## AFTERWORD

Professor Malvina Baica, a member of the Mathematics Department at the University of Wisconsin-Whitewater was one of the last students of professors Hasse and Bernstein in algebraic number theory at the University of Houston in Texas. In her graduate work she concerned herself with extending and making more powerful some of the great tools available to number theorists. I refer to the algorithms of Jacobi, of Perron, and finally of Hasse and Bernstein that are related to the Euclidean Algorithm. Concerned, as she was, in developing mechanisms to identify the multiplicative group of units in an algebraic number field, a problem associated with the periodicity of the Euclidean Algorithm, Dr. Baica was able to generalize the work of her predecessors to higher dimensions and to complex fields. Her work, originally published in ***Pacific Journal of Mathematics***, is now referred to as "Baica's Generalized Euclidean Algorithm".

A large number of solutions to classical problems have followed from Dr. Baica's use of her algorithm. Starting with the n-dimensional equivalent of the Euler-Lagrange theorem, she went on to settle Hermite's problem, that is, to answer questions concerning the development of irrationals of arbitrary degree into periodic sequences. This problem, now solved by Baica, has been open since the mid-nineteenth century. How to find the Galois group of units in an algebraic number field is known as Dirichlet's problem and has been solved by Professor Baica. She was able to show the earlier developments in the subject such as the calculation of the Halter-Koch and the Stender units are particular cases of her generalized Euclidean algorithm. Applications of Baica's algorithm following her solution of Dirichlet's problem allowed her to make advances in the Galois theory of polynomials.

It is Dr. Baica's work on Hilbert's Tenth Problem as it is related to the periodicity of the Euclidean Algorithm in dimension 2 that led her to a proof of Fermat Last Theorem entirely within the discipline of algebraic number theory. The application of her algorithm in higher dimensional settings allowed her to conclude that the generalized Euclidean algorithm she developed is not always periodic, a fact equivalent to the conclusion of Fermat's Last Theorem.

Baica's Generalized Euclidean Algorithm and the results that Professor Baica has demonstrated flow from it are the subject of this volume. Her work has not only been a new insight into the solution of classical problems, but it has brought new organizing principles into the body of results that are algebraic number theory. Whether the subject is the solution of Diophantine equations or new combinatorial identities or continued fractions, they are all illuminated by the methods developed by Professor Baica and her Generalized Euclidean Algorithm. It is not an exaggeration to claim that much of the future of this specialty in mathematics will be animated by the work of Dr. Malvina Baica.

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