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High technology industries are in desperate need for adequate tools to assess the validity of simulations produced by ever faster computers for perennial unstable problems. In order to meet these industrial expectations, applied mathematicians are facing a formidable challenge summarized by these words - nonlinearity and coupling. This book is unique as it proposes truly original solutions: Using hypercomputation in quadratic algebras, as opposed to the traditional use of linear vector spaces in the 20th century; and complementing the classical linear logic by the complex logic which expresses the creative potential of the complex plane. The book illustrates how qualitative computing has been the driving force behind the evolution of mathematics since Pythagoras presented the first incompleteness result about the irrationality of 2. The celebrated results of Godel and Turing are but modern versions of the same idea: the classical logic of Aristotle is too limited to capture the dynamics of nonlinear computation. Mathematics provides us with the missing tool, the organic logic, which is aptly tailored to model the dynamics of nonlinearity. This logic will be the core of the "Mathematics for Life" to be developed during this century.