

International Society on Multiple Criteria Decision Making



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Letter from the president

Dear Members of the International Society on Multiple Criteria Decision Making,

I wish a most fruitful and rewarding year 2013 to you all!

In our Society, we shall have two main events this year: an international conference and a summer school.

The 22nd International Conference on Multiple Criteria Decision Making will take place in Malaga, Spain, on June 17-21, 2013. Please, note that the abstract submission deadline is at the end of January! Full papers devoted to real-life applications of MCDM should be sent to Prof. Theo Stewart by the 18th of February to be considered for the Wiley Practice Prize. By the end of February, you can nominate distinguished researchers as the recipients of the three Awards of the Society. End of February is also the deadline for submitting applications for the MCDM Doctoral Dissertation Award. This is for those of you who have written a doctoral dissertation in the MCDM and/or related fields and graduated with a doctoral degree in 2010, 2011, 2012 or 2013.



Further information on all this and about the conference is available at <http://www.uma.es/mcdm2013/>. I look forward to seeing many of you in Malaga! This conference is an excellent place to meet colleagues interested in MCDM. The number of parallel sessions is not too big and there are many opportunities for fruitful discussions and networking.

In Malaga, the Executive Committee of our Society will decide where the 23rd International Conference will be organized in 2015. A call for proposals can be found in this newsletter. Please, consider this possibility of hosting an international conference. Proposals are most welcome!

I encourage doctoral students to attend the 11th Summer School on MCDM on July 22 - August 2, 2013 in Hamburg, Germany. The registration deadline is at the end of February but if you want to apply for financial support, the deadline is already at the end of January. We have summer schools only every three years, so do not miss this opportunity to widen understanding of various areas of MCDM and MCDA including theory, methods and applications. For further information, see <http://www2.hsu-hh.de/logistik/summer-school-2013/>.

The editorial team with the Newsletter Editor Johannes Siebert in charge have produced plenty of material in this newsletter including information of future and past conferences, publications published in 2012, a research group description and a platform for finding partners. I hope you will enjoy reading and welcome your feedback!

Sad news from the United States of America have reached us: Professor William W. Cooper has passed away. Please, read the obituary written by Stanley Zionts in this newsletter.

Remember that the officers of our Society can be easily contacted at the following email addresses:

president (at) mcdmsociety.org, president-elect (at) mcdmsociety.org, secretary (at) mcdmsociety.org, mcdm-award@mcdmsociety.org and newsletter (at) mcdmsociety.org.

See you in Malaga!

Kaisa Miettinen

President of the International Society on MCDM

President (at) mcdmsociety.org

Professor and Vice-rector

University of Jyväskylä, Finland

P.S. It is important that you are active and **keep your contact information up to date** at <http://mcdmsociety.org/members/> by typing in your email address and password. If you have forgotten your password, please, click the "Forgot your password" link, type in your email address and you'll receive instructions by email. If you face any problems in updating your data, e.g. your email address has changed, please, contact the Secretary at secretary (at) mcdmsociety.org.

1 Society news

1.1 *The 22nd International Conference on Multiple Criteria Decision Making, June 17-21, 2013, Málaga, Spain*



¡Hola, amigos!

The 22nd International Conference on Multiple Criteria Decision Making will take place in the Mediterranean city of Málaga (Spain), in June 2013. As in all our conferences, the aim is to bring together researchers and practitioners who address Multiple Criteria Decision Making and Multiobjective Optimization. We expect about 300 participants from all over the world. The Conference theme is ***MCDM for Tomorrow's World***.

The MCDM2013 conference welcomes contributions from all areas of MCDM, in particular those addressing the conference theme. The **topics** include, but are not limited to

- Advances in MCDM Theory
- AHP, ANP
- Applications of MCDM
- Behavioral Issues in Decision Making
- Compromise Programming
- Computing and Software for MCDM
- Data Envelopment Analysis
- Environmental Decision Making
- Evolutionary Algorithms and MCDM
- Fuzzy Multiple Criteria Decision Making
- Goal Programming
- Group Decision Making, Negotiations
- Multiattribute Utility or Value Theory
- Multiobjective Optimization
- Multiple Criteria Classification, Ranking, and Sorting
- Multiple Criteria Decision Aiding
- Multiple Objective Combinatorial Optimization
- Multiple Objective Metaheuristics
- New Approaches and Decision Support Systems
- New Areas where MCDM is Applied
- Outranking Methods
- Preference Modelling
- Risk and Uncertainty
- Teaching MCDM

The deadline for abstracts submission is **January 31st, 2013**. Acceptance messages will arrive not later than February 28, 2013

Let me suggest you to check our webpage <http://www.uma.es/mcdm2013> regularly for all the details. Besides, you can also follow the updates in our Facebook group MCDM2013 (www.facebook.com/groups/mcdm2013), and via twitter, following our account @MCDM2013, or the hash tag #MCDM2013. All the announcements will also be made through the electronic discussion list of the Society, which I invite you to join if you have not done it yet. Let me remind you that being a member of the International Society on MCDM does not directly imply to subscribe to the discussion list. This must be done separately (go to <http://www.mcdmsociety.org/discussion.html> for further details).

I am proud to announce that the organizing committee of the MCDM2013 conference has already invited three colleagues to deliver the plenary talks, and they have accepted. Our plenary speakers will be:

- Monday 17. [Ralph L. Keeney](#). Duke University. Durham (NC). USA.
- Tuesday 18. [Dylan F. Jones](#). University of Portsmouth. UK.
- Thursday 20. [Carlos Bana e Costa](#). Technical University of Lisbon. Portugal.

I wish to thank them for having accepted our invitation. I am sure that they will greatly contribute to the scientific success of the conference.

We will be delighted to welcome you in Málaga in June 2013 for the MCDM2013 Conference. We will do our best to host a memorable conference for all the colleagues who decide to visit us. ¡Nos vemos en Málaga!

Francisco Ruiz

General Chair.

About Málaga

Málaga is located in Spain's southern region called Andalucía, and it is bathed by the Mediterranean Sea. With a population of over 600,000, its whole metropolitan area gathers nearly 900,000 inhabitants. Its strategic geographical situation, 150 kilometers east from the Strait of Gibraltar, has attracted the main Mediterranean cultures throughout the centuries. Founded by the Phoenicians in the VIII century B.C., Carthaginians, Romans, Byzantines, Visigoths and Arabs lived and left their legacies in our city before it joined the Spanish crown by the end of the XV century.



The weather in Málaga during the month of June is very pleasant, with average temperatures ranging from 17° C minimum and 27° C maximum, and with a very low probability of rain. The International Málaga-Costa del Sol airport offers direct links with over 60 destinations worldwide, and many more via Madrid or Barcelona. On the other hand, the modern high speed train service provides fast and convenient links with the main cities of Spain. An outstanding road infrastructure and the harbor, with a continuously growing cruise traffic, complete the connections network of the city.

The venue

The venue of the conference will be the Faculty of Economy and Business Administration of the University of Málaga. It is located next to the city centre, within walking distance from the main hotels of the conference. The Faculty is equipped with enough rooms to hold the parallel sessions and a larger auditorium for the plenary sessions. Lunches and coffee breaks will be served in the main hall.



Committees

The local organizing committee will be formed by my colleagues J. M. Cabello, M. Luque, O. D. Marcenaro, F. Pineda, B. Rodríguez, A. B. Ruiz, and R. Saborido.

