issue will be available on the journal website shortly after acceptance.

Submission procedure
Before submitting, authors should read the JAAMAS submission guidelines at http://www.springer.com/10458 in full. To submit, you should visit the online system at https://www.editorialmanager.com/agnt/ and create a new account if you do not already have one. When creating your submission on the system, select the submission type "Manuscript ", and then in the "Additional Information "section, answer "Yes "when asked if your manuscript belongs to a special issue, then select "S.I. : Multi-Objective Decision Making (MODeM) ". If you do not mark your manuscript correctly as belonging to the MODeM special issue, it may not reach the correct editors.
If you are considering submitting to the special issue, we would appreciate it if you could send a brief email to patrick.mannion@nuigalway.ie with a tentative title and tentative list of authors. Announcing your

intention to submit to the SI is entirely optional, although it will help us greatly with planning for the review and publication process for the SI in the coming months.

MODeM 2021 workshop
In support of this special issue, an online workshop on Multi-Objective Decision Making (MODeM 2021) was held on 14, 15 and 16 July 2021 (see http://modem2021.cs.nuigalway.ie/ for full details). We anticipate that extended versions of a number of MODeM 2021 papers will appear in this SI. The JAAMAS MODeM special issue has an open call for papers, so we would also very much welcome original manuscripts that are not based on a MODeM 2021 paper (e.g. extended versions of relevant work that was presented at another conference or workshop, or indeed entirely new work that has not previously appeared in an archival forum).

Editors' CVs

Patrick Mannion is a Lecturer in the School of Computer Science at National University of Ireland Galway, and also serves as Deputy Editor of The Knowledge Engineering Review journal. He is a former Irish Research Council Scholar, and a former Fulbright Scholar. Dr Mannion served as Co-Chair for the 2017, 2018 and 2019 editions of the Adaptive and Learning Agents workshop series. He is a co-author of the survey on multi-objective multi-agent decision making that was recently published in JAAMAS (https://doi.org/10.1007/s10458-019-09433-x). His main research interests include (sequential) decision making, multi-agent systems, multi-objective optimisation, game theory and metaheuristic algorithms.

Diederik M. Roijers is a Senior Lecturer in Technical Computer Science, and member of the Microsystems Technology research group at HU University Of Applied Sciences Utrecht in the Netherlands, and Senior Researcher at the AI research group at the Vrije Universiteit Brussel in Brussels, Belgium. He is a co-author of the survey on multi-objective multi-agent decision making that was recently published in JAAMAS (https://doi.org/10.1007/s10458-019-09433-x), and first author of the seminal survey on multi-objective decision making in JAIR (http://dx.doi.org/10.1613/jair.3987) as well as the book on this topic in the Synthesis Lectures on Artificial Intelligence and Machine Learning series from Morgan and Claypool (http://dx.doi.org/10.2200/S00765ED1V01Y201704AIM034). His main research interests are reinforcement learning, decision-theoretic planning and multi-agent systems, especially with multiple objectives.

Peter Vamplew is an Associate Professor in Information Technology within the school of Science, Engineering and Information Technology at Federation University. He is currently an Associate editor for Neurocomputing journal. He has been a pioneer in multi-objective reinforcement learning research for over a decade, including co-authoring a key survey of multi-objective sequential decision-making (http://dx.doi.org/10.1613/jair.3987). His main interests are the development, evaluation and application of multi-objective reinforcement learning algorithms, particularly in the context of developing safe and ethical autonomous agents.

Richard Dazeley is an Associate Professor of Computer Science at Deakin University (Geelong) where he is the Deputy Leader of the Machine Intelligence Lab and Director of the Master of Applied Artificial Intelligence. Along with over a dozen papers in multi-objective reinforcement learning and optimisation he is also the co-author of the seminal survey on multi-objective decision making in JAIR (http://dx.doi.org/10.1613/jair.3987). He was a member of the IEEE P7001 Transparency of Autonomous Systems working group and has organised and served on numerous program committees for many leading conferences such as ACKMIDS, AAMAS, PRICAI, IJCAI, ALA and regularly reviews for leading journals e.g. AIJ, Neurocomputing, TKDE, JRPIT and KAIS. His current research interests are in applying reinforcement learning and multi-objective principles in the development of interactive, safe, ethical and explainable systems.

2.5 Topical Collection on Trustworthy Adaptive and Learning Agents

As autonomous agent-based systems become ever more prevalent in everyday life, it is imperative that society can trust that such systems will act for the benefit of humanity. Ensuring trustworthiness for autonomous systems is one of the key global challenges facing society at present, as evidenced by recently published guidelines on the topic by organisations such as the European Commission, the IEEE, and the OECD. Trustworthiness has a number of different dimensions, including explainability, safety, fairness, accountability and compliance with legislative and ethical standards.

Autonomous agents operating in the real world should therefore make decisions in a fair and transparent manner that respects ethical principles, should be aware of their social environment and should comply with applicable regulations. This can prove challenging given the complexity of agent architectures and the long-term dynamics — often hard to anticipate and control — resulting from multiple agents learning and adapting to each other and to constantly changing environments. Furthermore, the majority of published research on autonomous agents does not explicitly consider the level of trustworthiness of the proposed approaches, leaving a vast gap in the literature between the theory and practical application of agent-based systems.

