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Regulars

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The *Plus* New Writers Award 2006 the competition issue

Here at *Plus* we're aware of how incredibly privileged we are: every day we get to wallow in our favourite subject, explore some of the most beautiful ideas in the universe and even get to tell the world about them. But not only is it a great job, we also feel that communicating maths is a very important thing to do. We try to open a door onto the world of mathematics in order to convince the general public of the importance and relevance of maths. To do this we rely on our excellent authors, and we decided we needed to start the hunt for the maths writers of the future, the people who can bring mathematics to life.

So in March this year we launched our first-ever *Plus* New Writers Award with a challenge to our readers: maths is the language of the universe, so what do you have to say? A lot as it turns out, as your articles covering an incredible range of topics have flooded in!



Our venerable judges, Marcus du Sautoy, mathematician and best-selling author, John D. Barrow, director of the Millennium Mathematics Project and author of many successful books and plays on mathematics, and Helen Joyce, ex-editor of *Plus* and now a correspondent for *The Economist*, were truly spoilt for choice. "There were some really inventive and original articles," says Marcus du Sautoy, "Topics ranged from the

mathematics of protein folding to the death of the lightning calculator. It is great to see so many people demonstrating eloquent writing with a grasp of sophisticated mathematics."

After much painful weighing–up our judges decided on two winners, one for the schools category and one for the general public category. In addition, they chose two runners–up for each category. Congratulations to all of the finalists and you can read the six winning articles in this issue of *Plus*.

If you're not amongst the winners, then don't despair: the quality of your submissions was really impressive, competition was strong and the final result was very close. Some of the entries that didn't make it into the final six struck a particular chord with us, making us laugh or think, and we decided to share these with our readers by publishing them in this section of *Plus*. You can find them below.

Thanks very much to all of you who entered the competition. And if you didn't win this time, or never quite got around to entering in the first place, then watch this space for the *Plus* New Writers Award 2007.

- All the finalists
 - Maths journey by William C. Eaton, a finalist in the general public category
 - Mathematics a poem by Eliza Johnson, in the secondary school student category
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Congratulations to all the finalists!

Secondary student finalists

- *Infinity plays the number when division by zero is allowed* by Tom Lovering, Bristol, UK
- *Math ~ k(faith)* by Alicia de los Reyes, New Jersey, USA
- *"Father the reckoning is wrong": the death of the lightning calculator* by Owen Daniel, Norfolk, UK runner–up
- *Drinking Coffee in the Klein Café* by Jonathon Tims, Warrington, UK runner–up
- *Let 'em roll* by Clare Hobbs, Durham, UK the winner!

General public finalists

- *The fabulous positional system* by Christopher Hollings, York, UK
 - *On numbers, humans, monkeys and neurons* by Pablo Garcia Tello, Leuven, Belgium
 - *Math's Journey* by William C. Eaton, Oregon, USA special mention (see below)
 - *How I made a mathematical discovery* by Brad Bjordahl, Ontario, Canada
 - *Say hi to spider–math* by Ahmed Gaafar, New Jersey, USA
 - *So simple, so powerful: using maths to treat diseases* by Judy Hart, Bristol, UK
 - *Beautiful equations* by Katie Weeks, Oxford, UK
 - *Profits for peanuts* by Joel Goodwin, London, UK
 - *We must know, we will know* by Rebecca Lea Morris, Kent, UK runner–up
 - *Damn Lies* by Ben Parker, London, UK runner–up
 - *An Enormous Theorem: The Classification of Finite Simple Groups* by Richard Elwes, Leeds, UK the winner!
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Maths journey

Somewhere between X and Y I got lost. Perhaps I used subtraction when addition was in order, I may have been stuck outside a bracket or trapped under a square-root symbol. I don't know or remember exactly why, but sometime early in high-school, I gave up on maths. Along the educational process I missed something and math didn't "click" any longer. A foundational understanding of the basic rules of math was my downfall. Sure, I could add and subtract, divide and multiply, guesstimate large or obscure square roots, but when it came to writing polynomials in standard form so that $(x^2 - 3x + 1) - (x^2 - 3x + 4)$ would pare down to -3 , I was baffled. Factoring was equally frustrating. I was smart but lazy. Amidst all that pulls for a teen's attention, math failed. I never bridged the gap of meaning for mathematics; the fun, necessary and interesting applications of maths. Bobby and Sue saving money or Joe's dad who would be twice as old as Joe in half as many years just didn't capture my attention. Discouragement summed up my feeling about math.

