



Introduction

MANY ASPECTS OF social, economical and political life are based on ratios of power. Therefore, sometimes it is useful to consider the state-of-the-art of power measurement systems currently available, related to the various possible applications. This volume contains works on the subject, presented at the Second Spanish, Italian and Netherlands Meeting on Game Theory and Applications (SING 2, Foggia, July 9th-12th, 2006, organized by Andrea Di Liddo). The papers cover both theoretical aspects and applications to current situations (European, Polish, Catalanian and Basque Parliaments).

The book opens with a paper by Gianfranco Gambarelli and Arsen Palestini. They use the Banzhaf-Coleman index to optimise the democracy in the apportionment of seats in multi-district systems, given the distribution of votes. Again on voting systems, two works are based on Penrose's law. This law states that each representative gains a number of votes in proportion to the square root of the population represented, on the assumption that the voters in every state cast their votes independently of each other. On the grounds of the above law, Werner Kirsch considers the modifications that occur when the independence assumption is not valid; Wojciech Słomczyński and Karol Życzkowski analyze a toy voting model in which the optimal majority quota is a function of the number of members of the voting body.

Massimiliano Ferrara evaluates some properties of voting operators, with particular consideration on dictatorship. Giovanni Rossi produces a study on the allotment of the worth issued by cooperation, with the use of topological tools.

Going on to more applicative works, Jerzy Hołubiec, Grażyna Szkatuła and Dariusz Wagner illustrate how learning machines and the Theory of Rough Sets can be used in order to describe electorate preferences. They apply these tools to the 2001 Polish Parliament elections. José M. Alonso-Meijide and Balbina Casas-Méndez examine the modifications of Holler's Public Good Index, when some voters are incompatible. The results are applied in the 1986 and 2005 Parliaments of the Basque Country. The work by Francesc Carreras, Maria Dolors Llongueras and María Albina Puente is dedicated to another Iberian case: the 2006 Catalanian Parliament elections. The authors analyze whether the existence of a previous partnership might have

influenced the result of the elections. Juha Helin, Hannu Nurmi and Tapio Raunio conclude the volume with a voting power analysis of the European Parliament elections held in 2004, using the Banzhaf index.

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