Learning and adaptation are key capabilities for autonomous systems. This topical collection (TC) in the AI and Ethics (AI&E) journal focuses on the topic of Trustworthy Adaptive and Learning Agents (TALA). AI&E is a new journal recently launched by Springer, and seeks to promote informed debate and discussion of the ethical, regulatory, and policy implications that arise from the development of AI. The TALA TC targets high-quality original papers covering all aspects of trustworthiness in agent-based systems, including, but not limited to, the list of topics below. Manuscripts that extend a previous conference or workshop publication are welcome, provided that there is a significant amount of new material in the submission (i.e., the manuscript should contain at least 30% new material).

This topical collection is associated with the long-running and successful series of workshops on Adaptive and Learning Agents (ALA), that have been held each year since 2009 in conjunction with the AAMAS conference. Therefore, manuscripts reporting extended versions of work presented at a prior edition of the ALA workshop are very much welcome. The TALA TC has an open call for papers; it is not necessary to submit preliminary work to the ALA workshop in order to have your manuscript considered for publication in this TC.

Topics

The following is a non-exhaustive list of topics that we would like to cover in the topical collection:

- Trustworthy algorithms for ALA, including those based on reinforcement learning and planning
- Principled approaches to reward design for trustworthy ALA
- Trustworthy multi-agent decision making
- Requirements and design principles for trustworthy ALA
- Benchmark problems for verifying trustworthiness of ALA
- Multi-objective decision making approaches to TALA
- Analyses of TALA from different ethical paradigms (such as utilitarianism, deontology, particularism, etc.).
- Handling (environmental epistemic and aleatoric) uncertainty in TALA
- Safe reinforcement learning
- Explainable (learning) agents
- Avoidance of bias in ALA
- Emergence of coordination among adaptive and learning agents towards societal and environmental well-being

- Long-term trustworthiness in dynamic environments composed of learning agents
- Game theoretic approaches to frame ethical dilemmas in multiagent systems
- Agent-based approaches to model the societal impacts of AI
- Compliance of ALA with regulations, ethics and/or social norms
- Methods to counter malicious effects of autonomous agents (e.g., preventing misinformation through bots on social media)
- Perspectives on cultural differences in accepting and trusting autonomous learning agents
- Approaches to audit the behavior and impact of ALA, including agent failures

Timeline

There is no specific submission deadline for this TC. Manuscript submissions will be considered for publication in the TALA TC on a continuous basis until a sufficient number of manuscripts have been accepted for publication. Manuscripts will be sent out for review as soon as they are received, and first decisions on manuscripts can be expected within 2 months approx. from the initial submission date. Submissions accepted for publication before the completion of the topical collection will be published online on the journal website shortly after acceptance. Authors considering submitting to the TALA TC should contact the Guest Editors in advance, to ensure that their proposed manuscript is in scope, and that there is space in the TC for the manuscript.

Article types

This TC solicits original research articles, reviews/surveys, and opinion pieces/commentaries relating to trustworthiness in agent-based systems, including those that employ learning and/or adaptation. Research articles should present original and high-quality theoretical and/or empirical results that advance the field of Trustworthy Adaptive and Learning Agents. It is expected that original research articles include (as appropriate) full Introduction, Background, Related Work, Methods, Results, and Discussion sections. Reviews/surveys should provide a comprehensive summary of a research topic of interest to TALA, and identify open challenges and new research directions for the field based on a thorough analysis of current literature. Opinion pieces/commentaries should offer new personal perspectives, visionary ideas, current challenges or summarize new research opportunities on a topic related to TALA, be circa 2500-5000 words and be accessible to a broad scientific audience.

Submission procedure

Before submitting, authors should read the AI&E submission guidelines at https://www.springer.com/journal/43681 in full. To submit, you should visit the online system at https://www.editorialmanager.com/aiet and create a new account if you do not already have one. When creating your submission on the system, select the article type (e.g., Original Research, Review, or Opinion Paper), and then in the "Additional Information" section, answer "Yes" when asked if your manuscript belongs to a special issue, then select "T.C. : Trustworthy Adaptive and Learning Agents TALA". If you do not mark your manuscript correctly as belonging to the TALA topical collection, it may not reach the correct editors.

Guest Editors

Patrick Mannion (Lead Guest Editor), School of Computer Science, National University of Ireland Galway, webpage, **email:** patrick.mannion@nuigalway.ie
Fernando P. Santos, University of Amsterdam, webpage, **email:** f.p.santos@uva.nl
Diederik M. Roijers, Vrije Universiteit Brussel & HU University Of Applied Sciences Utrecht, webpage, **email:** diederik.roijers@vub.be

3 Past Conferences, Workshops, and other News

3.1 Project using Multi-Criteria Decision Analysis wins the prestigious EURO Excellence in Practice Award this Year

Emerging health threats, such as the Coronavirus global pandemic, create extensive health, economic and social problems. A key challenge for health experts and policy makers is deciding how to balance and reduce the risk of these threats.

