MAWA Book Club

Mathematics for Human Flourishing (Yale University Press, 2020)
by Francis Su

Having watched online Francis Su's Retiring Presidential Address to the Mathematical Association of America (MAA), I was keen to acquire the promised book and ordered it as soon as it was published in 2020. It's a remarkable book, which repays re-reading, and so I was pleased to do so for the Book Club meeting, at which we enjoyed an animated discussion.

Just a little context … Su was the first Asian-American President of the MAA, which is one of the two large US national bodies of professional mathematicians; although some in the MAA pay solid attention to mathematics education, and probably all active members are engaged in some teaching of mathematics at various levels in universities, it is mostly a body of research mathematicians rather than teachers. Su himself has long been interested in teaching as well as research, and first came to my notice through the lovely *Math Fun Facts* app and website (https://math.hmc.edu/funfacts/), which give a human, and even at times playful, perspective on maths.

The book advances the claim that mathematics has a powerful potential to help (all) humans flourish and so is written for a general audience, not just an audience of mathematicians. The opening lines of the book, in the Preface, summarise it well:

> This book is not about how great mathematics is, though it is, indeed, a glorious endeavour. Nor does it focus on what math can do, although it undeniably can do many things. Rather, this is a book that grounds mathematics in what it means to be a human being and to live a more fully human life.

Far too many people in our society, including students and perhaps even some teachers, would find such an undertaking incomprehensible, as it is a long way removed from popular (mis)conceptions about the nature of mathematics. I suspect that the same sad diagnosis may well be accurate in in the USA and elsewhere, which probably motivated Su to address this ambitious task.

The book comprises a discussion of various human desires, each the topic of a chapter, together with the virtues associated with those and towards which mathematics might contribute. There are sufficiently few chapters to list them all: exploration, meaning, play, beauty, permanence, truth, struggle, power, justice, freedom, community and love. We agreed in our discussions that these are not normally uppermost in the minds of many students and their parents when discussing the mathematical experience.

Each of the chapters includes a discussion of various virtues associated with these desires, drawn from Su's experiences, observations and discussions amongst his wide circle of professional colleagues. Each chapter concludes with a brief mathematical problem, for readers who enjoy being diverted into mathematics, as well as an extract from Su's ongoing personal correspondence with a long-term jail inmate, learning the mathematics that he missed out in school. Some of the letters are poignant, others brutally frank, but all of them remind the reader of the humanity involved in powerful ways. Although certainly not a

textbook, the book also includes some discussion topics for each chapter, and some hints and solutions for the problems.

This book was much too rich for our discussion to encompass everything; indeed, we might have had a fruitful discussion about a single chapter, helped along by the discussion questions Su provides. Indeed, that would make a great conversation piece for a staff meeting not concerned with the usual administrative minutiae, but rather focussing on important bigger pictures of our professional lives. The (virtual) book club attendees responded to many different aspects of the arguments advanced and illustrated, while all enjoying both the experience of reading the book and of discussing it with others, but all knew that we had only scratched the surface.

To illustrate briefly, the desire of 'Community' introduced as one chapter in the book addresses various virtues of hospitality, excellence in teaching and mentoring, disposition to affirm others, self-reflection, attention to people and vulnerability (nicely reflected in a summary at the end of the book). Whether we think about our book club, our classroom, our staff room, our school community or our wider professional community, these are all profoundly important to flourishing as humans through mathematics. What does it mean to be 'hospitable'? How do we engage in our various communities? How can we be inclusive of all involved? Some of us reflected on how important our various mathematical communities have been to us, how carefully they need to be nurtured and how much they have helped us to flourish. Indeed, a book club, within a MAWA, connected to an AAMT and beyond, all prompt reflection on these ideas. Our communities meet, sometimes daily in a classroom, or weekly in a staff meeting, or less often in a conference, or more often virtually, but these questions remain important.

Throughout the book (and also the talk), there is regular reference to the almost haunting words of Simone Weil: *Every being cries out silently to be read differently*. Weil was a celebrated writer and philosopher, who died of illness at 34, but whose work was much discussed after her death. Importantly, she thought very little of her abilities, growing up in the shadow of her older brother, André Weil, one of the outstanding mathematicians of the twentieth century.

This book doesn't have teaching tips, lesson plans, assessment ideas, assignment tasks, open-ended problems or hints on using technology. But it is a wonderful book, that will help mathematics teachers think about what mathematics is, why it matters to humans and why it is important to keep trying to teach it well. And if they lend their copy to their significant others, the important messages might be amplified.

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