

## Editorial

**I don't want to reinforce** the unhelpful stereotype of an anti-social mathematician, but I have to admit that it's been quite a while since I last went to a party. It's been even longer since I indulged in any party games. So, I don't know whether people still play *Would You Rather?* Just in case you're unfamiliar with the concept, someone offers two alternatives, one of which needs to be selected. The rules of the game do not allow for careful balancing between options, or for avoiding the question: you just have to pick one alternative. This sounds simple but, in practice, can be very difficult. Depending on the players' intent, questions can reveal widely different things from the comical to the deeply philosophical, such as, would you rather live in a world without kittens or a world without ice cream?

... questions are an important part of mathematics ...

where everyone benefits obviously makes things easier to agree and to implement. However, it's naive to think there are always solutions of this type. Sometimes, a difficult decision has to be made. Then, we need to decide in the style of *Would You Rather?*

The balance between mathematical and non-mathematical study inevitably involves other disciplines, so I've chosen not to pursue that here. Instead, I've selected something that is largely, if not entirely, within our own domain: would

you rather make our best mathematicians better, or raise the mathematical standard of our lowest achievers?

Even posing the question makes me somewhat uncomfortable. I immediately start looking for potential win-win scenarios. For example, it could be argued that an improvement in our lowest achievers would ripple through the entire domain to produce some benefit in the realm of our best mathematicians. Alternatively, it could be argued that, given the extensive way that mathematics permeates our world (and our economy) that any improvement in the mathematical elite would result in mathematically-derived benefits being distributed across our entire society. Both of these arguments are probably true, at least to some extent. But, neither directly addresses the issue of which approach leads to optimum results.

If a win-win cannot easily be achieved then, at least in my case, I start investigating (or, perhaps, attacking) the question. An obvious approach is to ask how we're defining 'best' or 'lowest'? Given the breadth of our subject, neither of those seems easy to define. But, without such definitions, it's not going to be easy to implement any sort of action plan. This type of reasoning allows me to avoid answering the question but, if I'm honest, that still leaves me somewhat uneasy. Whilst it can be an appropriate response, as I noted earlier, avoiding the question doesn't always help. Sometimes, it can mean that decisions are made arbitrarily, or by default: depending on your background you might attribute the quote to Descartes or to the rock band Rush but, even 'if you choose not to decide, you still have made a choice'.

Obviously, I have my own views on the question of making the best better or raising the lowest achievers, but I'm not going to impose them on you. That reticence is mainly because I don't think I'm especially qualified to answer the question. But, it's also partly because almost all my responses would be based on how I'd answer the question in a sporting context, where the salary cap (in American Football) or the profit and sustainability regulations (in the Premier League) bring a similar question, about balancing the two ends of the capability spectrum, into stark reality.

I will, however, suggest there might be times where we, as a community, would benefit from being more direct in how we tackle questions. Equivalently, I'm asking, do you want decisions to be made without us, or should we (at least, on occasion) be prepared to play *Would You Rather?* In that spirit, referring back to the very first question in this editorial, I'd give up ice cream much more readily than I'd give up kittens!

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*Would you rather ... a world without kittens or ice cream?*

For me, questions are an important part of mathematics. The ability to transform a difficult question into an easier question, for example, by a nifty substitution in an integral or by a change in coordinates, is a key weapon in a mathematician's arsenal. There are also times when a well-posed question is a valuable thing in its own right: many insightful things have been built upon a carefully constructed conjecture.

However, despite a mathematician's ability to transform and to pose questions, I've begun to wonder whether, as a community, we too often shy away from difficult questions. Or, perhaps, it's more accurate to suggest we shy away from completely answering such questions. To give a specific example, we may exhort for greater numbers of students to complete some form of mathematical study up to the age of 18. I don't want to prejudge the opinions of *Mathematics Today* (MT) readers, but I suspect that exhortation will receive significant support from our community.

Of course, if students are to spend more time studying maths then either they need to spend more time studying, or they need to spend less time studying another subject. I suspect the range of views from the MT readership on which of these options should be preferred would be more disparate than whether more study of mathematics should be conducted. But, without addressing the issue of 'what gives' (either non-study time or non-mathematical study time) there can be no more time for mathematics.

I will admit things need not be as stark as posed at the beginning of the last paragraph. It might be possible to adopt a balanced approach, which combines a bit more study time and a bit less time for non-mathematical subjects. Also, there may be ways of emphasising mathematical content in other subjects, thus gaining a type of double benefit from a single study period. There is a definite skill to this type of arrangement. Creating situations