Research led by **Gilberto Montibeller** (Management Science and Operations Group, Loughborough University, UK & Center for Risk and Economic Analysis of Threats and Emergencies, University of Southern California, USA) and **L. Alberto Franco** (Management Science and Operations Group, Loughborough University, UK & Universidad del Pacifico, Peru) underpinned the development and implementation of innovative multi-criteria decision models and enhanced decision processes in two global organisations.

The winning project, *Improving Global Risk Management of Emerging Health Threats with Facilitated Decision Analysis*, achieved the following impacts: (i) enhanced the quality of health experts' recommendations to the UK Department for Environment, Food and Rural Affairs leadership in the prioritisation of animal and human emerging health threats; and, (ii) informed new international standards for the Food Standards joint programmes of the Food and Agriculture Organization of the United Nations and the World Health Organization.

Montibeller and Franco's work comprises an ongoing programme of research on facilitated decision analysis. In this article we briefly describe the winning project, including its research developments and benefits to the organizations involved. The project provides further evidence of the relevance of multi-criteria decision analysis to tackle complex societal problems and highlights the relevance of decision support for health security decisions.

Research Developments

National and international organisations in charge of managing emerging human and animal health threats must deal with several challenges. These include multiple contingencies and issues to balance, including: the emerging nature of the threats, which limits the amount of hard evidence about their possible impacts and probability of occurrence; the large number of threats present in the environment, and the tangible and intangible impacts they may cause; the limited amount of time and resources available to evaluate the potential impacts of each threat; and the mandate for evidence-based, value-for-money recommendations that consider hard-to-monetise impacts.

Previous research has produced decision analysis tools that focus on single health threats, neglect hard-to-measure impacts, and pay limited attention to key group and organisational issues in risk prioritisation processes. Pioneering research led by Gilberto Montibeller and L. Alberto Franco in the Management Science and Operations Group at Loughborough University, developed an advanced framework to support the facilitated decision analysis for the prioritisation of emerging health threats and address these challenges and the gaps in previous research. The research contributions to Operational Research arising from this ongoing research programme are built upon three themes, which are focused on improving decision capability for the prioritisation of emerging health threats. These are tool development, process enhancement and competence building.

Tool development encompassed the creation of rigorous decision analytic models to support decision making in the prioritisation of emerging health threats, as well as the design of risk management support tools that enable policy makers to use these models. On this front, major research contributions were made by Montibeller on advanced decision models with incomplete information for modelling the risks and impacts of emerging health threats. Specifically, he led the development of innovative methods in the estimations of the probabilities of occurrence of emerging health threats from expert judgment and on the development of suitable elicitation protocols for determining policy makers' priorities and de-biasing their judgments in multi-attribute value models.

Process enhancement focused on the redesign of decision processes to address the challenges posed by the prioritisation of emergent health threats, to enable the embedding of risk management support tools within organisational routines. In this direction, major research contributions were made by Franco on improving the efficiency of facilitated decision modelling for risk management groups. In particular, he led the development of effective elicitation protocols that consider the impact of individual and group behaviours.

Finally, *competence building* supported the development of health experts' decision and risk analysis skills, together with the effective deployment of value-focused decision making and sound health risk management practices. Franco and Montibeller made contributions to research on developing best practices for health risk prioritisation at organisational level. These contributions included: (i) a coherent decision modelling scheme for measuring multiple tangible and intangible impacts caused by health threats and for eliciting competing priorities of policy makers in charge of managing such threats using multi-criteria decision analysis; and (ii) a systemic approach to the development and embedding of organisational decision support systems for the prioritisation of emergent health threats.

Impacts of the Research Project

The impacts resulting from Montibeller and Franco's research on facilitated decision analysis for the prioritisation of emerging health threats were achieved via several pathways**.** They were invited to implement their framework with senior scientists and policy makers working on global health risk prioritisations. The significant impacts of their research on two large-scale projects is detailed next.

1. Mitigated the risks of emerging animal health threats to the UK
Beneficiary Organisation: Department of Environment, Food and Rural Affairs (DEFRA)

The UK government's Department of Environment, Food and Rural Affairs (DEFRA), in cooperation with the Veterinary Laboratories Agency, is responsible for monitoring emerging animal health threats and managing animal health threats to animals and humans in the country. The identification of top emerging animal health threats is crucial to guide DEFRA's decisions on impact mitigation and risk management.

Montibeller and Franco's research produced a decision support tool for DEFRA, the electronic emergent threat highlight report (e-thir), alongside with improved decision and risk analysis skills for health experts and enhanced decision processes. The tool improved the way health experts and policymakers discuss complex nature of the risks posed by emerging health threats. DEFRA's Veterinary Public Health Adviser stated that:

> "E-thir provided a platform to the Veterinary Risk Group to facilitate discussions and decisions on very complex issues" [**S1**].

