1. Record Nr. UNINA9910818802103321 Autore Taylor Alan D **Titolo** Mathematics and Politics: Strategy, Voting, Power and Proof // by Alan D. Taylor New York, NY:,: Springer New York:,: Imprint: Springer,, 1995 Pubbl/distr/stampa **ISBN** 1-4612-2512-4 Edizione [1st ed. 1995.] Descrizione fisica 1 online resource (XIV, 284 p.) Textbooks in Mathematical Sciences, , 1431-9381 Collana Disciplina 519.5 Soggetti **Statistics** Economic theory Statistical Theory and Methods Economic Theory/Quantitative Economics/Mathematical Methods Statistics for Social Sciences, Humanities, Law Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. Nota di contenuto 1 Escalation -- 1.1. Introduction -- 1.2. Game-Tree Analyses -- 1.3. Limitations and Back-of-the-Envelope Calculations -- 1.4. Statement of O'Neill's Theorem -- 1.5. Conclusions -- Exercises -- 2 Conflict --2.1. Introduction -- 2.2. Dominant Strategies and Nash Equilibria --2.3. Prisoner's Dilemma -- 2.4. A Game-Theoretic Model of the Arms Race -- 2.5. Chicken -- 2.6. Game-Theoretic Models of the Cuban Missile Crisis -- 2.7. Conclusions -- Exercises -- 3 Yes-No Voting --3.1. Introduction -- 3.2. Swap Robustness and the Nonweightedness of the Federal System -- 3.3. Trade Robustness and the Nonweightedness of the Procedure to Amend the Canadian Constitution -- 3.4. Statement of the Characterization Theorem -- 3.5. Conclusions -- Exercises -- 4 Political Power -- 4.1. Introduction -- 4.2. The Shapley-Shubik Index of Power -- 4.3. Calculations for the European Economic Community --4.4. A Theorem on Voting Blocs -- 4.5. The Banzhaf Index of Power --4.6. Two Methods of Computing Banzhaf Power -- 4.7. Ordinal Power: Incomparability -- 4.8. Conclusions -- Exercises -- 5 Social Choice --5.1. Introduction -- 5.2. Five Examples of Social Choice Procedures --5.3. Four Desirable Properties of Social Choice Procedures -- 5.4.

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## Sommario/riassunto

interest in a particular application, however, often depends on his or hergeneralinterestintheareainwhichtheapplicationistakingplace. My experience at Union College has been that there is a real advan- tage in having students enter the course knowing thatvirtually all the applications will focus on a single discipline-in this case, political science. The level ofpresentation assumes no college-level mathematicalor social science prerequisites. The philosophy underlying the approach we have taken in this book is based on the sense that we (mathemati- cians)

havetendedtomaketwoerrorsinteachingnonsciencestudents: wehaveoverestimatedtheircomfortwithcomputationalmaterial, and we have underestimated their ability to handle conceptual material. Thus, while there is very little algebra (and certainly no calculus) in our presentation, we have included numerous logical arguments that students in the humanitiesand the socialscienceswill find accessible, but not trivial. The book contains five main topics: a m.odel of escalation, game- theoretic models of international conflict, yes-no voting systems, political power, and social choice. The first partofthe text is made up of a single chapter devoted to each topic. The second part of the text revisits each topic, again with a single chapter devoted to each. The organizationofthe

bookisbasedonpedagogicalconsiderations, with the material becoming somewhat more sophisticated as one moves through the ten chapters. On the other hand, within any given chap- terthere is little reliance on material from earlierchapters, except for those devoted to the same topic.