The Program Committee is co-chaired by Profs. Rafael Caballero (University of Málaga, Spain) and Carlos Romero (Technical University of Madrid, Spain), and formed by Enrique Alba (University of Málaga, Spain), Carlos Coello (CINVESTAV-IPN, Mexico), Kalyanmoy Deb (IIT Kanpur, India), Jim Dyer (The University of Texas at Austin, USA), Matthias Ehrgott (The University of Auckland, New Zealand), José Rui Figueira (Technical University of Lisbon, Portugal), Salvatore Greco (University of Catania, Italy), Birsen Karpak (Youngstown State University, USA), Murat Köksalan (Middle East Technical University, Turkey), Pekka Korhonen (Aalto University, Finland), Mariano Luque (University of Málaga, Spain), Kaisa Miettinen (University of Jyväskylä, Finland), Roman Słowiński (Technical University of Poznań, Poland), Jaap Spronk (Erasmus University of Rotterdam, The Netherlands), Ralph Steuer (University of Georgia, USA), Theo Stewart (University of Cape Town, South Africa), Jyrki Wallenius (Aalto University, Finland) and Stanley Zionts (State University of New York, USA).

Social Program

The social program will provide the participants with an overview of our traditions, culture and gastronomy. We are planning to welcome you with a typical “moraga” (tasting our varied fish offer) by the seaside, and to carry out a visit around the main monumental part of the city and have a drink at a traditional cellar on Wednesday evening. The gala dinner will be held outdoors. We also expect to show you some Flamenco dancing performance.



Last but not least, don't forget that Málaga is the birthplace of the worldwide famous painter Pablo Picasso. During your stay, you can plan to visit the Picasso Museum, and Picasso's birth place, or some of the other museums that you can find in our city, like the Carmen Thyssen Museum or the Automobile Museum.

Contact

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Phone: +34 952131167

Facebook group. MCDM2013 (www.facebook.com/groups/mcdm2013)

Twitter: @MCDM2013

1.2 Call for proposals as the host of MCDM 2015



International Society on Multiple Criteria Decision Making

Call for Proposals to Organize the MCDM2015 Conference

The main scientific event of the International Society on Multiple Criteria Decision Making (<http://www.mcdmsociety.org>) is the International Conference on Multiple Criteria Decision Making which is organized every two years. We welcome proposals to host and organize the 23rd International Conference on Multiple Criteria Decision Making in 2015.

While preparing the proposal, please, pay careful attention to the traditions of the Society related to its conferences and make sure that you are prepared to follow them. The traditions can be found at <http://www.mcdmsociety.org/conf.html#Traditions>.

According to the bylaws of the Society, the International Conference Chairperson shall be responsible for all the conference arrangements and for information dissemination as directed by the Executive Committee. He/she shall be an *ex officio* member of the Executive Committee.

The proposal should contain at least the following information:

1. Name of Conference Chairperson with address, email and telephone and names of possible other main organizers (e.g. Chair of Program Committee if known)
2. Contact email address
3. Venue and host institution of the Conference
4. Support from host institution and from other organizations (if available or whether can be applied, e.g. financial or other type, please, specify details)
5. Possible assistance available (estimate of the number of staff members and students to be involved in local organization)
6. Registration fee (including lunches, coffees, outing, banquet, abstract book etc.) – regular and student fees (as reliable estimate as possible). Indicate also maximum registration fee which will not be exceeded
7. Program outline
8. Tentative main theme of the Conference
9. Information about how the Conference venue can be reached from e.g. main airports
10. Proximity of accommodation to the Conference venue
11. Information about accommodation possibilities (including inexpensive alternatives for students) and prices
12. Capacity of the main auditorium and lecture rooms for parallel sessions (including how many lecture rooms are available)
13. Information whether the organizers have identified some domains where special sessions could be organized e.g. to build bridges between fields related to MCDM, to demonstrate special application fields of MCDM etc.

14. Information whether some of the traditions of the Society cannot be followed (with explanation why so)
15. Possible attractions of the location/venue
16. Any past experience in organizing international conferences and collecting financial support for them (in the proposed venue or elsewhere, give names, dates and further information)

The executive committee of the Society will make the decision in its meeting in Malaga during the 22nd International Conference on Multiple Criteria Decision Making (MCDM2013) in June 2013. The Conference Chairperson or his/her representative is expected to present the proposal in the meeting. It is possible that the decision of the host of the subsequent International Conference will be made in the same meeting, so, please mention in your proposal whether you are interested in organizing the MCDM2017 conference.

Send your proposal by email to the President of the Society, Prof. Kaisa Miettinen, at president@mcdmsociety.org by **April 24, 2013**. She can also provide further information.

1.3 MCDA/M Summer School 2013, Hamburg, Germany



11th MCDA/M Summer School July 22nd – August 2nd, 2013 Hamburg, Germany

<http://logistik.hsu-hh.de/MCDAM-2013>



Dear friends and colleagues,

as you probably already know, the 2013 MCDA/M Summer School will be this summer at the Helmut-Schmidt-University (HSU), Hamburg, Germany. It is a, if not *the* joint event of the *International Society on Multiple Criteria Decision Making* and the *EURO Working Group on Multicriteria Decision Aiding*.

We kindly would like to draw your attention to this meeting of young, mostly PhD-students. The Summer School has a rich tradition, which in 2013 will go back for an amazing number of 30 years! Many of us who are now more 'senior' in the field attended at one time, and recall the benefits this school brought at an early stage of an academic career.

Bringing it to the city of Hamburg, Germany, will allow us to welcome you in a beautiful place, which is worth visiting not only for the summer school. Nevertheless, a strong academic two-week-program, covering the broad field of MCDA/M best possible, will be the foremost focus of most participants (see the summer school website for recent information on this). Our aim here at HSU is to provide an excellent scientific environment at low costs. This implies that all registration fees collected will go back to the participants in some form (teaching material, lecturers, lunches, social program, etc.). As a note, both *EURO* and the *International Society on MCDM* financially support the summer.

At the moments, the **registration/ application dates** are important to mention.

On the one hand, the 'early registration' ends on **February 28th, 2013**. This deadline is important for the organization of the school, especially with respect to the reserved accommodation. In some cases, we may deviate from it, but in order to do so, some prior notification is needed (please let us know). On the other hand, the written applications for financial support, provided by the International Society on MCDM, have to be received by **January 31st, 2013**. A total amount of 3,000 USD is available for this instrument.

Looking forward to see you soon, I remain, sincerely yours,

Martin Josef Geiger

m.j.geiger@hsu-hh.de



1.4 Call for nominations: MCDM Awards

The International Society on Multiple Criteria Decision Making (MCDM) has been presenting awards at each of its meetings since 1992. The next set of awards will be presented at the 22nd International Conference on MCDM in Málaga, Spain, June 17-21, 2013. The Society has three awards: **1. MCDM Gold Medal, 2. Edgeworth-Pareto Award, and 3. Georg Cantor Award**, and nominations are welcome to the awards generally. The awards committee will make a decision on how many (1-3) and who are awarded.

Submit nominations to: Professor Pekka Korhonen, Department of Business Technology, Aalto University, School of Economics, P.O. Box 21220, 00076 Aalto, Finland (preferably by e-mail), mcdm-award@mcdmsociety.org. Contact him for further information.

