

DA VINCI WAS A DOUBLE MAJOR

After a decade of parents rushing to enroll their children in specialized math classes, and university humanities departments in crisis mode, a radical education movement is taking hold. Why not have students study Shakespeare *and* the quadratic formula? Prepare for a new Renaissance generation.

BY NICOLE LAPORTE
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A few years ago, when Alex, an academically minded Manhattan mother, first hired a math tutor for her son after he was placed in seventh grade advanced math at the prestigious Collegiate School on the Upper West Side, it was not, she said, an example of competitive parenting. Her son had shown an aptitude for math on the school's placement test but then had flubbed the first two exams he took once school was underway. "I just wanted him to get an A- or a B+," Alex said recently.

She quickly learned, however, just how competitive the math game has become in places like New York, San Francisco, Los Angeles, and other cosmopolitan hubs populated by moneyed strivers. When Alex (her name has been changed) tried to hire the tutor that "everyone" at Collegiate used, she said that parents turned mum. "Getting the tutor's number was a nightmare. It was so coveted. It was like trying to get Jackie Kennedy's Social Security number." She finally managed to obtain the sacred seven digits one evening over drinks with a fellow mom—it took alcohol to shake the information free. But the hurdles didn't end there. The tutor was so booked that the only time she could tutor Alex's son was late on Sunday evenings.

Being a math nerd—in school or later in life—was once the definition of social marginality, a demarcation rife with ruthless stereotypes: the pocket calculator, the smudged glasses with bent frames. Even for those who were hypersuccessful mathletes, like Bill Gates, it wasn't until this century that they became viewed as glamorous

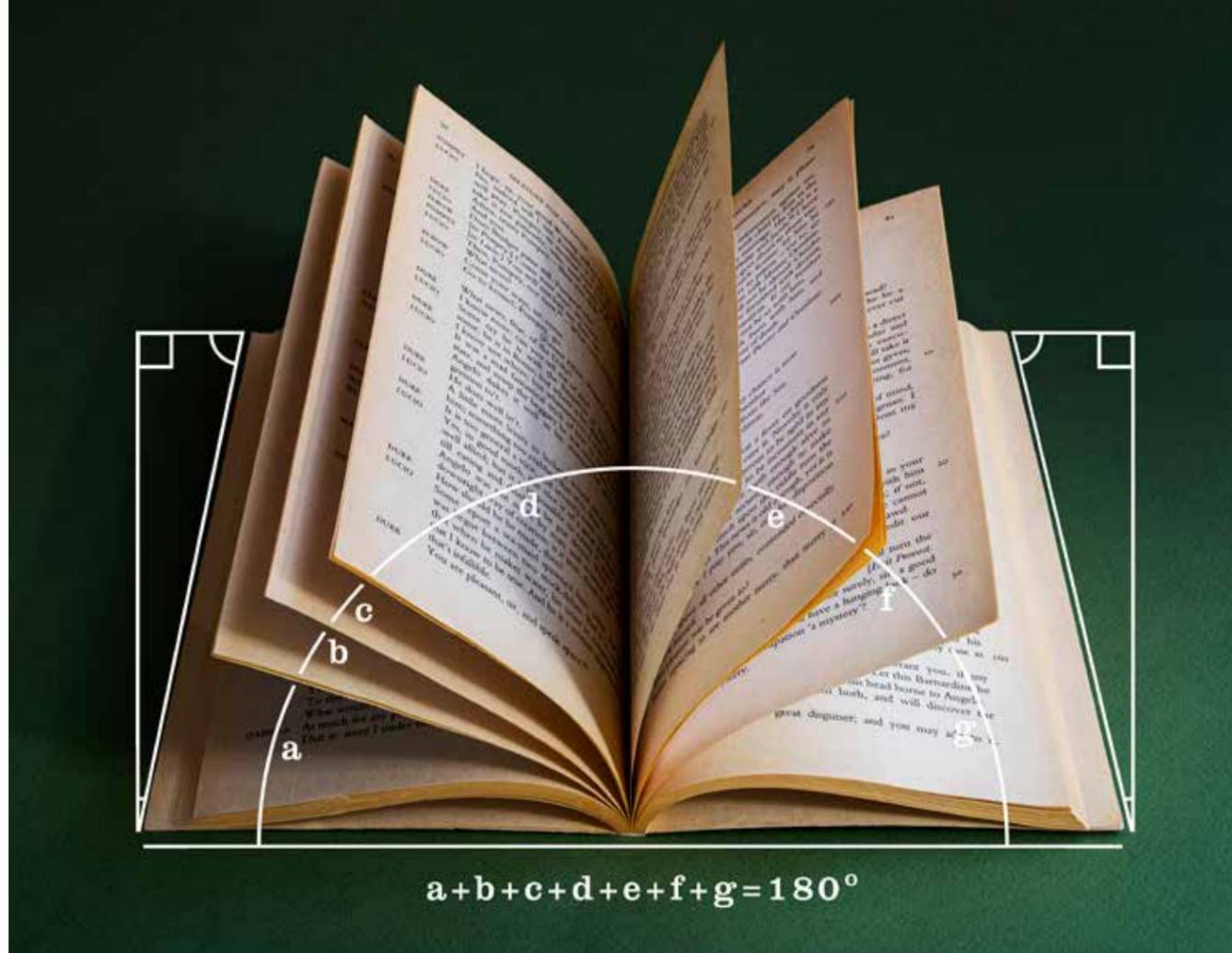
tech gods and global ambassadors. The video of the Microsoft Windows launch in 1995 is a study in ebullient but cringey math geeks gone wild: Gates and Steve Ballmer bop around a stage as they awkwardly pump the air to a Rolling Stones tune.

