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# Group Decision and Negotiation


Theory, Empirical Evidence,  
and Application

16th International Conference, GDN 2016  
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Revised Selected Papers

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# Preface

Group decision and negotiation (GDN) is a very broad field of research that deals with the many facets of decision-making processes involving multiple parties, from teams who want to combine their knowledge and ideas to find the solution that best satisfies their common goals, to adversaries trying to solve long-standing fundamental conflicts. Consequently, this field has attracted researchers from many disciplines such as operations research, economics, and political science, but also social sciences and communication, as well as information systems. Bringing researchers from these different disciplines together to share their insights and ideas on their common subject, discover similarities and complementarities of their research methodologies, and contribute to the common goal of a better understanding and support of these processes is in itself a difficult and important act of group decision-making and sometimes negotiation.

An important focal point for the GDN research community is the series of annual Group Decision and Negotiation conferences that started in 2000 with the Group Decision and Negotiation conference held in Glasgow, Scotland. Although it was originally planned as a one-time event, this conference was followed by a series of conferences that were held every year (with a single exception of 2011, when a planned conference in Jordan had to be canceled because of the turbulent situation in the region), and on four continents. Until 2015, ten conferences were held in Europe (Glasgow 2000, La Rochelle 2001, Istanbul 2003, Vienna 2005, Karlsruhe 2006, Coimbra 2008, Delft 2010, Stockholm 2013, Toulouse 2014, and Warsaw 2015), three in North America (Banff 2004, Mt. Tremblant 2007, and Toronto 2009), and one each in Australia (Perth 2002) and in South America (Recife 2012). Some of these meetings were held as streams within a larger INFORMS conference, but most were organized as separate events.

In 2016, GDN returned again to North America, and for the first time came to the United States. The Group Decision and Negotiation 2016 conference was hosted by Western Washington University in Bellingham, WA, and took place during June 20–24, 2016. In total, 70 papers were accepted for presentation at the conference after a first review process by members of the Program Committee (PC) and additional experts invited by the PC members. Following the tradition established in Toulouse 2014, two volumes of proceedings were created from the conference papers. Based on the results of the first of reviews, out of the 70 papers accepted for the conference, 12 papers were selected for publication in this volume of the *Lecture Notes in Business Information Processing*. After the conference, authors had the opportunity to revise their papers to take into account comments from the first round of reviews and to incorporate topics that might have arisen in discussions during the conference. These revised papers were then sent out for a second round of reviews, and in some cases this led to yet another revision of the papers. Papers not included in this volume were published in the electronic conference proceedings by Western Washington University.

We have grouped the papers included in this volume into four broad areas. The first group of papers mainly deals with the fundamental part of all decision processes, individual preferences. In group decisions and negotiations, like in many other areas of decision-making, preferences are often not clear at the outset when solving a decision problem, and this problem is aggravated when parties in a group decision or negotiation context do not only act on their behalf, but represent some organization or constituency. In such a setting, preferences of the organization or constituency need to be communicated to negotiators. In the first section of this volume, the first paper deals with these problems. In their paper “The Application of Item Response Theory for Analyzing the Negotiators’ Accuracy in Defining Their Preferences,” Ewa Roszkowska and Tomasz Wachowicz present empirical evidence of how difficult it might be to communicate an organization’s preferences clearly to negotiators acting on behalf of the organization, and introduce item response theory as an instrument that might help organizations to identify issues and forms of communication that are particularly prone to misunderstandings. The second paper in this section, “Trade-Offs for Ordinal Ranking Methods in Multi-criteria Decisions” by Mats Danielson and Love Ekenberg deals with the problem that parties in a group decision context might not be able to specify the importance of criteria to be negotiated exactly, and surrogate methods have to be used to quantify the attribute weights.

The second section of this volume contains papers related to situations of group decision-making in which there is not necessarily a strong conflict of interests between group members, but different expertise and information as well as some different perspectives of the problem need to be integrated. Pascale Zaraté, Guy Camilleri, and D. Marc Kilgour in their paper “Multi-criteria Group Decision-Making with Private and Shared Criteria: An Experiment” deal with this mixture of common and individual interests. If a decision problem involves multiple criteria, some of these criteria might be seen in exactly the same way by all group members, but they might have different views on other criteria. This paper provides the first empirical evidence on how such shared criteria might influence the process of group decision-making. Any form of group decision-making requires some rules on how to aggregate different preferences and opinions. The literature offers many possible rules, and this obviously makes the choice of a rule to be used by the group another (meta) group decision problem. In their paper “Plurality, Borda Count, or Anti-plurality: Regress Convergence Phenomenon in the Procedural Choice,” Takahiro Suzuki and Masahide Horita show that this does not necessarily lead to an infinite regress (decide about the rule to choose a rule to decide about a rule to choose a rule...), but that this process can converge at some level. We also want to mention that for this paper, the first author Takahiro Suzuki won the best young researcher’s award at the conference.