To assure full consideration:

1. Make the nominations by **February 28, 2013**.
2. Indicate the name of the nominee, why (s)he is worthy of the award, his/her contributions to the MCDM field, and anything else that is relevant to the award.
3. Provide the CV of the nominee or the link to it.

Awardees are expected to attend the conference and give a talk. More information concerning the awards and past awardees may be found [on the web site of the Society](#).

The Members of the Award Committee:

Pekka Korhonen (chairman)
 Murat Köksalan
 Benedetto Matarazzo
 Kaisa Miettinen (ex officio)
 Hirotaka Nakayama
 Carlos Romero
 Jaap Spronk
 Francisco Ruiz (ex officio)
 Detlof von Winterfeldt

1.5 Call for applications: MCDM Doctoral Dissertation Award

At the 22nd International Conference on Multiple Criteria Decision Making, the International Society on Multiple Criteria Decision Making will honor **the MCDM Doctoral Dissertation Award** to a young scholar who has recently obtained a doctoral degree and completed an excellent doctoral dissertation in the Multiple Criteria Decision Making (MCDM) and/or related research fields.

Once applications are received, the MCDM Doctoral Dissertation Award Committee will evaluate the applications, identify finalists and provide recommendations to the MCDM Executive Committee for the final decision. The award will be announced at the 22nd International Conference on Multiple Criteria Decision Making, University of Málaga, Spain, June 17-21, 2013. The finalists are expected to give a short talk at the conference and the final decision will be made after the talks.

Application Process:

Deadline for applications: **February 28, 2013**. Please send the zip file of the application packet to Yong Shi, the chair of the MCDM Doctoral Dissertation Award Committee at yshi@unomaha.edu and yshi@gucas.ac.cn

Eligibility: All applicants, whose dissertation is in the MCDM and/or related fields and graduated with a doctoral degree in 2010, 2011, 2012 or 2013.

The application packet should include the following documents (all of which must be written in English, except the diploma or acceptance form):

- Cover letter.
- Detailed resume.
- Scanned copy of the original diploma of Doctoral Degree /Scanned copy of dissertation acceptance form signed by all committee members for recent graduates who do not have the diploma.
- Electronic copy of the Doctoral Dissertation Report of the corresponding supervisor.
- Extended Abstract of the Doctoral Dissertation in English, limit of four single-spaced pages.
- Copy of related publications/patents based on the Doctoral Dissertation, if any. In this case, the report of the supervisor must include a paragraph stating that the publication(s) derive directly from the dissertation.
- Supporting letters of three references, at least two from persons who were not Dissertation Advisors or did serve on the Dissertation Committee.

MCDM Doctoral Dissertation Award Committee:

- Yong Shi (Chair), Chinese Academy of Sciences, China /University of Nebraska at Omaha, USA
- Andrzej Jaskiewicz, Poznań University of Technology, Poland
- Kathrin Klamroth, University Wuppertal, Germany
- Gang Kou, University of Electronic Science and Technology, China
- Heeseok Lee, Korea Advanced Institute of Science and Technology, Korea
- Hirotaka Nakayama, Konan University, Japan
- Serpil Sayin, Koç University, Turkey
- Francisco Ruiz, University of Málaga, Spain
- Lothar Thiele, Swiss Federal Institute of Technology Zurich, Switzerland
- Margaret Wiecek, Clemson University, USA

1.6 Call for applications: Wiley Practice Prize

John Wiley & Sons Limited, as publishers of the Journal of Multi-Criteria Decision Analysis, are once more sponsoring a prize for the best paper describing a real-life application of multiple criteria decision making presented at the 22nd International Conference on Multiple Criteria Decision Making to be held in Málaga, Spain from June 17 to June 21, 2013. The prize is US \$1000, while the winning paper and approved finalist papers will be published in the journal. Conference delegates wishing to have their papers considered for the prize should submit full papers by **18 February**, 2013 directly to Theo Stewart (Editor in Chief of the journal) at theodor.stewart@uct.ac.za, with a copy to the conference organizers at mcdm2013@uma.es. This submission implies that the paper has not been submitted for publication to any journal. The adjudication process will then be as follows:

- A committee will perform a preliminary screening of submissions to select finalists. (It is expected that at most 4 finalists will be selected). The finalists will be informed by 30th April, 2013.
- The finalists will at this point be required to upload their papers formally on to the JMCD A on-line submission system. (Instructions will be given at that time). The papers will then be subject to a full review according to the standard procedures of the journal.
- Finalist papers which have been submitted to the journal will be assembled into a special practice prize session at the conference, where their status as finalists will be advertised.

The final decision of the practice prize jury will be announced by 30th September 2013. The jury will take into consideration both the presentation at the conference and the referees' reports from the journal.

The prize winning paper is ensured publication in the journal, although minor revisions may be requested. Decisions on the others will be subject to reviewers' comments, and may require revisions. The intention is to group all of these papers into a single issue of the journal. Please note that submitting a full paper to the Wiley Practice Prize competition does not replace submitting an abstract to the Conference.

1.7 Find a research collaborator through the MCDM Newsletter

We are pleased to inform the members of the Society about a new section, “**Find a research collaborator**” in the MCDM Newsletter.

What is “Find a research collaborator”?

Find a research collaborator will be a new section in the MCDM Newsletter. The main idea behind this section is to enhance research collaboration between members of the Society. This section consists of problem definitions with a brief background and contact information from the presenter. The members who are willing to collaborate and have the necessary skills may make contact directly with the presenter. In addition, this section may also help members to establish joint projects.

What you need to do?

The research problem presenters may send one’s research problem, with a brief background and contact information not exceeding one page to karthiksindhya@hotmail.com. A full description of the problem may be linked to the presenter’s web page. Please note that this is an open invitation for entries which we accept throughout the year. We accumulate the entries and publish them in the subsequent the MCDM Newsletters.

What we want to achieve?

We want to enhance the research collaboration between different research groups, e.g. EMO and rest of MCDM. In addition, we also want to enhance research collaboration between young researchers, research groups and inter-continental research collaboration. Subsequently, we expect to have new entries to the MCDM 2013 conference.

1.7.1 1000Minds

1000Minds is an online decision-making software (www.1000minds.com). Specifically, 1000Minds helps with decision-making, prioritization and discovering stakeholder preferences; and, depending on the application, 1000Minds can also help users think about the



‘value for money’ of alternatives and allocate budgets or other scarce resources. As well as stand-alone decision tools, customizable processes are available to include potentially 10s or 100s (even 1000s!) of participants in a variety of group decision-making activities. 1000Minds applies the PAPRIKA method – an acronym for ‘*Potentially All Pairwise RanKings of all possible Alternatives*’ – as explained in this article: P Hansen & F Ombler (2008), “A new method for scoring multi-attribute value models using pairwise rankings of alternatives”, *Journal of Multi-Criteria Decision Analysis* 15, 87-107 (for a gentle introduction, search Wikipedia for “PAPRIKA method”).

Free academic licenses to use 1000Minds are available for research and study that’s not funded commercially or from research grants. 1000Minds’ inventors, Paul Hansen (Department of Economics, University of Otago) and Franz Ombler (1000Minds Ltd), are available to

collaborate with you if appropriate, or you are welcome to use 1000Minds on your own. Naturally, you are welcome (encouraged!) to come up with your own ideas for research topics; nonetheless, a few ideas that have occurred to us are listed at www.1000minds.com/researchers/research-ideas.