Such improvements increased health experts' ability to influence the highest levels of DEFRA's animal-related decision-making echelons. As DEFRA'S Scientific Risk Co-ordinator attests:

> "…..all the outputs from the e-thir and the discussions at the Veterinary Risk Group go to the Chief Veterinary Officers of the UK for discussion at their meeting, so it has a high impact" **[S1].**

E-thir also improved evidence-based management of animal health threats, as stressed by the Veterinary Laboratories Agency's Senior Adviser in Epidemiology, who valued:

> "…the model's ability to handle the assessment of the different impacts such as scientific, societal, economic and political for the same risk. (…) This supported a transparency in public resource allocation in management of animal health related risks." [**S1].**

Since January 2014, DEFRA has used e-thir to analyse fifty-four emerging health threats, including the Ebola virus, the Zika virus, and the risks of African swine fever in pet raw food, among many other high impact emergent animal threats to the UK, leading to better understanding of the risks threatening the country, and strengthening DEFRA's role in supporting the current UK Biological Security Strategy **[S2]**.

DEFRA also used e-thir to assess risks associated with Covid-19 since the beginning of the outbreak. The tool supported DEFRA in producing and issuing a series of guidelines to Official Veterinarians (OV) and to relevant organisations (e.g. abattoirs, border control agencies, farms), with the aim of reducing the risks of human-to-human and human-to-animal contaminations **[S2]**.

The reach of e-thir has been extended through its further use by DEFRA to analyse the potential impacts of the Covid-19 pandemic on farming, animal well-being, animal food chains, national commercial flows of animals (e.g. livestock auctions), and import/export of animal products. E-thir proved essential in providing an early assessment of high impacts of this health threat, when the outbreak was still confined to China, despite being an emerging threat with limited hard evidence. It also highlighted the uncertainties surrounding this threat and thus improved DEFRA's ability in to identify important evidence gaps rapidly. The DEFRA Science and Risk Officer stated:

> "The tool has saved DEFRA experts at least one month of analysis, vital time in such a fast-changing environment and enabled us to provide timely and important guidelines to official veterinarians on how to proceed during the pandemic " **[S2].**

Finally, the decision support tool has improved health risk control regulations. For instance, recommendations generated from its use have supported changes in UK policy and legislation e.g. the restriction of some types of animal urine imports from the United States in 2016, and subsequent legislation change **[S1, S3]**. It also helped to support change to supra-national regulations, such as the EU legislation banning the imports and exports of Caudata (group of amphibians containing salamanders that could infect UK native species such as the great crested newt with Bsal disease) in 2018, which was led by DEFRA **[S1]**.

To summarise, in the words of the DEFRA's Science and Risk Advisor:

> "All these important impacts have helped in making the UK a more secure place for humans, animals, and the environment, even when confronted with a multitude of potentially high risk/high impact animal health threats." **[S1]**

2. **Improved international food risk standards.**
   Beneficiary Organisations: The Food and Agriculture Organization (FAO) of the United Nations and World Health Organization (WHO).

The Food and Agriculture Organization (FAO) of the United Nations and World Health Organization are responsible for setting up international food standards via the CODEX Alimentarius committee. Montibeller and Franco's research was also used to support the risk prioritisation of low moisture food categories to "inform international food standards regarding hygienic practice for low-moisture foods, which was adopted in 2015 by the CODEX Alimentarius (CXC 75-2015), revised in 2016, and amended in 2018." **[S4, S5]**.

The CODEX Alimentarius is a collection of standards, guidelines and codes of practice adopted by the CODEX Alimentarius Commission, the joint intergovernmental body of the Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO) responsible for defining international food standards. These standards must be followed by food producers and food exporters worldwide, with significant impacts on the risk management of international food supply chains. Low moisture foods constitute an important category of food supplies for humans, from rice to spices and cereals to grains, with more than U$250 billion/year in international trade and more than 230 contamination cases since records began.

The research also improved evidence-based risk management of biological hazards in low-moisture foods, which are considered a type of bio-security threat. The chair of the FAO/WHO low moisture foods expert committee stated that, without Montibeller and Franco's research:

> "These benefits of an evidence-based and priority-led decision process would not have been achieved. The value of this project was therefore significant for the international management of risks associated with low-moisture food categories." **[S6]**

Summarising, the impacts realised by this translational research project, as attested by the sources provided, were significant for the beneficiary organisations on three main fronts. First, it provided an enhanced quality of health experts' recommendations to policy agencies and improved health risk control regulations [**S1**,**S2**,**S3**,**S5**]. Second, it improved evidence-based management of emerging health threats [**S1**,**S2**,**S3**,**S6**]. Third, it influenced the global health debate for the adoption of high-value policy options [**S5**, **S6**].

Sources of Impact

S1 Interviews with Scientific Risk Co-ordinator at DEFRA (audio file) and Senior Adviser in Epidemiology (audio file). Testimonial letter by the DEFRA Veterinary Public Health Adviser in 2016 [**submitted with the application**].

S2 Testimonial letter by DEFRA Risk Adviser (June 2020) [**submitted with the application**].

S3 Interview with Senior Scientific Officer, DEFRA (audio file) in 2016.

