

GREAT MOMENTS IN XXTH CENTURY MATHEMATICS

BY RICHARD BRUALDI

Professor F.J. Craveiro de Carvalho asked me (and others) the following question: “If you had to mention one or two great moments in XXth century mathematics which one(s) would you pick?” Previous responders have, quite appropriately, interpreted “great moments” to be spectacular individual achievements such as the solution of Fermat’s Problem and the classification of the finite simple groups. Another interpretation might be changes in the direction or culture of mathematics that have greatly influenced its development.

Using this interpretation, I would like to respond with the work of Gian-Carlo Rota which as Richard P. Stanley put it “lifted the subject of combinatorics from disrepute to eminent respectability.” Rota started this change with the first (of ten) of his “Foundation’s” papers in 1964 subtitled “Theory of Möbius functions.” His further work

(and his charisma, charm, and worldliness) greatly influenced the development of mathematics in the last half of the twentieth century.

As we begin the twenty-first century, combinatorics is on a firm footing and is not only respectable but is considered to be very important in many parts of mathematics. Combinatorial ideas and constructs are now essential and widespread from algebra (e.g. representation theory) to geometry and topology (e.g. Grassmannians and flag manifolds) to analysis (e.g. harmonic analysis). And, of course, as an area of mathematics in itself, combinatorics is flourishing and has some of the best mathematical minds.

Gian-Carlo Rota died in April of 1999. One can read about him and his work in the February 2000 issue of the Notices of the American Mathematical Society.

Richard Brualdi is Professor of Mathematics at the University of Wisconsin-Madison, having been department chair from 1993 to 1999. He has been Co-editor-in-chief of the journal “Linear Algebra and its Applications” since 1979. At present he is President of the International Linear Algebra Society.