1000Minds software is used by 100s of academic researchers and students worldwide from across more than 50 universities and other organizations engaged in research (see www.1000minds.com/researchers).

1.7.2 Evacuation Planning Network Optimization

After the graduation in industrial mathematics with specialization in optimization from Germany, I introduced the courses in these fields at Tribhuvan University. A number of faculty members and students have been motivated; three PhD scholars and about two dozen Masters Degree students have been working under my supervision. I got opportunity for the post-doctoral research at MUN in Canada. The research visits to USA, India, and as visiting professor to South Korea were possible. Frequent visits to universities of Germany were possible to strengthen and update the education and research. My recent visits to different research institutes in Germany as a Humboldt Research Fellow have provided additional opportunities. I have been involved in publishing a number of papers and participating and organizing conferences, workshops and seminars. Distinguished professors from abroad have conducted the workshops/seminars in Nepal on operations research that concerns the real-life problems of developing countries. I am glad to mention that Tribhuvan University has provided the responsibility of the departmental head of Computer Science and IT since last six years. My group has been working in the areas like algebraic characterizations, irreducibility and potential optimality in shop scheduling problems, mixed-model just-in-time sequencing problems with batching and without batching in production systems, logistics, the apportionment problem, facility location problems and emergency evacuation network optimization.

The life threatening large-scale natural or man-created horrible disasters motivate the researchers in evacuation planning network optimization. The problem has been understood as the process of shifting of residents from danger zones to safety areas as effectively as possible with utmost reliability. There exist scattered models and solution methods depending upon various factors. The research is also relevant to the analysis and implementation of high peak travel of weekly busy periods. In this problem, a building (a region) to be evacuated is represented by a network in which the rooms in a building (intersection of streets in a region) represent the nodes and connections between these parts (doors between rooms, or streets in region) correspond to edges. There are capacity constraints on nodes and edges, travel time on edges. The arc flow capacity represents the number of travelers allowed to pass through the arc per unit time and the arc travel time is the time restricted to travel from one node to the other. The group of evacuees is modeled as flow which passes through the evacuation network over time. The maximum, quickest time and earliest arrival evacuation problems have been considered. The approaches that have been used to model the problems are classified into macroscopic, microscopic and heuristics including contraflow. Diversified approaches of mathematical modeling, solution strategies, algorithms, simulations studies, heuristics and implementations covering continuous as well as discrete variables have been realized by different community. More realistic results depend on the time-

varying and dynamic time. One of the main issues may be a choice of discrete or continuous time periods together with the models chosen. No universal consensus could be driven with the best performance over one. An investigation of a unified model and integrated solution software that fits for all kinds of networks and characteristics must be quite challenging, very tedious and may be time consuming. Relaxing the model would force to accept the solution precision quite a lot. The simulation-optimization hybrid models improve the solution quality by exploiting the advantages of one to the other. A structural investigation with overlapping model features is a common interest. Proposing a mathematically tractable model acceptable to the majority of the evacuation problems is a biggest issue.

We are interested to build a research group to address these issues in the field of emergency planning and its implementation to large scale evacuation scenarios like in Nepal. I wish to collaborate with a research group provided a financial support.

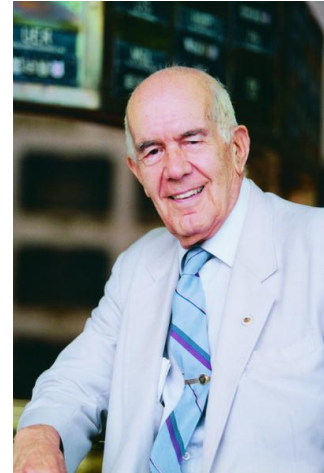
Contact information- Dr. Tanka Nath Dhamala, Associate Professor of Mathematics (Central Department of Mathematics) and Head (Central Department of Computer Science and IT) (www.cdcsit.edu.np), Tribhuvan University, P.O.Box, 13143, Kathmandu, Nepal; Alexander von Humboldt Research Fellow (University of Kaiserslautern, Germany); Email: dhamala@yahoo.com, phone: 0097714155160.

2 To the memory of Professor William W. Cooper

William W. Cooper – My Teacher, My Colleague, and My Friend (1914-2012)¹

by Stanley Zionts – Distinguished Professor Emeritus, State University of New York at Buffalo

I first met Dr. Cooper in the fall of 1958 when I became a student in a two-year master's program at the then Graduate School of Industrial Administration (now the Tepper School of Business), Carnegie-Mellon University. He was my professor for several courses in the program. I got to know him well; he helped me choose courses; he advised me in choosing a job; he encouraged me to return to Carnegie to do a Ph. D.; and he helped me in the choice of a dissertation topic. He was a tough task master, and loved a good argument. He arranged for me to teach an MBA course while I was pursuing my Ph. D. When I was working on my Ph. D. degree, he painstakingly read all of my many drafts and wrote so many comments in the margins that it looked as if it might become his dissertation rather than mine.



One incident I will never forget. I had an enormous penultimate chapter. I called it something like “ Ideas for future research”. In fact, it was rather like a bowl of spaghetti, with many loose strands or ideas. I was crushed when Dr. Cooper urged me to drop the chapter, because I thought it was truly excellent. I decided not to argue with Dr. Cooper. Few people ever won arguments with him. Instead I wrote a much abridged version of the same chapter which I substituted, with references to an unpublished research report. Subsequently, it turned out that I was right; there were many good ideas in the unpublished research report that I later expanded into published papers. But Dr. Cooper was right too. The abridged chapter made the thesis much more readable and useful.

Now about Dr. Cooper:

William W. Cooper was born in 1914 in Birmingham, Ala. He grew up in a rough neighborhood on Division Street in Chicago. Think Al Capone, Prohibition and street gangs. His father, who owned a string of gasoline stations, fell ill and couldn't work anymore. His mother, needing her son to help with the family of five during the Great Depression, pulled him out of high school in his sophomore year. He never graduated.

He did whatever he could to make money. He set up pins in bowling alleys. He caddied on golf courses. Then he found boxing. Professional boxing then yielded \$35 for only nine grueling minutes: three rounds, three minutes each. Cooper was a natural. His record: 58 wins, three losses and two draws.

Professional boxing might have become his career had not fate intervened. One day while hitching a ride to his caddying job, he was picked up by Northwestern University professor Eric Kohler. Kohler, who was also a partner at Arthur Andersen, saw something impressive in Cooper

¹ Some of this information was obtained from Carnegie-Mellon University and the University of Texas, and is gratefully acknowledged. The content is originally published in the European Journal of Operational Research, Volume 225, Issue 1, Pages 197-198 and reused with the permission of Elsevier.

and became a kind of father-figure, guide and mentor to the lad, persuading him to attend college and extending him money to get started.

“I was just amazed at what I found,” Cooper said of his first days at the University of Chicago in a 2010 interview. “I had never seen anything like that kind of intellectual life where I grew up.”

He initially studied physical chemistry but switched to economics after working on a patent infringement case with Kohler and discovering a significant error in a math equation. It was a windfall for the case, and Kohler hired Cooper part time for math and accounting work. That led to a job after graduation as Kohler’s research assistant at the Tennessee Valley Authority (TVA), where he was put in charge of internal audits.