S4 FAO/WHO Meeting – Report on Low-Moisture Food Categories ranking. Available at:

http://www.fao.org/tempref/codex/Meetings/CCFH/ccfh46/FAO_WHO%20Presentation%20on%20LMF%20ranking.pdf

S5 Code of Hygienic Practice for Low-Moisture Foods (CXC 75-2015). CODEX Alimentarius FAO/WHO. Available at:

https://higieneambiental.com/sites/default/files/images/halimentaria/codex-alimentarius-bajaaw.pdf

S6 Testimonial letter by Director of the Canadian Research Institute for Food Safety and chair of the FAO/WHO low moisture food expert committee (6th Nov 2019) [**submitted with the application**].

Relevant publications

Montibeller, G., Franco, L.A. and Carreras, A. (2020). A risk analysis framework for the prioritization of bio-security threats. *Risk Analysis*, 40(11), pp.2462-2477. DOI: 10.1111/risa.13542

Jaspersen, J.G., Montibeller, G. (2015). Probability elicitation under severe time pressure: A rank-based method. *Risk Analysis,* 35, pp.1317–1335. DOI:10.1111/risa.12357.

Montibeller, G. (2018). Behavioral challenges in policy analysis with conflicting objectives. *Recent Advances in Optimization and Modeling of Contemporary Problems*, *Informs*, pp. 85-108. DOI: 10.1287/educ.2018.0182

Franco, L.A. and Greiffenhagen, C. (2018). Making OR practice visible: Using ethnomethodology to analyse facilitated modelling workshops. *European Journal of Operational Research*, 265(2), pp. 673-684. DOI: 10.1016/j.ejor.2017.08.016

Montibeller, G., Patel, P. and Del Rio Vilas, V. (2020). A critical analysis of multi-criteria models for the prioritization of health threats. *European Journal of Operational Research* 281(1), pp. 87-99. DOI: 10.1016/j.ejor.2019.08.018

3.2 Proactive Decision-Making Skills Enhance Life Satisfaction and Can Be Trained

There is good news, especially for those who teach or participate in decision-making courses and those who want to have a better life. We have gathered empirical evidence suggesting that, firstly, good, proactive decision-making skills can be trained and, secondly, these skills explain a substantial share of the variance of life satisfaction. Taken together, **by participating in decision-making courses actively, you can learn how to make better decisions, and as a consequence, you are more satisfied with your life**. (If it increases your satisfaction, you can watch this video instead of reading;-)

Figure 1: Video summary (link)

Most individuals and organizations can be characterized as reactive in their decision-making. Decision situations are seen as decision problems that have to be solved. The most apparent alternatives or alternatives that have proven suitable in similar decision situations are often identified with little effort. Most of the effort is spent in evaluating these alternatives. In doing so, it is by no means ensured that the best possible alternatives are available for selection.

In contrast, Ralph Keeney (1992) suggests spending more effort to identify attractive alternatives since only alternatives that have been identified before can later be chosen. Individuals or organizations should identify their values, in other words, what they care about, and translate them into objectives. These objectives should be used for identifying more and better alternatives systematically. Instead of solving decision problems, decisions should be seen as opportunities that can be proactively developed. Keeney assumes that value-focused thinking is beneficial for decision-makers.

In the last decades, several studies produced empirical evidence suggesting the usefulness of value-focused thinking. Keeney recommends identifying objectives and using them to create alternatives systematically. For that, you need to be aware of your objectives. However, Bond, Carlson, and Keeney (2008) found empirical evidence suggesting that individuals and organizations are not aware of their objectives. If you do not know your objectives, how can you make good decisions?

In a paper in which I had the great pleasure of sharing the authorship with Ralph Keeney, we found empirical evidence suggesting that individuals and organizations are not aware of their alternatives (Siebert and Keeney 2015). More than fifty percent of the participants were not able to identify their best alternative without any help. How can you make good decisions if you are not aware of your potentially best alternatives? However, there is good news. Prompting with objectives helps to identify more and better alternatives. These and other research are essential pieces of the puzzle of investigating the benefits of methods suggested in value-focused thinking. However, there was still the need to capture the essence of decision-makers' value-focused skills and personality traits to analyze the consequences on a broader level.

In 2013, I started this endeavor with my friend and colleague Reinhard Kunz. Later, our Ph.D. student Philipp Rolf has joined and energized the team. We have conducted several studies with more than 7,000 participants and have published our results in three papers in the European Journal of Operational Research.

In the first paper, we developed and validated the scale of Proactive Decision-Making (Siebert and Kunz 2016). This scale describes the degree of proactivity of individuals in decision situations with six dimensions. Four dimensions concern cognitive skills integrate the ideas and concepts of value-focused thinking and decision quality into the Scale of Proactive Decision Making: systematical identification of objectives, systematical identification of information, systematical identification of alternatives, and using a decision radar. Two dimensions cover proactive personality traits: striving for improvement and showing initiative. We explained 50% of the variance of decision satisfaction with proactive decision-making.

In the second paper, using a structural equation model, we showed that proactive decision-making explains a substantial share of the variance in life satisfaction (Siebert, Kunz, and Rolf 2020). In other words, if you are more proactive in your decision-making, you are more satisfied in your life.

