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Einladung zur Vortragsserie
"Combinatorial Games and Ramsey Theory"

Achievement and avoidance games on geometries, graphs, grids, groups and numbers

Frank Harary — Computer Science Department, New Mexico State University

Dienstag 22. Juni 1999, 17h c.t.

Freihaus Hörsaal 6 (FH HS6): A-1040 Wien, Technische Universität Wien, Wiedner Hauptstraße 8-10, Freihaus, Turm A, 2. Stock, grüner Bereich.

Abstract: Thus far, the games which I have been discovering deal with geometries, graphs, groups, games played on grids [where they generalize tic-tac-toe in many directions], numbers, and chess pieces. There are unsolved problems galore, both for 'pure' mathematicians and for computer scientists. Some of the graph games have catchy names like: Kingmaker, Blockbuster, Pathfinder, Trailblazer. The number games can be useful in teaching children arithmetic in a rather enjoyable way. I will be delighted when these games are programmed for a person to play against a computer. At least one game of each type will be played.
These games have relevance to pedagogy as children of all ages enjoy playing them and thus enjoy while learning the mathematical operations needed to play them. They represent research challenges to both mathematicians and computer scientists as only a few of their strategies have been developed.

The complexity of graph Ramsey achievement and avoidance games

Wolfgang Slany — Institut für Informationssysteme, Technische Universität Wien

Dienstag 22. Juni 1999, nach dem Vortrag von Prof. Harary am gleichen Ort (FH HS 6).

Abstract: Given two graphs G and A, two players, Red and Green, alternate in coloring the edges of G in their respective colors. Aim is to avoid to build a monochromatic subgraph isomorphic to A. In another variant, aim is to achieve to build a monochromatic subgraph isomorphic to A. I determine the computational complexity of finding winning strategies for several variants of these games and ultra-strongly solve some small instances.
A Java applet that improves its strategy by playing over the Internet and that allows to play some small but nontrivial instances can be challenged at http://www.dbai.tuwien.ac.at/proj/ramsey/. Please try it out! In case you win, you will be able to leave your name in our hall-of-fame.

My adventures with Ramsey theory

Frank Harary — Computer Science Department, New Mexico State University

Freitag 25. Juni 1999, 16h c.t.

Hörsaal EI 10: A-1040 Wien, Technische Universität Wien, Gußhausstraße 27-29 (Elektrotechnisches Institut 'Neubau'), Erdgeschoß.

Abstract: When I heard a lecture given by the prolific Paul Erdős in London in 1962, it seemed an omission that only complete graphs had a ramsey number. Only in 1970 did I confide this idea to Vasek Chvátal and showed him some ramsey numbers for noncomplete graphs. Thus my series "Generalized ramsey theory for graphs" was begun. There are now 19 papers in this series! During the process of developing the properties of this very rich source of theorems, I discovered the ramsey multiplicity of a graph, its achievement number, the fact that 4 is the only number that is NOT the ramsey number of some graph, a ramsey theorem for finite groups, and achievement/avoidance games, etc.