After the TVA, Cooper completed the coursework for a Ph.D. in economics at Columbia in 1942. But the research in his dissertation was so advanced for its day that the committee did not fully understand it. They refused to accept or reject the work despite his careful explications and several changes. And so a man who would go on to win three honorary doctorates for his pioneering work didn’t actually receive his own doctorate. He later turned down an offer from Columbia for an honorary doctorate.

But it wouldn’t matter a whit. World War II was on and Cooper headed to the White House, to the U.S. Bureau of the Budget (now the Office of Management and Budget), where he was in charge of all accounting statistics for the federal government, specifically those relating to war procurement programs, price control, production allocations and related economic studies.

Cooper wrote about coordinating these wartime accounting stats in an article for *The Accounting Review* in July 1945. The American Institute of Accountants was so impressed with his findings that they created an annual award to honor the most significant accounting article of the year and then named Bill Cooper and co-author Eric Kohler the award’s first recipients.

In 1946, Cooper joined the faculty of the newly formed Graduate School of Industrial Administration (GSIA) at the Carnegie Institute of Technology (now, Carnegie Mellon University). There he became part of a radical shift in business education that emphasized scientific and mathematical rigor over trade-school, hand-me-down instruction and professors teaching in departmental silos.

There he met Abraham Charnes, a professor of mathematics. They worked together to develop management models and applications in a field that became known as management science and operations research. Charnes and Cooper shared a legendary joint publishing record of more than 35 years. In 1982 they shared the John Von Neumann Theory Prize, an award given to individuals who have made fundamental and sustained contributions to theory in operations research and management science.

At a conference organized by Mihajlo D. Mesarovic at what is now Case Western Reserve University in 1963, Mesarovic presented Abraham Charnes and William W. Cooper with a poem that he wrote:

Programming sticks upon the shoals
Of incommensurate multiple goals,
And where the tops are no one knows
When all our peaks become plateaus
The top is anything we think
When measuring makes the mountain shrink.

The upshot is, we cannot tailor
 Policy by a single scalar,
 Unless we know the priceless price
 Of honor, justice, pride, and vice.
 This means a crisis is arising
 For simple-minded maximizing

While at Carnegie, Cooper was named the founding dean of the School of Urban and Public Affairs, now known as Heinz College. After thirty years at Carnegie, he became a professor at Harvard University. While there, one day he was escorting a visitor around the campus, when he was accosted by a young thug. Cooper, then in his sixties, put up his fists, and the thug fled.

At age 66, Dr. Cooper became a faculty member at the University of Texas McComb School of Business. Though he retired at age 79, he remained as an extremely active professor *emeritus*, and almost never missed a day in his office on the UT campus.

Cooper authored or coauthored over 300 articles and 25 books. His work covered many areas including linear and nonlinear programming, goal programming, chance-constrained programming, manpower planning, as well as numerous areas of accounting. He is best known as the co-creator of data envelopment analysis, a method used worldwide to measure, evaluate and improve the performance of manufacturing and service operations, generally in the public sector.

In addition to his accomplishments in higher education, Bill was the founding president of The Institute for Management Science, which later became part of the Institute for Operations Research and the Management Sciences, the leading operational research society in the world today. In 2010, Cooper was inducted into the inaugural Wall of Fame at the Tepper School of Business at Carnegie Mellon. He was the recipient of many awards, including several honorary doctorates. He was also honored at the November 2010 INFORMS meeting in Austin, Texas. Many papers were presented in his honor at that conference.

At his side for 55 years, from their 1945 marriage to her death in 2000, was his wife, Ruth Cooper, an attorney and human rights champion who achieved considerable renown in her own right. "She was a great force behind me," Cooper said in 2009. "Without her, I wouldn't have done any of it."

In his own words, Cooper once described his career in saying: "We've tried everything to improve the human condition: religion, political systems, but the thing I think we need to rely on, where we've made the most progress anyway, is intelligence. And that's what universities do. They teach, and they develop new intelligence. This is the way I've spent my life, and it's the way I'd like to see the world continue."

William W. Cooper was a great, kind, and generous person. He contributed to society in many ways. Another former student and colleague, Professor Andrew Whinston of the University of Texas McComb School of Business said, "He left a big footprint." We shall all miss him.

3 Lessons learned in completing a doctoral dissertation: An anecdote by Stanley Zionts

Stanley Zionts, Distinguished Professor Emeritus

School of Management

State University of New York at Buffalo

I defended my doctoral dissertation in early fall, 1965 at the then Graduate School of Industrial Administration, Carnegie Institute of Technology, in Pittsburgh, PA (USA), now the Tepper School of Business at Carnegie-Mellon University.

As I worked on the dissertation, titled “Size Reduction Techniques of Linear Programming and Their Applications,” I had been somewhat clever, by choosing a topic that was both of academic interest, and of interest to my part-time employer, The United States Steel Corporation. U. S. Steel was solving (then) gigantic linear programming problems, and my work helped solve problems more quickly and more efficiently, and sometimes just solved them (as opposed to not). Also the



Pouring molten steel. © United States Steel Corporation.

work generated a number of academic papers published in good journals. As I progressed on the project, it seemed to me that my study became simpler and simpler for me to understand. When I was about to defend, I began to think that it was so simple that it hardly worthy of a doctoral dissertation at a good school. (Of course, I didn’t tell that to my advisors!)



Further, the penultimate chapter of the dissertation was what I called a spaghetti bowl of ideas for future research. One of my advisors, the late professor W. W. Cooper, insisted that I drop the chapter, because it was such a mess. I felt that was the best chapter of the dissertation! Of course, I was upset by his request. But it was hard to argue with Professor Cooper, so I wrote a very much shorter version of the chapter that I called “Topics for

Future Research” with many references to an unpublished paper, the deleted chapter. I thought my solution to dropping the chapter was a good one.

So what did I learn from the whole thing? There were three lessons: First, it’s a good idea to have a dissertation serve multiple purposes. My dissertation was a valuable application for my employer, as well as useful theory. It also helped me support my young family while doing a dissertation. Second, accommodating Professor Cooper was smart: he was right. My original chapter was a mess. On the other hand, I was right too; many good papers came from that chapter. Third, years later, I was talking with an older colleague at Buffalo from a different academic area about my dilemma about the quality of the dissertation. His comment was that because I was so familiar with the material, I made it simple for me to understand, but he made the contrapositive argument, that if I hadn’t made it so simple, I probably wouldn’t have understood it as well as I did!

Stanley Zionts

"Dr. Zionts' academic interests include mathematical programming, multiple criteria decision making, decision support systems, entrepreneurship, management strategy, and negotiation. He has published more than 100 articles and several books. He was a visiting professor at the European Institute for Advanced Studies in Brussels, and he has made presentations at numerous conferences and universities. Dr. Zionts founded and served as the first president of the International Society on Multiple Criteria Decision Making, and was awarded the Gold Medal Award and the Presidential Service Award by that organization" Also he was awarded an honorary doctorate by the Helsinki School of Economics, now part of Aalto University. He is an avid skier, and has taught skiing for almost thirty years, currently at Canyons Ski Resort in Park City, Utah. Zionts and his wife Terri live in Boynton Beach Florida and Park City Utah.