In the third paper, we applied the proactive decision-making scale a priori and ex-post to analyze the impact of three different types of decision-making courses: A massive online course by Carl Spetzler (NovoEd's online courses, *DQ 101: Introduction to Decision Quality),* a massive onsite course by Rüdiger von Nitzsch at the RWTH Aachen University, and several of my small onsite courses at the Management Center Innsbruck in Austria (Siebert, Kunz, and Rolf 2021). In line with the hypotheses, the degree of the proactive personality traits remained stable, while the degree of the proactive cognitive skills improved significantly through the training.

Our results substantiate the assumption that decision training is of practical relevance. The decision-making courses increased participants' (tacit) knowledge about effective decision-making, self and peer-reported proactive decision-making behavior, and general satisfaction with their decision-making. We argue that it would be beneficial both for potential participants and for training providers to deplore the dwindling number of decision-making courses being offered publicly. Hence, OR and MCDM scholars, in particular, should be encouraged to advocate for incorporating such general decision-making courses into OR- and MCDM-related degree programs or similar professional development initiatives. But, of course, even the most sophisticated OR and MCDM methods cannot entirely compensate for underdeveloped individual decision-making skills.

Decision-making courses are also missing outside our field. For example, there are business schools that do not offer any courses on decision-making to their students. Yet, what is one of the core tasks of managers? Making decisions! Therefore, we recommend universities, colleges, and schools to include decision-making courses in their curriculum. At the Management Center Innsbruck, I have already successfully created such courses in five study programs. My students enjoy them very much, knowing that actively participating in the course and reflecting on the material has the potential to make their life better.

In addition, I have created the initiative KLUGentscheiden (smart deciding) in Germany, which educates high school students in decision-making. Preliminary results indicate that they enhance their proactive cognitive skills and feel empowered. This is very motivating. Decision education is a key for our future. The research results I have shared with you are just the beginning. There is a lot to do. If you are interested in joint work, please contact me to discuss perspectives.

Finally, I like to thank the research community for many precious inputs. The discussions with colleagues during the meetings of the Decision Analysis Society and the EURO working group on Behavioral Operations Research were very fruitful and energized our research. Mainly, I like to thank the anonymous reviewers who have provided many useful suggestions to substantially improve the quality of our papers. In the end, I like to cite Ralph Keeney: *The only way to exert control over your life is through your decision-making. Take advantage of this opportunity.*

Johannes Siebert

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Bond, SD; Carlson KA; Keeney RL 2008. Generating Objectives: Can Decision Makers Articulate What They Want? *Management Science, 54(1),* 56-70, https://doi.org/10.1287/mnsc.1070.0754

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Siebert, JU; Keeney RL 2015. Creating More and Better Alternatives for Decisions Using Objectives. *Operations Research, 63(5),* 1144-1158, http://dx.doi.org/10.1287/opre.2015.1411

Siebert JU; Kunz R 2015. Developing and Validating the Multidimensional Proactive Decision-Making Scale. Special Issue "Behavioral Operations Research", *European Journal of Operational Research*, 249(3) 2016, 864-877, https://doi.org/10.1016/j.ejor.2015.06.066

Siebert, JU; Kunz, R; Rolf P 2020. Effects of Proactive Decision Making on Life Satisfaction. *European Journal of Operational Research*, 280(1) 2020, 1171-1187, https://doi.org/10.1016/j.ejor.2019.08.011

Siebert, JU; Kunz R, Rolf P 2021. Effects of decision training on individuals' decision-making proactivity. *European Journal of Operational Research*, 294 (1), 264-282, https://doi.org/10.1016/j.ejor.2021.01.010

3.3 Taking MCDM to Common People: The Birth of Mobile Application Decision Mentor

The birth of DecisionMentor took place with the vision to bring multiple criteria decision making (MCDM) tool available to the common people's hand to address personal decision dilemmas. The theory behind the personal MCDM (PMCDM) is the Analytic Hierarchy Process (AHP). Taking the decision support tool to general people is only possible when the users of the application are kept at centre point and making them able to interact with ease, letting them enjoy while solving their personal decision making problem. As the mobile application focusing on user friendliness brings something innovative to personal productivity applications. The mobile application developed focusing on users experience from the very beginning.

Smart phones have become ubiquitous to daily life in the past decade where people turn to its use at many different touch points during the day. DecisionMentor is created to serve as a tool to help individuals to clarify their decision curiosity, thus, the PMCDM mobile application is served with the tagline "Clarify Your Confusion". The PMCDM also guides to get insights into personal decision problems, helping one to come out of dilemmas in choosing available shortlisted few options.

A functional version of the mobile application for PMCDM with a usable interface was released on 20 September, 2020. Based on the feedback from the audience and identified touch points, a series of modifications are made iteratively and tested. The improvement process is ongoing with the learning from the users' feedback. The users are gaining momentum; improvement is driven by the users. It is expected that the personal multiple criteria decision making (PMCDM) application will be reaching people worldwide in the days to come.

