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Proof in $C17$ algebra. (English)

Van Kerkhove, Bart (ed.) et al., Perspectives on mathematical practices. Bringing together philosophy of mathematics, sociology of mathematics, and mathematics education. Berlin: Springer. Logic, Epistemology, and the Unity of Science 5, 119-133 (2007). ISBN 978-1-4020-5033-6/hbk

Larvor's aim is to illustrate, through four "snapshots", how the attitude to algebraic proof changed from the 1540s to the 1660s. Initially, as he points out, Euclidean geometry was seen as a scientia, agreeing with how Aristotle described a demonstrative science in the *Posterior analytics*, which algebra was not; instead, it was considered a technique for finding solutions. In the *Ars magna* (1545), Cardano therefore gave geometric proofs for his solution rules. Viète followed by Harriot, instead, gave a preponderant role to the theory of proportions from *Elements V*; Harriot, in the *Artis analyticae praxis* (posthumous, 1631), however, also ascribed argumentative power to the manipulation of symbols. Pell, finally, took the operations of symbols to be sufficient proof, which he may have learned from Johann Rahn, on whose *Teutsche Algebra* (1659) the Introduction to Algebra (1668) is based, but who may have been a pupil of Pell and learned it from him.
The historical precision of the paper is less than optimal. It thus begins by a genuine just so story, according to which algebra came from "an indigenous European tradition of reckoning [to which] were added rediscovered Diophantus and the works of Islamic mathematicians"(p. 120), and arose when arithmeticians had "established techniques for finding square roots [and therefore naturally wanted] to extend these techniques to problems that we would nowadays express in quadratic equations" (p. 119). Following a mistaken header in *T. R. Witmer*'s translation of the *Ars magna* [Cambridge, Mass., and London: M.I.T. Press, 1968, p. 237ff)] it is also claimed (p. 121) that Ferrari found the solution to biquadratic, not to more general quartic equations; actually, biquadratics had been routinely solved in Italian abbacus algebra since the early fourteenth century. On the whole, however, this does not affect the core of the argument.

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