4 Upcoming Events and Call for Papers

4.1 *Journal of Global Optimization*

**Special Issue on
Global Optimization with Multiple Objectives
of the Journal of Global Optimization
(published by Springer)**

Guest editors:

Kaisa Miettinen, Jussi Hakanen, Dmitry Podkopaev and Ingrida Steponavice

Submission deadline:

September 30, 2013

The goal of this special issue is to present advanced research at the intersection of global and multiobjective optimization. We invite unpublished high quality papers which address challenges of global optimization with multiple objectives. Many optimization problems (such as nonconvex, stochastic or combinatorial optimization problems) have both global and local optima. For solving such problems one needs to implement sophisticated global search strategies. In problems with multiple objectives an additional challenge is posed by the fact that the notion of a solution to such problems is not unique.

The special issue is connected but not restricted to the 22th International Conference on Multiple Criteria Decision Making (to be held in Malaga, Spain, in June 2013; www.uma.es/mcdm2013/). We welcome papers with a significant amount of new scientific contribution in theory, methods and applications of global optimization with multiple objectives in line with the scope of the *Journal of Global Optimization* – an international journal dealing with theoretical and computational aspects of seeking global optima and their applications in science, management and engineering.

Submission:

Authors should follow the Instructions for Authors of the Journal of Global Optimization and submit their high quality manuscript via Springer's online Editorial Manager www.editorialmanager.com/jogo/ by September 30, 2013. The maximum number of pages is 15 (plus an online supplement, if needed). While submitting, please make sure to choose in the Editorial Manager **SI: MCDM2013** as the Article Type.

4.2 Stream of the MCDM Section within INFORMS Annual meeting in Minneapolis, Minnesota (USA), October 6-9, 2013.

Bringing together experts from industry, academia, and government.

Minneapolis - City of Lakes - the heart of the upper Midwest, looks forward to hosting you for the 2013 INFORMS Annual Meeting.

From its beginning as a hub for grain and timber milling, coupling the power of the Mississippi River and the rich natural resources of the upper Midwest, Minneapolis now stands as a center for manufacturing and commerce, anchored in a diversified economy, including finance, retail, electronics, healthcare, food processing, advertising and graphic arts. The Twin Cities metropolitan area is home to three million people and the largest commercial center between Chicago and the West Coast. With the University of Minnesota and local colleges providing research, scientists, and engineers, the Twin Cities have one of the largest concentrations of high-technology firms in the nation.



The strength of our Annual Meeting is its diversity, bringing together experts from industry, academia, and government. The meeting covers topics ranging from business analytics to workforce management. INFORMS Minneapolis offers a vibrant, progressive environment for us to come together, look forward, and share and discuss scientific advances.

INFORMS Minneapolis will take place in the Minneapolis Convention Center, located in downtown Minneapolis and connected via enclosed skyway to the two headquarters hotels, Hilton Minneapolis and Hyatt Regency. With over twenty lakes and wetlands, the Mississippi River, creeks and waterfalls, Minneapolis is abundantly rich in water and trees. The conference will be held in mid-October, known for its beautiful fall weather and moderate temperatures. The city is rated the number one bike friendly city in the U.S.

Minneapolis is also well known for its arts. Take in a show at the Guthrie, one of the city's Tony Award-winning theaters. Enjoy a concert at the First Avenue club, or other outlets of our vibrant local music scene. Hear a breathtaking performance by the Minnesota Orchestra. Visit the Walker Art Center, hailed as one of the best contemporary art museums in the country. With dozens of international culinary traditions, Minneapolis restaurants offer a culture of locally-grown, globally-inspired foods. Light rail connects downtown Minneapolis with the Minneapolis—St. Paul International Airport, a national hub.

Important Dates

- May 15 – Abstract submission deadline
- August 1 – Interactive/poster submission deadline
- August 12 – Authors' deadline for final abstract changes
- September 3 – Early registration deadline
- September 3 –Hotel reservation cut-off date

The goal is to have many sessions to exhibit a major MCDM presence at the Conference. Ralph Steuer (rsteuer@uga.edu) will be in charge for organizing the MCDM stream. If you are interested in organizing a session, please send an email to Ralph.

4.3 OR Society's YoungOR 18, Exeter 2013

The OR Society's YoungOR 18 is the conference for those whose Operational Research (O.R.) careers are less than ten years in duration. It takes place at the Peter Chalk Centre, University of Exeter, from 9 -11 April 2013.



The University of Exeter is one of the UK's most popular universities. Exeter's 2,000 year history is reflected in its heritage attractions, such as the Gothic St Peter's Cathedral and the Roman City Wall. Delegates can explore beneath the city's streets at Exeter's underground passages, originally built to bring fresh water into the city in medieval times. Alternatively you can explore the city's vibrant quayside with its antique shops or wander round its cosmopolitan shopping quarters.



The conference chair is **Antuela Tako (Loughborough University)**. The MCDA stream chair is **Brian Reddy (University of Sheffield)**. The stream, in the open spirit of the approach, will welcome papers across a broad range of areas – academic, practical, mixed and otherwise – and hopes to foster links between these groups as far as possible.

The final deadline for your abstract to be submitted is **28 February 2013**, however, if your abstract is submitted and accepted before 31 January 2013, you can book online and qualify for the early bird reduced booking rate. All bookings received after 31 January 2013 will be charged at the standard booking rate. Please check the conference website for further information on submission dates and requirements: www.theorsociety.com/YOR18.

5 New Books/Publications

This section presents a list of papers published in 2012, 2013 or to appear. This list is by no means exhaustive. If you want your recent publications to appear in the next newsletter, please send an email with the complete citation of your work to lucie.galand@dauphine.fr.

5.1 Journal papers

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Greco S., Knowles J., Miettinen K., Zitzler E. (eds), **Learning in Multiobjective Optimization**, Dagstuhl Seminar 12041, Dagstuhl Reports 2(1), Schloss Dagstuhl, Germany. 2012.

5.4 *Research Reports and PhD Thesis*

Bokrantz R., Miettinen K., **Improved Plan Quality in Multicriteria Radiation Therapy Optimization by Projections onto the Pareto Surface**, Technical Report TRITA-MAT-2012-OS4, Department of Mathematics, Royal Institute of Technology, 2012.

Cailloux O. **Élicitation indirecte de modèles de tri multicritère**, PhD Thesis (in french), École Centrale Paris, <http://www.lgi.ecp.fr/uploads/PagesPerso/phd-cailloux-dblside.pdf>, 2012.

6 Past Conferences, Workshops, and other News

6.1 A Report on the activities of the INFORMS MCDM Section at the INFORMS Annual meeting in Phoenix, Arizona (USA), November 13-16, 2012.

The MCDM Section was established in 2010, having had its roots in the International Society on Multiple Criteria Decision Making dating from 1979. For the 2012 INFORMS conference, the Section President Jyrki Wallenius organized an MCDM cluster, making a powerful presence at the conference. This Section was promoted by sponsoring an information desk during the



Pekka Korhonen, Jyrki Wallenius, Hannele Wallenius and Murat Köksalan recruiting new members at the information desk.

“New Member Welcome & Annual Meeting Orientation Session” that provided detailed information about this cluster and served for recruiting new members for the Section. More than ten members volunteered for that desk service. This effort helped in drawing additional interest and attendance for the cluster as well as in recruiting new members for the MCDM Section. In addition, an information flyer about the MCDM Section was distributed at the conference and given to the members to advertise the Section in the future.



Stanley Zionts during his presentation.