The PMCDM application DecisionMentor is available for free at www.DecisionMentor.app

The PMCDM application for Smartphone features following:

- Dynamic decision visualization
- Pair-wise comparison for tradeoffs
- Measures consistency of judgements
- Handles up to 5 Criteria & 5 Alternatives
- Preloaded with editable sample decisions
- Unlimited number of personal decisions
- Helping users to navigate the application
- Crisp user interface
- Available for both Android & Apple phones
- Continuous user driven improvements
- Incorporating up-to-date technologies

The application, DecisionMentor is co-created by Shashi Bhattarai, founder of Development Dynamics and Sovit Poudel co-founder of Truenary Solutions both are in Nepal. Shashi Bhattarai is passionate in applying MCDM in real life problems; his focus is on Analytic Hierarchy Process (AHP). Shashi's work is in practical applications of AHP for more than 20 years. Shashi was invited speaker in 2003 International Symposium on the Analytic Hierarchy Process (ISAHP2003), Bali, Indonesia; then after ISAHP2005 to most recent ISAHP2020, he was in the international scientific advisory committee for ISAHP, being organized by Creative Decision Foundation, USA. Shashi

organized a panel on AHP application in renewable energy in ISAHP2014, Washington DC, he was among Keynote Speakers in ISAHP2018, Hongkong; his talk titled "In Memory of Prof. Thomas Saaty: Demand Driven Cases of the Analytic Hierarchy Process Applications" and Track Co-chair in ISAHP2020, Virtual-meeting. Shashi can be reached at ShashiBhattarai@gmail.com

Sovit Poudel is young innovative technology entrepreneur skilled with creative full-stack mobile application development for clients in the USA, Australia and Nepal. Sovit can be reached at Sovit.Poudel@gmail.com

Sovit Poudel

4 In Memoriam

4.1 Włodzimierz (Włodek) Ogryczak

By Janusz Granat (Warsaw University of Technology)

Włodzimierz (Włodek) Ogryczak, Professor of the Warsaw University of Technology, passed away on September 15th, 2020 at the age of 69. He has been known by friends and colleagues as Włodek, the nickname much easier to pronounce than his official first name. Włodek, graduated as mathematician, has been always looking for challenging real problems where mathematics could help finding better solutions. The Multiple-Criteria Community will remember Włodek for many publications on the ground-breaking methodology and its interdisciplinary applications, numerous diverse collaborative projects, as well as countless discussions on diverse occasions and his different roles, ranging from the university professor, through plentiful scientific projects up to uncountable conferences and seminars. Włodek was a very friendly person; therefore, it was equally pleasant to work with him in diverse set-ups, as a team-member under his leadership, as co-author of joint papers, scientific proposals or within a software developers' teams.

Włodek was convinced that the best trigger for development of new and useful methodology is to work on problems for which no adequate methodology existed. This naturally leads to interdisciplinary collaboration because rational problem solving requires integration of relevant knowledge developed in diverse and overlapping fields of operations research, mathematics, and decision-making, as well as the field of the addressed real problem. and to represent the pertinent knowledge into mathematical models that can be effectively solved. Therefore, his research interests included the theoretical research, computer solutions and interdisciplinary applications in the area of Operations Research, Optimization and Decision Making with the main stress on:

- Multiple-criteria analysis and decision support
  - Reference point methodology
  - Goal programming models
  - Lexicographic orders
  - Equitable preferences
  - Outranking aggregations
- Decision making under risk and portfolio optimization
  - Stochastic dominance and risk measures
  - LP solvable models for portfolio optimization
  - Multiple-criteria models for decision making under risk
- Linear, network and discrete programming
  - Variable upper bounds and other LP structures
  - Ordered MIP structures
- Location and distribution problems
  - Multiple-criteria models and analysis
  - Distribution approaches

    - Equitable solution concepts
- Computer implementations of the solution methods, including DINAS and MOMIP packages

The milestones of Włodek's professional life-path:

- Both M.Sc. (1973) and Ph.D. (1983) in Mathematics received from University of Warsaw.
- D.Sc. (1997) in Computer Science from Polish Academy of Sciences (Systems Research Institute).
- State Title of Professor in Technical Sciences (2011).
- Since 2000 with the Institute of Control and Computation Engineering (ICCE) at the Warsaw University of Technology.
- Earlier with Institute of Informatics at University of Warsaw (1973-2000).

Meantime as the H.P.Kizer Eminent Scholar Chair in Computer Science at Marshall University, USA (1989-1992), as a visiting professor at Department of Operations Research and Multicriteria Decision Aid (Service de Mathématiques de la Gestion), Université Libre de Bruxelles, Belgium (1994-1995) and at the Computer Science Laboratory (LIP6), Université Pierre et Marie Curie, Paris VI, France (2010).

Włodek was a member of editorial boards of leading international journals, including: Quantitative Finance Letters, International Journal of Portfolio Analysis & Management, International Journal of Multicriteria Decision Making, Journal of Optimization, Operational Research, Mathematical Problems of Engineering, and guest editor of several special issues. Moreover, he was leading several scientific projects, participated in many international collaborative projects, he was member of the Management Board of the Polish Operational and System Research Society, as well as of countless program and/or organization committees of international conferences.

Włodek was a great person, dear friend, respected colleague, inspirational teacher and leader. His research had and will continue to have major impacts on science and its applications. All who knew Włodek will not only miss him very much but also will remember countless diverse interactions that leave both nice memories and scientific results laying foundations for further research.

