This book offers fascinating and modern perspectives into the theory and practice of the historical subject of polynomial root-finding, rejuvenating the field via polynomiography, a creative and novel computer visualization that renders spectacular images of a polynomial equation. Polynomiography will not only pave the way for new applications of polynomials in science and mathematics, but also in art and education. The book presents a thorough development of the basic family, arguably the most fundamental family of iteration functions, deriving many surprising and novel theoretical and practical applications such as: algorithms for approximation of roots of polynomials and analytic functions, polynomiography, bounds on zeros of polynomials, formulas for the approximation of \( \pi \), and characterizations or visualizations associated with a homogeneous linear recurrence relation. These discoveries and a set of beautiful images that provide new visions, even of the well-known polynomials and recurrences, are the makeup of a very desirable book. This book is a must for mathematicians, scientists, advanced undergraduates and graduates, but is also for anyone with an appreciation for the connections between a fantastically creative art form and its ancient mathematical foundations.

"Bahman Kalantari has created a beautiful new genre of mathematical visual art, that is quite distinct from Fractal Art, and is just as beautiful. Not only is the art beautiful, but the mathematics and the elegant algorithms that generate it. This book can be read on quite a few levels, all very rewarding, and will inspire lots of future research and new gorgeous art."

Doron Zeilberger
Rutgers University
Winner of the Steele Prize