

**David Attis: Mathematics and the Making of Modern
Ireland, Trinity College Dublin from Cromwell to the
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REVIEWED BY DAVID SPEARMAN

Mathematics in Trinity College Dublin has been a core discipline and area of activity since the college's foundation at the end of the sixteenth century up to the present day. Its history is well documented and has been a subject of interest to historians of science; it forms the central strand of this book. Mathematics is interpreted in a broad sense, reflecting the historical grouping in Trinity of the chairs of mathematics and of natural philosophy. And, despite the book's title, Irish non-Trinity scientists such as Boyle, Kelvin, Stokes, Larmor and Boole are included in the narrative. The author's interest in Irish mathematics reaches back for over twenty years. As an undergraduate in Chicago his enthusiasm for physics was channelled towards history of science which led him to Cambridge and then to Princeton and a doctoral thesis which formed the basis from which this book has developed. Over the years he has made many visits to Ireland where he has consulted widely and studied source material. It is important that the material and information that he has gleaned and a listing of the references from which he has drawn, together with his own commentary and assessment, should be made easily available as it now is with the publication of this book. David Attis insists however that the history as he presents it in this book is different from what might normally be expected of a history of mathematics. "It explores" he says "the contested and contingent aspects of mathematical activity as a means to understand not the logical development of mathematical truth but the social and political development of modern Ireland". I have some doubts about this approach and the constraints which it imposes on the narrative as he presents it. I agree that an account of the mathematical achievements of a relatively small scientific community is not of itself an adequate basis for understanding the logical

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development of mathematical truth, but to suggest that it can provide a means to understand the social and political development of modern Ireland seems to me to be unrealistic. And pursuing that objective can have the further disadvantage of neglecting other strands of influence and of deflecting attention from the diversity of individual motivation and outlook. Examine, by all means, the social and political contexts within which these individuals lived and the extent to which their work was influenced by them; that, as well as the impact their achievements may have had both in the social and scientific contexts, is a proper part of the historical narrative. The characters in this story form a varied bunch, differing in background, in attitude and interests, and also in political outlook. The Trinity Fellows may have shared a common commitment to the Union but many of them were proud to count themselves Irishmen. They were Protestants, most of them ordained clergy, but typically not religious zealots. An important part of their Protestantism was their resistance to authority; this manifested itself in their readiness to adopt the new learning and to replace the Aristotelian world view with Bacon, Copernicus and Galileo. Fellows were required to be celibate while holding their Fellowships but they could resign if they wanted to marry, and for those in holy orders there was the prospect of moving to a country rectory in one of the livings owned by the College, where some at least managed to continue their scholarly investigations. They came from different and often relatively modest social backgrounds. Hamilton's father was a land agent; the family's strained financial circumstances were at least partially the reason that he was sent to live with and be educated by his uncle who ran the diocesan school in Trim. Brinkley, whom Hamilton succeeded as Professor of Astronomy, was born to a single mother and was supported through school and at Cambridge by teachers and clergy who recognised his talent. Incidentally, Brinkley would probably not have resigned to become Bishop of Cloyne if the professorial salary had been closer to that of the bishopric. And the world would have been the poorer! James MacCullagh was the son of a small farmer in County Tyrone. He lived modestly in College, allowing him to accumulate his salary over many years so that when the Cross of Cong came on the market he was able to buy it and present it to the Academy, expressing his distress at the prevailing lack of interest in our national heritage and the hope that his intervention

might encourage others to do likewise. It did, and led to further acquisitions and the formation of the collection of Irish antiquities now housed in the National Museum. They kept in touch with their English colleagues. They travelled to London and maintained contact through regular correspondence. MacCullagh's friend Charles Babbage arranged for him to become a member of the Athenaeum, giving him a base where he could stay when he was in London. And they also corresponded with French, German, Russian and other colleagues. They regularly attended the annual meetings of the British Association after its establishment in 1831. Quite a few of them were Fellows of the Royal Society: Boyle and Petty were Founder Fellows. The College was extremely fortunate in its library. Thanks to Luke Challoner, one of the original Fellows, and James Ussher, one of the initial scholars who became a Fellow, then a bishop and then Archbishop of Armagh, both avid book collectors, members of the College had access from the very early days to a larger and broader collection than was then available in Cambridge. Trinity mathematicians, were to the fore in establishing the Dublin Philosophical Society in 1684. These included William Molyneux, who had translated Galileo and Descartes into English and did important work on optics, who was a friend of John Locke and had Locke's Essay concerning human understanding introduced into the College curriculum. Another was St George Ashe, who was the second Donegall Lecturer in Mathematics, succeeding Myles Symner, and later became Provost; during his Provostship the College celebrated its first centenary during which both the continuity of the traditional religious learning and a commitment to the new interest in science were emphasised. If one seeks to find some strands of continuity in Trinity mathematics perhaps geometry might spring to mind. Hugh Hamilton, Fellow and Professor of Natural Philosophy, who was also the great-great-great-grandfather of J L Synge, wrote a treatise on Conic Sections in 1758. Bartholomew Lloyd's *Analytic Geometry*, published 60 years later, was the book that was to awaken decisively Hamilton's interest in mathematics. MacCullagh was also a student of Lloyd, and he too was a fine geometer, passing this on to his student George Salmon whose five books on geometry and the theory of invariants went through many editions and were translated into as many as five languages. J L Synge inherited this tradition and incorporated his geometric outlook in his enormously influential

books on Special and General Relativity. But perhaps the strongest thread linking these scholars is their shared spirit of enquiry and their enthusiastic pursuit of knowledge and understanding for its own sake. This includes Miles Symner (sometimes wrongly categorised as a mere Cromwellian soldier whose only role was to teach the rudiments of surveying), Molyneux, Hamilton, MacCullagh, the two Lloyds, Salmon and Synge, and still continues in the string theorists, with their geometries of the world, as well as those who use lattice models to obtain results in Quantum Field Theory and are led from this to develop high performance computing. It is that same spirit and outlook that motivated de Valera to establish the Institute for Advanced Studies and to bring Schrodinger to Dublin, and that led Ernest Walton to explore the atomic nucleus. Unfortunately, and despite the host of ancillary practical results delivered as by-products, this pursuit of fundamental understanding seems to receive scant encouragement today.

David Attis has brought together a great deal of useful information which he presents in an accessible and readable way. He has adopted a particular perspective which he pursues with determination. His book is interesting and thought-provoking. It raises many questions, waiting temptingly to be pursued. And if some of his readers are stimulated to broaden the panorama and to interpose their own individual alternative narratives then that surely is no bad thing.

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