Back then the pinnacle of high achievement hewed to more classical lines—and stereotypes. Bill Clinton was a Rhodes Scholar at Oxford who was fond of Walt Whitman. For teenagers at the dawn of the 20th century, the ideal was to be a well-rounded dynamo who could effortlessly nail a back heel kick on the soccer field, ace the SATs, and weave *Macbeth* references into casual conversation. Focusing singularly on math was viewed as a narrow path toward pursuits in academia or applied science.

But a lot has changed since then. Gates and other tech leaders like Elon Musk, Jeff Bezos, and Mark Zuckerberg now define the culture—for better or worse—far more than anyone in politics or traditional businesses. Indeed, nothing is more responsible for this new paradigm than the rise of Silicon Valley, with its billion-dollar IPOs and daily life-altering "products." Being a nerd has become not just an acceptable trajectory but an incredibly desirable one. "When I was in middle school, all the cool people were basketball players," says Richard Rusczyk, the founder and CEO of the Art of Problem Solving (AoPS), an accelerated math program that serves nearly 200,000 school age kids. "It was tough to be a math kid. Now there are role models out there."

This sea change, combined with a disheartening economy ➡





and college tuition bills that can run up to \$80,000 annually, has led to a new push for math among the wider population of students and their parents, who find comfort in imagining their kids as software engineers, chief technology officers, and game designers. “There’s less perceived potential in things that come after the humanities major,” Rusczyk says. “Law has gotten harder. There is a set of lawyers who do great, but a very large group who don’t. It’s hard to become a doctor. In terms of the gauntlet you have to run to get to the prize at the end, it’s much easier to be a programmer.” Numbers bear this out. A recent *New Yorker* article titled “The End of the English Major” lamented how English and history majors have decreased by a third over the past decade. Humanities enrollment is down 17 percent overall.

The pre-college kids gravitating toward math enrichment programs span a wide spectrum. There are children in elementary and middle school whose foundational math skills were hit hard by the pandemic. There are older students who feel pressure to have as much accelerated math (namely, calculus) on their transcript as they can in order to have a leg up in the more-competitive-by-the-hour college admissions derby. And then there are students who simply love math but never had as many opportunities to explore it as they do today, via math circles and organizations like the Russian School of Mathematics (RSM) and AoPS.

These companies, along with math tutoring franchises like Mathnasium and Kumon, all of which have seen enormous growth in the past few years, are selling themselves not just as homework helpers but as tools to improve students’ deeper understanding of mathematics

in a way that borders on spiritual enlightenment. At the Russian School of Mathematics, which operates some 50 schools around the country (kids attend classes after their regular school gets out), students “learn how to navigate abstract concepts intuitively,” says Masha Gershman, RSM’s director of outreach. “And in the process they develop a deep foundational knowledge of math. There are really great behavioral benefits, too. They become very confident, because they develop what we call intellectual character.”

The rise in math as a pastime has been underway for a few decades now, for reasons that go beyond Steve Jobs’s cool factor or Jeff Bezos’s net worth. Waves of immigrants from mathcentric parts of the world, including China, India, Turkey, Nigeria, and Eastern Europe have fueled a focus on math in the places where they work as professors or engineers. The parents among them often find the level of math at their kids’ public and even private schools wanting, which drives up interest in math circles and other after-school programs they sign their kids up for.

Increasingly, that feeling is shared even by many non-mathy parents, due to the identity crisis underway in this country as to how math should be taught. In California there is a proposal to “de-track” math instruction in public schools, meaning that kids in advanced math would no longer be separated out from kids working at a less accelerated level, in order to close racial and socioeconomic disparities in achievement that have long existed in math education. The proposal also seeks to deemphasize calculus in high school and replace it with data science or statistics—even though calculus is perceived as an increasingly important factor in college admissions.

The tracking system has its share of critics on all sides, but some feel that the alternatives being offered are still problematic. As Rusczyk says, “If you set up a bunch of tracks, the kids on the lowest rung feel that they’re at the bottom. That’s a terrible signal to send. So I understand the goals [of de-tracking], but I think there are other solutions that should be explored.”