The MCDM Section in the Phoenix conference had a *Sponsored Cluster*, with 18 sessions, including 63 talks (starting Sunday morning, ending Wednesday afternoon). The sessions covered a wide spectrum within MCDM. In addition to sessions dealing with Evolutionary Multi-Criterion Optimization, Multiobjective Programming, and Combinatorial Multi-Objective Optimization, there were sessions dealing with applications of the Analytical Network Process as well as sessions dealing with Behavioral Issues and Neurophysiology in MCDM. The presentation by Stan Zionts on “A History of Multiple Criteria Decision Making” and the tutorials by Murat Köksalan and

Jyrki Wallenius on “A tutorial on Multiple Criteria Decision Making: Foundations” and Kalyanmoy Deb on “Evolutionary Multi-Criterion Optimization” were the highlights of the MCDM cluster. The Section plans at the INFORMS Annual Meeting 2013 in Minneapolis to expand its presence at the conference. Ralph Steuer (rsteuer@uga.edu) will be in charge for

organizing the MCDM stream. If you are interested in organizing a session, please send an email to Ralph.

The business meeting was the stage for lively discussions and was followed by a reception. Wine and cheese was sponsored by Aalto University. Both events were well-attended. The minutes of the business meeting can be found at <http://www.informs.org/Community/MCDM> clicking the link “Bylaws-and-Meeting-Minutes.” We also discussed the possibility of establishing an MCDM student award in 2013, as a means of attracting young researchers to the field. The flyer prepared to publicize the Section was distributed during the meeting. The President thanked Johannes Siebert (from Universität Bayreuth, Germany) for preparing the flyer again this year. In the elections conducted, Pekka Korhonen was elected as the new Vice President and Gilberto Montibeller as the Secretary/Treasurer for 2013.



Wine and cheese after the business meeting.

Matthias Ehr Gott, and Roman Slowinski were elected as the new Board members. The term of Jyrki Wallenius ends at the end of 2012, and he will serve as an ex-officio board member in 2013. He thanked his fellow officers and board members (Harold Benson, James Dyer, Murat Köksalan, Theo Stewart, Hannele Wallenius, and Margaret Wiecek). Jyrki also thanked all members of the Section for their support and participation. Ralph Steuer will serve as the new president during 2013.

Overall the Phoenix INFORMS conference was a great success for the MCDM Section with high quality talks attracting a large audience. The MCDM Section has reached over 200 members in about a year. While this is a healthy growth, the size of the MCDM researchers and practitioners worldwide shows a potential of further growth. The MCDM Section urges its members to be involved in recruiting new members. The stronger we get, the more powerful we will be in convincing others about our issues. Membership is open to anyone interested in MCDM. To become a member or to renew your membership for 2013, visit <http://www.informs.org/Community/MCDM>. The dues for 2013 are \$5 for INFORMS members and \$7 for others.

Jyrki Wallenius

Johannes Siebert

6.2 76th meeting of the European Working Group on MCDA

The 76th meeting of the European Working Group “Multiple Criteria Decision Aiding” (EWG-MCDA) was held in Portsmouth (United Kingdom), the 13th-15th September 2012. We were especially glad to bring back to



United Kingdom the EWG-MCDA after 34 years (the 7th EWG-MCDA was organised in 1978 in York). The organisation of the meeting in Portsmouth Business School was not a coincidence as the MCDA is one of the core research areas of the University.

Scientific Programme

The 76th meeting was attended by 46 participants from 12 countries: United Kingdom, Hungary, France, Spain, Poland, Luxembourg, Belgium, Greece, Italy, Nederland, Malta and Kingdom of Saudi Arabia. Fifteen papers were presented, three papers were included for discussion and six posters were presented by young MCDA researchers. Five streams were presented: Outranking methods, Clustering, AHP, Transports and MCDA Applications.

A round table on the theme “*Fairness in Group Decisions*” was held by Sébastien Damart (Université de Rouen), Gilberto Montibeller (LSE) and Dylan Jones (University of Portsmouth). The passionate debate involved a large and active participation.

Full papers and abstracts were printed in the proceedings (<http://mcda76.port.ac.uk>). A special issue in the International Journal of Multi-criteria Decision Making will gather the best papers after a peer-review process (<http://www.inderscience.com/info/ingeneral/cfp.php?id=1986>).

Social Programme

The gala dinner was held in the Southsea castle, where a Scottish piper welcomed the delegates. The networking excursion led us in the historic dockyard with the visit of the HMS Victory (the oldest commissioned warship in the world and a proud memorial to Vice Admiral Lord Horatio Nelson), the HMS Warrior 1860, the harbour tour with view on aircraft carriers, fleet of destroyers, frigates, mine warfare ships and offshore patrol vessels and finally the Spinnaker tower gave us the possibility to with see Portsmouth and Isle of Wight from the high. Finally an Indian lunch closed the meeting with an exotic touch.

Alessio Ishizaka (conference chair)

7 Research Team Presentation: Decision and Cognitive Sciences Research Centre

Manchester Business School, The University of Manchester, UK

Manchester Business School's Decision and Cognitive Sciences Research Centre (DCS, <https://research.mbs.ac.uk/decision-science/>) brings together researchers in Manchester interested in all aspects of human decision making and decision support systems. Research conducted by the centre covers a range of decision making areas: from information collection and management, decision modelling, decision analysis and support systems, through to the understanding of human participation in decision processes. The Centre pursues a wide range of applications in all sectors, such as strategic decision making, financial decision making, analysis of performance, consumer preference prioritisation for new product development, sustainable development, and societal risk management,.

DCS has considerable ongoing success in using fundamental research to inform real world issues and to attract externally-sponsored (both private and public sector) research and consultancy projects for additional income generation. The members of DCS have extensive collaborations with external bodies mainly through joint research and consultancy projects. The following are a list of high-profile organisations with which DCS members have had recent and/or current research/consultancy collaborations:

- General Motors Company
- Tesco
- Manchester Royal Infirmary
- Belgian Nuclear Research Centre
- MG Motor UK Ltd
- Bradford and Airedale Community Health Services
- Mersey Maritime Ltd
- Mersey Docks & Harbour Company
- Aromco Limited
- SABMiller
- Leatherhead International Ltd
- British Nuclear Fuel Ltd
- United Biscuits
- Siemens UK
- United Utilities
- The Association of Chartered Certified Accountants (ACCA)
- Barclays Bank
- PricewaterhouseCoopers (PwC)
- European Federation of Accountants (FEE)
- US Federal Aviation Authority
- Roche Pharma
- UN/World Bank
- OECD
- HM Revenue and Customs

- Department of Work and Pensions, UK government
- Qinetiq/Ministry of Defence
- National Nuclear Laboratory
- Christie Hospital, Manchester
- Rapiscan Systems
- Knowledge Support Systems
- Environment Protection Agency (Ireland)

DCS's key strengths lie in:

- Multiple Criteria Decision Analysis (MCDA)
- Decision Support Systems (DSS)
- Computational models of human behaviour
- Understanding how to support distributed decision making through collaboration and visualisation tools.

