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Regulars

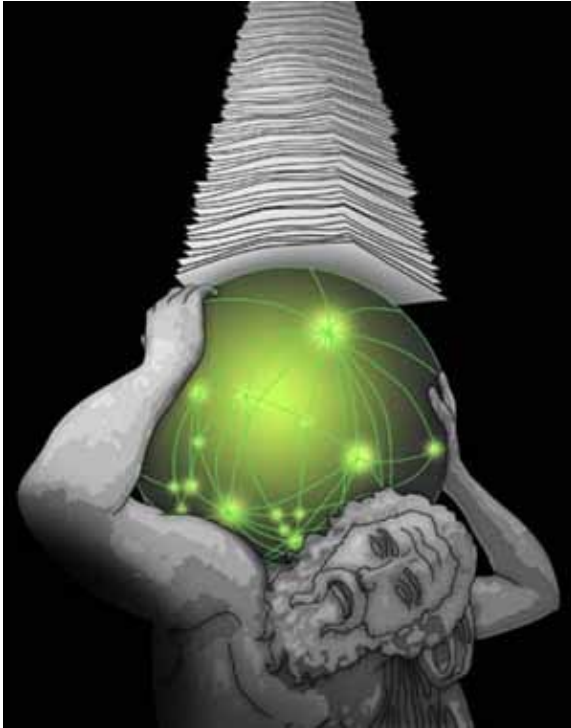
## **Pluschat**



### **This issue's *Pluschat* topics**

- [Information overload](#) – how mathematicians are helping us all to make sense of the vast amount of information now available to us
  - [Sum problems](#) – can you be good at mathematics without being good at arithmetic?
  - [Readers' corner](#) – Meet Mandy, the cuddly Mandelbrot set!
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### **Information overload**



We often hear that we live in the information age, and certainly information is easier to get hold of than it ever was before. With new websites coming online all the time, the web has become the first port of call for many people when they want to find out about something – anything at all. The other day I wanted to know how to get from Turnpike Lane to White City by tube, and instead of doing what I would have done a couple of years ago – try to find my battered old London AZ – I clicked my Google button, and used my broadband connection to get the information online from London Underground's website. The technology used to give me the information I needed was truly overkill – this was a case of the proverbial sledgehammer and nut.

But there is a downside to this wealth of information – how do we make sense of it all? Search engines don't evaluate the web pages they find in terms of its value, but in terms of its popularity. An old-fashioned encyclopaedia was edited by a group of experts; nowadays, we must all become editors and information experts if we are to make sense of the staggering amount of data easily available to us. This is not just an academic concern – if you do a websearch on "geomagnetism", along with reputable websites about geology and geophysics, you will find links to "Creationist" websites which present skewed and downright false "information" about the evidence for evolution, and rubbish like the "Bible Code" is hard to recognise for what it is without a reasonable amount of knowledge. We all need to become more sceptical about what we are being told, and to question the source and motivation behind the material.

To some extent, the disease is also the cure – another quick websearch will also provide you with the information you need to debunk the Bible Code. Clearly search engines have an immense amount of power, as mediators and "editors" of the information we all rely on. They do their best to use this power wisely – none list neoNazi or race hate sites, for example – but their task, never easy, is getting harder all the time, as those with pernicious views try to get around the existing filters. Now mathematicians are creating automated methods of searching, using the links embedded in web pages as their starting point – see [Search engine makes social calls](#) by John Whitfield. Whitfield says that "current content filters are largely text-based; these are easy to dodge and require intensive human management."

Making it harder for those holding objectionable opinions to find a hearing, and helping the rest of us to find the best-quality information; now that really is mathematics taking the information overload off my mind!

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## Sum problems

Wang Yen, a *Plus* reader from Malaysia, recently emailed us to ask:



A necessary tool of the mathematical trade?

Image from [freeimages.co.uk](http://freeimages.co.uk)

"Is it possible that someone who is very interested in and good at mathematical logic (understanding mathematical concepts and theories) but is not very good at mechanical calculation (i.e. his speed and accuracy in arithmetic is only average) and even finds it (mechanical calculation) boring, could go far in mathematics? This question arises because in the Asian (especially Chinese) context, arithmetic ability is highly prized and regarded as almost equivalent to mathematical ability, and good arithmetic skill is often deemed to be a necessary and sufficient condition for high mathematical ability. Here in Asia, if you are not as fast as your friends in your mental calculation or make a slip in calculation, you will often be seen and commented on as being mathematically inadequate. What do you think?"

What would your reply have been? Here is our editor's response:

1. Lots of maths is not about mechanical calculation. Although I'm reasonable at mental arithmetic, I mostly think geometrically and then must laboriously check my geometric intuition with algebra. This is not uncommon among people who work in geometric areas of maths (my interests are fractals and geometric measure theory). I think topologists would likely say the same.
2. Lots of maths is not about being fast. There are highly original thinkers who have their great ideas very slowly.
3. Care and accuracy are, however, important in mathematics. Although lots of mathematicians say they can't do sums (at least UK mathematicians!) I don't really believe them! Fluency with calculation is the basic grammar of mathematics. It would be hard to be a great writer without a feel for the way sentences are structured. Similarly if you are always being tripped up by your calculations it will be hard to do original work. But I don't think that calculations need to be amazingly fast, or never need checking! I just don't want to give the idea that I think calculations and arithmetic are nothing to do with maths.

What would you have said?

If you have anything to say about this or any other topic that might be of interest to *Plus* readers, e-mail [plus@maths.cam.ac.uk](mailto:plus@maths.cam.ac.uk). Let us know if you are happy for your email and our response to be published in *Plus*. (We may edit emails before publication.)

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## Readers' corner



Jon and Chloe from San Francisco University High School recently sent us a picture of "Mandy", their plush version of the Mandelbrot Set! They were inspired to create Mandy after taking a high school course in Chaos Theory and Fractals.

If you have any entertaining or interesting school projects you'd like us to show the world, why not email us? Maybe our other readers would like to know about your work!

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