

Coffee, Love and Matrix Algebra by Gary E. Davis, 2014, Republic of Mathematics, 396 pp, ISBN: 978-0692262306, £9.93.

At the end of the last millennium Timothy Gowers wrote an essay ‘Rough Structure and Classification’ (accessible, in postscript format, on his webpage) the first part being a contemplation of how computers might impact on mathematical research over the next century. In his forecast, human mathematicians follow their chess grandmaster counterparts into also-ran status, with perhaps a twilight phase “where only a few very outstanding mathematicians could discover proofs that were inaccessible to computers. Perhaps the others,” Gowers continues, “would concentrate on teaching, but computers would probably become better than us at this as well.” His vision has more than a whiff of John Haugeland’s Good-Old-Fashioned-AI about it but there is no doubt that some very deep results have acquired automated proofs since the year 2000, notably the Jordan curve theorem (2005), Feit–Thomson (2012) and Kepler’s Conjecture (2014). And significant progress has been made towards a fleeting ‘golden age’ imagined by Gowers “when computers were good at exercises but not yet good at having deep insights”. Maple has advanced, since the millennium, through twelve version numbers; Wolfram Alpha (2009) has recently been followed by Mathematica Online; and there are high quality open-source competitors such as Sage and SymPy. Subject specific software such as Magma and Gap are completely entrenched as computer-aided research tools.

The reason I remind you of all this is because Gary Davis’ novel is largely about how the clever, friendly, motivated staff of a mathematics department on the US East Coast become even more clever, friendly and motivated thanks to computer-aided teaching. Well, not to be coy, thanks to Wolfram Research’s ‘Computational Document Format’ (CDF). Competitors, especially MatLab, are derided almost, I would have thought, to the point of being actionable: “MATLAB was now looking distinctly like last century software”, “if MathWorks didn’t do something about MATLAB it would probably be dead in ten years”. Actually, product placement is rife throughout the book: a jewellery company, a legal company, an educational consultant, a barbecue consultant, a brand of coffee, all prove to be actual commercial entities and all get generous press.

In fact there is a general lack of editorial control and polish. Never mind, because Davis has the skill of a good story-teller in making you turn his pages. And his style is engaging, genial and unaffected: I was initially reminded of Alexander McCall Smith and there is some similarity between Davis’ anti-hero Professor Albacete and McCall Smith’s Professor Dr von Igelfeld and between their respective tomes *Matrix Algebra* and *Portuguese Irregular Verbs*. But whereas von Igelfeld and his book are perpetual fall guys for McCall Smith’s gentle mikey-taking, Albacete and his become symbols of the healing power of academic camaraderie, good (trade-marked) coffee, and the CDF. Love, of various types, came to predominate and I ended the book in the company of an adolescent *Pollyanna*.

Nevertheless, as well as being very readable I imagine Davis’ book is well-informed. He has a background in mathematics education, maintains a very widely-read mathematics blog and has earned himself over thirty thousand Twitter followers. If he says that a successful small US mathematics department is or will soon be one that is exclusively devoted to multidisciplinary research into how to use computers to better educate its students then I, not having visited such a department since before Gowers wrote his essay, am inclined to believe him. So, at least to those who subscribe to Gowers’ ‘Golden Age’ vision, I recommend this book as a pleasant and thought-provoking read.