The intellectual agenda lies in research questions that emerge through collaborations across these areas that address real-world problems. At present the agenda is organised into the following themes:

Research Themes and Theme Leaders

Theme Title	Theme Leaders
Evidential Reasoning Theory, Multiple Criteria Decision Analysis, Intelligent Modelling, Simulation & Optimisation	Jian-Bo Yang, Dong-Ling Xu, Yu-Wang Chen
Data and Text Analytics	John Keane, Julia Handl
Web-based Decision Modelling and Group Decision Support Systems	Dong-Ling Xu, Yu-Wang Chen, Weigang Wang
Intelligent Decision Support Systems	Ludmil Mikhailov, Dong-Ling Xu
Evolutionary Multiple Objective Optimisation	Julia Handl, Jian-Bo Yang
Computational Models of Behaviour, Social and Interactive Behaviour	Oscar de Bruijn, Dermot Lynott
Public Participation and Societal Risk Management	Simon French, Nadia Papamichail
Strategic Decision Making	Paul Jackson
Financial Decision Making	Ser-Huang Poon
Analysis of Risk, Performance, Sustainability, Innovation, Policy, Impact, etc	Jian-Bo Yang, Theo Stewart, Dong-Ling Xu, Andrew McMeekin

DCS is an internationally respected research centre of excellence that enjoys the support of Manchester Business School and the University of Manchester. It was identified as a priority area for Manchester Business School in 2010 to 2012. It has ongoing collaborations with members of the School of Computer Science, and with the School of Social Sciences.

In summary, DCS provides an outstanding environment for researchers looking for an intellectually stimulating and stable context within which to pursue questions concerning decision making.

Selected ten publications in MCDA

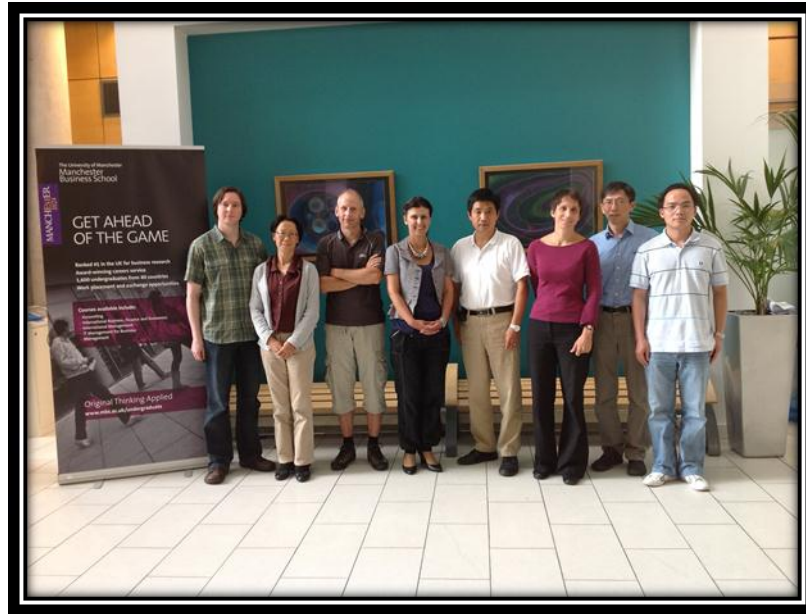
1. Yang, J. B. (2001). "Rule and utility based evidential reasoning approach for multiattribute decision analysis under uncertainties." *European Journal of Operational Research* 131(1): 31-61.
2. Yang, J. B. and D. L. Xu (2002). "On the evidential reasoning algorithm for multiple attribute decision analysis under uncertainty." *IEEE Transactions on Systems Man and Cybernetics Part A-Systems and Humans* 32(3): 289-304.
3. Mikhailov, L. (2003). "Fuzzy analytical approach to partnership selection in formation of virtual enterprises." *OMEGA-International Journal of Management Science* 30(5): 365-38.
4. Stewart, T. J. (2005). "Goal programming and cognitive biases in decision making." *Journal of the Operational Research Society* 56: 1166-1175.
5. Xu, D. L., J. B. Yang and Y. M. Wang (2006). "The ER approach for multi-attribute decision analysis under interval uncertainties." *European Journal of Operational Research* 174(3): 1914-1943.
6. Yang, J. B., Y. M. Wang, D. L. Xu and K. S. Chin (2006). "The evidential reasoning approach for MADA under both probabilistic and fuzzy uncertainties." *European Journal of Operational Research* 171(1): 309-343.
7. Handl, J. and J. Knowles (2007). "An evolutionary approach to multiobjective clustering." *IEEE Transactions on Evolutionary Computation* 11 (1): 56-76.
8. Papamichail, K. N., G. Alves, S. French, J. B. Yang and R. Snowdon (2007). "Facilitation practices in decision workshops." *Journal of the Operational Research Society* 58: 614-632.
9. Yang, J. B., Y. H. Wong, D. L. Xu and T. J. Stewart (2009). "Integrating DEA-oriented performance assessment and target setting using interactive MCDA methods." *European Journal of Operational Research* 195: 205-222.
10. Yang, J. B., D. L. Xu, X. L. Xie and A.K. Maddulapalli (2011). "Multicriteria evidential reasoning decision modelling and analysis – prioritising voices of customer." *Journal of the Operational Research Society* 62: 1638–1654.

Software

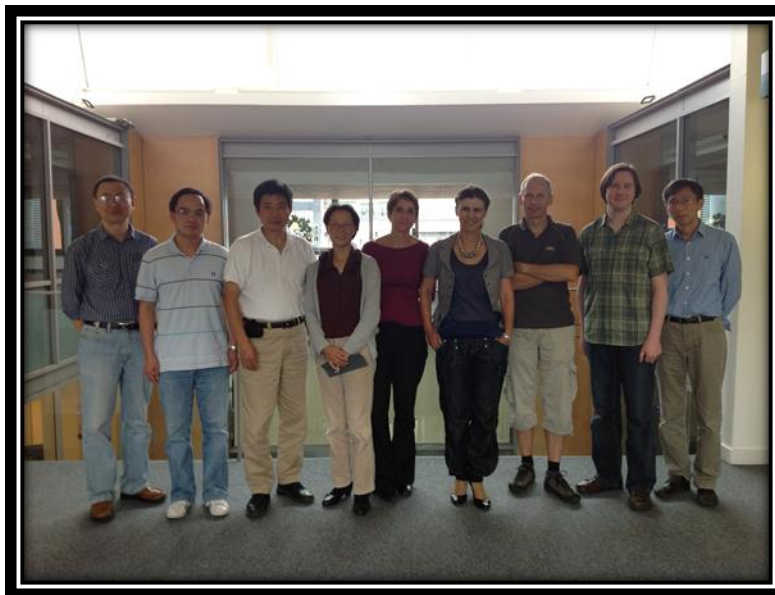
The members of the DCS Research Centre have designed and developed several large software packages including the Windows-based **Intelligent Decision Systems (IDS)** for MCDA and cost estimation of complex projects. The free version of the IDS software, which can handle up to 50 criteria, appropriate for research and study purposes, can be downloaded for research and study purposes from the following website:

<https://phps.portals.mbs.ac.uk/JianBoYang/Research/tabid/1074/Default.aspx>.

Group photo for some members of the DCS Research Centre



From left to right: Dr Dermot Lynott, Prof Dong-Ling Xu, Dr Oscar de Bruijn, Dr Nadia Papamichail, Prof Jian-Bo Yang, Dr Julia Handl, Dr Weigang Wang, Dr Yu-Wang Chen



From left to right: Dr Min Guo, Dr Yu-Wang Chen, Prof Jian-Bo Yang, Prof Dong-Ling Xu, Dr Julia Handl, Dr Nadia Papamichail, Dr Oscar de Bruijn, Dermot Lynott, Dr Weigang Wang

8 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. Contributions can be sent at any time to the editor (please see the address provided above).