Small Grants Report to the British Society for the History of Mathematics

I am very grateful for the financial support given to me by the BSHM to undertake visit to the Institute for Advanced Study (IAS) in Princeton in September-October 2026. It has provided me an invaluable opportunity to pursue research for my forthcoming book with Yale University Press, on zero-sum games, and the history of game theory more broadly.

I spent three weeks at the IAS, an institution most closely associated with some of the most significant developments in the 20th century mathematics and theoretical science, and where the most important protagonists of my narrative met and worked the details of the game theory – John von Neumann (1903-1957) and Oscar Morgenstern (1902-1977). During my visit, I concentrated on archival documents relating to them. Their work, culminating in the landmark publication of *Theory of Games and Economic Behaviour* (1944) transformed the study of strategic interaction during the Cold War, which was also of interest. Game theory provided a new framework for understanding the zero-sum games, a two-player games in which one player's gain is exactly balanced against the other's loss, so that the total gain or game score remains unchanged.

Of particular interest to me during this visit was the collection donated to the archives by Julian Bigelow (1913-2003), a pioneering engineer and computer scientist who worked closely with von Neumann at the IAS. This collection has not yet been fully processed, so it was a real thrill to be able to access it in person. It contains documentary material that will help me illuminate the practical and collaborative work undertaken by von Neumann and various people he was in touch with, as well as his work for the US government and the RAND corporation.

Whilst the published books and papers provide essential accounts of the development of mathematical ideas, it is within the correspondence and in the drafts of papers later published that most interesting details emerge about formation of mathematical ideas. An unexpected find of this kind was the cornucopia of papers and correspondence about Alan Turin (1912-1954) who studied at the IAS with Alonzo Church (1903-1995). In one collection of papers relating to him I found interesting details about his life and works.

I returned from Princeton with a rich body of material and with some new questions to give a consideration to and explore further when writing my book.