Janusz Granat

Warsaw University of Technology

5 New Books/Publications

This section presents a list of books and papers recently published. This list is by no means exhaustive.

5.1 Books

L. Diaz-Balteiro, J. González-Pachón, C. Romero (Eds), **Sustainability as a Multi-criteria Concept. New Developments and Applications**, Printed Edition of the Special Issue published in *Sustainability*, MDPI, 2020.

G.W. Evans, **Multiple Objective Analytics for Criminal Justice Systems**, *CRC Press*, Boca Raton, 2020.

P.J. Korhonen, J. Wallenius, **Making Better Decisions: Balancing Conflicting Criteria**, *International Series in Operations Research & Management Science*, 2020.

K. Kułakowski, **Understanding The Analytic Hierarchy Process**, *Chapman & Hall/CRC*, Boca Raton, 2020.

B.O. Saracoglu, **Multiobjective Evolutionary Algorithms Knowledge Acquisition System for Renewable Energy Power Plants**, *MedCrave Group LLC*, 2019.

5.2 Special Issue

K. Miettinen, S. Sayin (Guest Editors), **Special Issue on Global Multiobjective Optimization**, *Journal of Global Optimization*, 80(1), 2021.

5.3 Journal papers

B. Afsar, K. Miettinen, F. Ruiz, **Assessing the Performance of Interactive Multiobjective Optimization Methods: A Survey**, *ACM Computing Surveys*, 54(4):85, 2021.

P.A. Alvarez, A. Ishizaka, L. Martínez, **Multiple-criteria decision-making sorting methods: A survey**, *Expert Systems with Applications*, 183:115368, 2021.

M.J. Alves, C.H. Antunes, J. P. Costa, **New Concepts and an Algorithm for Multiobjective Bilevel Programming: Optimistic, Pessimistic and Moderate Solutions**, *Operational Research*, 2019.

M. Arandarenko, S. Corrente, M. Jandrić, M. Stamenković, **Multiple criteria decision aiding as a prediction tool for migration potential of regions**, *European Journal of Operational Research*, 284(3):1154-1166, 2020.

G. Cabrera-Guerrero, M. Ehrgott, A.J. Mason, A. Raith, **Bi-objective optimisation over a set of convex sub-problems**, *Annals of Operations Research*, 2021.

A.S. Costa, S. Corrente, S. Greco, J.R. Figueira, J. Borbinha, **A robust hierarchical nominal multicriteria classification method based on similarity and dissimilarity**, *European Journal of Operational Research*, 286(3):986-1001, 2020.

A.S. Costa, J.R. Figueira, J. Borbinha, **A multiple criteria socio-technical approach for the Portuguese Army Special Forces recruitment**, *4OR - A Quarterly Journal of Operations Research*, 2021.

J.E. Diaz, M. López-Ibáñez, **Incorporating Decision-Maker's Preferences into the Automatic Configuration of Bi-Objective Optimisation Algorithms**, *European Journal of Operational Research*, 289(3):1209-1222, 2021.

L. Diaz-Balteiro, C. Iglesias-Merchan, C. Romero, S. García de Jalón, **The sustainable management of land and fisheries resources: Current situation and future perspectives**, Land 9(10):380, 2020.

A.-N. El-Kassar, A. Ishizaka, Y. Temouri, A. Al Sagheer, D. Vaz, **An economic production model with imperfect quality components and probabilistic lead times**, *The International Journal of Logistics Management*, 32(2):320-336, 2021.

J.E. Fieldsend, T. Chugh, R. Allmendinger, K. Miettinen, **A Visualizable Test Problem Generator for Many-Objective Optimization**, *IEEE Transactions on Evolutionary Computation*, to appear.

R. Garg, **A ranking model for the selection and ranking of commercial off-the-shelf components**, *IEEE Transactions on Engineering Management*, 2020.

R. Garg, **MCDM-Based Parametric Selection of Cloud Deployment Models for an Academic Organization**, *IEEE Transactions on Cloud Computing*, 2020.

R.K. Garg, R. Garg, **Decision Support System for Evaluation and Ranking of Robots Using Hybrid Approach**, *IEEE Transactions on Engineering Management*, 2021.

E.F. Girão, L.F.A.M. Gomes, **A hybrid multi-criteria decision-making approach to order natural gas consuming countries**, *Independent Journal of Management & Production*, 12(2):691-710, 2021.

C.F.S. Gomes, L.F.A.M. Gomes, L.A.D. Rangel, F.M. Tenório, M. dos Santos, **Ballast Water Management: technology choice comparing TODIM and THOR 2**, *Independent Journal of Management & Production*, 12(8):2140-2160, 2021.

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6 Imprints

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We are working on publishing the newsletter of the International Society on Multiple Criteria Decision Making two times a year. Usually, the deadline for the January issue is January 10th and the issue is intended to be published "around January 20th". The deadline for the September issue is usually August 20th and the issue is intended to be published "at the beginning of September". Contributions can be sent at any time to the editor (please see the address provided above).