The following two papers in this section focus on processes of group decision-making and on empirical methods to study these processes. Often, group decisions are made under time pressure, and then heuristic approaches are applied in decision-making. In their paper “Estimating Computational Models of Dynamic Decision-Making from Transactional Data,” James Brooks, David Mendonça, Xin Zhang, and Martha Grabowski present a method of how parameters of such processes can be inferred from decisions observed in a highly volatile environment. Log data tracing a decision process over time also forms the empirical basis of the paper

“Demystifying Facilitation: A New Approach to Investigating the Role of Facilitation in Group Decision Support Processes” by Mike Yearworth and Leroy White. They describe how data recorded by a web-based group decision support system can be used to study how facilitators can actually influence the group process in such an environment, where facilitators are not physically present and share electronic communication channels in exactly the same way as all other group members.

The next section presents papers that study collective decision-making in situations characterized by a higher level of conflict, in particular negotiations. All three papers in this section deal with the measurement of important concepts in negotiations. In their paper “Bargaining Power: Measuring Its Drivers and Consequences in Negotiations,” Tilman Eichstädt, Ali Hotait, and Niklas Dahlen are concerned with the issue of power. They relate standard concepts of negotiation analysis like the BATNA (best alternative to negotiated agreement) that a negotiator has to their power in the negotiation and finally to the outcome these negotiators achieve, and analyze these relationships in a controlled experiment. Negotiators do not always act rationally, and thus do not always reach the theoretically optimal outcomes. How to measure this deviation is the topic of the paper “A Deviation Index Proposal to Evaluate Group Decision-Making Based on Equilibrium Solutions” by Alexandre Bevilacqua Leoneti and Fernanda de Sessa. Emotions are also an important factor influencing the negotiation process, but existing methods to measure emotions in negotiations require considerable effort by raters. Michael Filzmoser, Sabine T. Koeszegi, and Guenther Pfeffer study whether methods of automatic text mining can be used for this task in their paper “What Computers Can Tell Us About Emotions: Classification of Affective Communication in Electronic Negotiations by Supervised Machine Learning.”

The last section of this volume contains three papers related to group processes and negotiations in different subject areas. The first paper in this section “Facebook and the Elderly: The Benefits of Social Media Adoption for Aged Care Facility Residents” by Saara Matilainen, David G. Schwartz, and John Zeleznikow deals with an important aspect of group processes, connectedness, in the context of social networks and their use by the elderly population. An innovative approach to group decision-making is presented in the paper “How to Help a Pedagogical Team of an MOOC Identify the ‘Leader Learners’?” by Sarra Bouzayane and Inès Saad, who describe a group decision support tool based on rough set theory and its application in a specific problem of online education. Last, but not least, the paper “Negotiating Peace: The Role of Procedural and Distributive Justice in Achieving Durable Peace” by Daniel Druckman and Lynn Wagner considers important aspects of negotiations in a political and diplomatic context. This paper won the best paper award at the conference.

Of course, organizing a conference like GDN and preparing such a volume of proceedings is not possible without many helping hands. Like everyone in the GDN community, we are deeply indebted to Mel Shakun, the founder of both the GDN section and the journal, for his continuing support, advice, and inspiration that has shaped our community for so many years. We also want to thank the two general chairs of GDN 2016, Colin Eden and Gregory Kersten, for their many contributions to the success of the conference, and the local organizers, in particular Marlene Harlan and her team, whose effort made GDN 2016 possible.

Papers in this volume went through an elaborate two-stage review process, and the quality and timeliness of reviews were essential for the preparation of this volume. We therefore are very grateful to all reviewers of the papers. Our thanks goes to: Fran Ackerman, Adiel Almeida, Adiel Almeida Filho, Jonatas Almeida, Ana-Paula Cabral, Colin Eden, Alberto Franco, Johannes Gettinger, Salvatore Greco, Masahide Horita, Gregory Kersten, Hsiangchu Lai, Annika Lenz, Bilyana Martinovski, Danielle Morais, José Maria Moreno-Jiménez, Hannu Nurmi, Amer Obeidi, Mareike Schoop, Ofir Turel, Doug Vogel, Tomasz Wachowicz, Shi Kui Wu, Bo Yu, Yufei Yuan, Pascale Zaraté, and John Zeleznikow.

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December 2016

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