A growing number of academics see the future not as an either-or question of math versus the humanities but as a combination of the two, which, after all, was the blueprint of the liberal arts education as dreamed up by the ancient Greeks. The notion was to create a wholly educated individual who was as learned in astronomy as in Plato. “I think universities have a responsibility to offer a liberal education as the foundation of any major,” says Roosevelt Montás, senior lecturer in American Studies and English at Columbia University and the author of *Rescuing Socrates: How the Great Books Changed My Life and Why They Matter for a New Generation*. “A student should not have to choose between computer science and some familiarity with Shakespeare. That should be baked into whatever kind of professional education you end up pursuing.”

But as with so many trends in education, a driving force in the push for more math is college admissions. Kids are involved in the “race to calculus” (or, even better, AP calculus), which presumes that calculus is a prerequisite for getting into a selective college. Admissions offices don’t outright say as much (with the exceptions of schools like MIT and CalTech, whose very mission is grounded in math and science), but there is a growing perception that even at liberal arts institutions, transcripts devoid of calculus—which students generally take in their senior year—will be tossed onto the less desirable pile.

Consider that 80 percent of students offered admission for the fall of 2023 to Wesleyan University, a liberal haven most known for its film and humanities programs, had completed calculus. In contrast only 19 percent of high school students in 2022 had completed the class, according to the education news site Inside Higher Ed.

Among families, the importance of calculus has become heightened as standardized test scores have become optional at many schools. The sense is that an advanced math class offers concrete evidence of achievement in a way that is more objective than, say, an A in British Literature.

The situation has changed dramatically from 20 years ago, when calculus (and certainly AP Calculus) was seen as the route only for all-around whiz kids or ones who were STEM-oriented. As a public high school student in Connecticut in the early 1990s, I had a clear humanities bent and eagerly signed up for AP English, history, and French courses. It never dawned on me to pursue advanced math or science, so I took the basic “level 2’s.” When applying to college I didn’t feel that this hurt me; I was accepted by a handful of selective schools and wound up studying English at Georgetown. It seemed like a solid, foundational background for any number of real jobs: law, teaching, or a consulting gig at Bain & Co. (a popular route for many an English major back then).

But this sense of flexibility and freedom no longer exists, and

the change has trickled down to how parents view their children’s course of study in high school, and ultimately what they focus on in college. “I want my kids to be more well-rounded than I was,” said a Greenwich mother who has a liberal arts background. “But today math is so important. It didn’t seem important when we were in high school. You used to be able to catch up.”

Montás agrees that students today feel the pressure to specialize earlier. “There used to be a sense that your undergrad years were just about following your intellectual passions. You’d still have time to go to grad school or specialize outside of academia and pursue whatever career you wanted. I think that space has been shrinking,” he says. As to why, he points to the “rise of the knowledge economy and the cost of college. Particularly, working- and middle-class families look at college as a kind of investment, with the expectation that it will yield returns.”

Historically the humanities were seen as a solid training ground not just for writers or journalists but politicians, lawyers, diplomats, and business leaders. The idea was to soak up everything from Socrates to Sontag while also taking courses in geometry and astronomy as part of a virtuous journey toward greater selfhood: the *cura personalis*, which is Latin for “care of the whole person.”

“Every human being has to organize their life according to some conception of what kind of life is worth living,” Montás says. “What is the best kind of life for me to live? That’s a question the humanities equip a student to ask and explore. That stuff does not go out of relevance.”

Even so, he readily admits that the humanities in higher education “are falling off a cliff.” He thinks the solution is to make the humanities and the math/sciences less of a binary construct in college, so that math and the humanities are woven together. This type of blended approach is already happening at Purdue University, which instituted the Cornerstone Integrated Liberal Arts program in order to provide its STEM students with “exposure to foundational material in history, philosophy, and literature

and develop their written and communication skills,” according to the program’s website. Cornerstone is now being implemented at other institutions thanks to a grant from the National Endowment for the Humanities and the Teagle Foundation.

At the Proof School in San Francisco, an independent middle and high school that caters to kids with a math bent, the curriculum incorporates a vigorous study of art, literature, and languages. In fact, the school’s humanities dean is the former preceptor of the undergrad writing program at Harvard. Paul Zeitz, a professor of mathematics at the University of San Francisco who co-founded the Proof School, firmly believes in a balanced education and doesn’t believe kids should be forced down a specific path, including math.

“The truth is,” he says, “math is a lot like music. It’s an art. Some people have more of an innate talent. It’s an art that has an inherent, aesthetic beauty, but it should be an enjoyable thing, and most kids should not specialize in it. Just as you want every kid to have an exposure to music, but there’s no need for every kid to do an hour of piano practice a day.”

He pauses. “But tell that to a parent who went to Yale and is worrying about their child going to Yale.” **T&C**

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