In my junior year of high school I discovered computers. I could program simple computers to do all sorts of tasks with BASIC; the logic of it made sense. Only now at forty-three years old does it occur to me that understanding BASIC and its logic is similar to the logic of algebra and all of mathematics.

During college, I took the road of least resistance: finite maths. It was the prerequisite for statistics a necessary component for my major. The rumours about this class were harsh: "impossible," "hardest class I've ever had," "boring," "confusing," "you'll be lucky to get a D,"... Consequently this greatest fear of my college career loomed large. Like anyone fearing a daunting mathematics journey I did the only realistic, sensible thing to do: I bought a calculator. It was a programmable calculator and it used BASIC.

As statistics began, there were new words like standard deviation, Chi Square, and familiar words such as mean, average, median. I credit the professor for making Statistics "math with meaning". I think that in much of my mathematics education, the "why" was left out. I never understood the need to convert $(x^2 - 3x + 1) - (x^2 - 3x + 4)$ to -3 . Statistics made sense though. In order to get the needed result you applied a particular formula. The answers were meaningful; they were descriptive information about a body of data. Class went on and to my surprise I understood this "impossible math course". I programmed my handheld computer with statistics routines. Then I would simply enter the scores the professor gave as data, and instantly have every required answer at the push of a button. I caught a little guff from classmates about what seemed to be a lack of effort. I was thankful however for the professor's reply: "If he is able to program all this information and these equations, then he understands it". To make a long story short, I aced statistics and helped a number of students in their understanding of it.

Fast forward now to somewhere in my late thirties. I don't recall the reason for the inspiration or even if there was a reason. Perhaps I was attacking mental boredom. I purchased a book called *Innumeracy, mathematical illiteracy and its consequences*. In this expose of mathematical illiteracy, written by John Allen Paulos; PhD, I found comfort. I was not alone. Since my initial read, I've read this book again, several times over the years, and progressed to its sequel: *Beyond Innumeracy*, which was equally fascinating, yet lacked the pointed finger that left me feeling like the victim of a conspiracy.

I understood *Innumeracy* and *Beyond innumeracy*. I enjoyed them! It dawned on me that the same logic in BASIC applied to algebra and to mathematics at large. If I was able to understand the ominous Statistics class perhaps there was yet hope for me: the mathematically challenged.

I began to peruse college textbooks, math workbooks, Calculus For Dummies, and other insightful books, periodicals and web sites for help in overcoming my fear of math. As a gadget lover, I purchased and learned to use the graphic calculators and mathematical software. Presently I continue this hobby for the pure joy of logic, challenge and discovery.

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Math is truly akin to exploring a new world and at the same time the foundation of our world. My hope is to encourage my children in the conquest of the maths. That it will be the adventure for them that I missed early on, and in doing this, to encourage others. It's practical, sensible and rational. Math enhances understanding in other subjects on many levels. With this as a friend, you'll never run out of things to ponder. I'm told that thinking is good for the brain. NUM3ERS, the CBS mystery program says it well: "We all use math everyday".

William C. Eaton

Mathematics

Maths on a Monday is hard to bear Adding of fractions is dull I swear Trigonometry is so complex,
Hexagonal shapes, give it a rest, Equations are bad and boring too, But a Magazine named Plus makes it more fun for you
A cool magazine that helps you understand, Topics are there that you'd normally brand,
Impossibly difficult and too complicated, Challenging and a subject that can sometimes be hated,
So why not try Plus, you'd be silly to miss out, Read it yourself and find out what the fuss is about.

Eliza Johnson



Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.