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Principles of algebraic geometry, by Phillip Griffiths and Joseph Harris, Wiley, New York, 1978, xii + 813 pp., $42.00.

Algebraic geometry, as a mutually beneficial association between major branches of mathematics, was set up with the invention by Descartes and Fermat of Cartesian coordinates. Geometry was as old as mathematics; but it was not until the seventeenth century, more or less, that algebra had matured to the point where it could stand as an equal partner. Calculus too played a major role (tangents, curvature, etc.); in the early stages algebraic and differential geometry could be considered to be two aspects of "analytic" (as opposed to "synthetic ") geometry.

During the nineteenth century the horizons of the subject were expanded (to ∞!) by the development of projective geometry and the use of complex numbers as coordinates. Gradually, out of an intensive study of special curves and surfaces, the idea emerged that algebraic geometry should deal with an arbitrary algebraic subset of n-dimensional projective space over the complex numbers (i.e. a set of points where finitely many homogeneous polynomials with complex coefficients vanish simultaneously). This was the proper context for the working out of concepts like transformation groups and their invariants, correspondences, and "enumerative" geometry (how to count the number of solutions of a geometric problem).

In the middle of the nineteenth century, Riemann appeared on the scene like a supernova. His conceptions of intrinsic geometry on a manifold, topology, function theory on a Riemann surface, birational transformations, abelian integrals, and zeta functions, fueled almost all the subsequent developments. In the analytic vein, which is relevant to the book under review, some of the more prominent contributors have been Picard, Poincaré, Lefschetz, Hodge, Kodaira, and Hirzebruch. In particular Hodge and Kodaira used the theory of partial differential equations to establish basic results, some of which have not yet been proved otherwise.

It is not my purpose here to summarize the history of algebraic geometry (cf. [**D**], [**Z**]), but rather to suggest that since it began algebraic geometry has been a prime exhibit of the unity of mathematics, an area where diverse methods from analysis, topology, geometry, algebra and even number theory have interacted in a marvellously fruitful way. Indeed, though the subject has sometimes grown in directions which seemed exclusively algebraic, geometric, or analytic, history teaches us that it will continue to flourish *only if* nourished by ideas from all the different fields.