Meet our Editors: An interview with Michel Destrade

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Michel Destrade is Head of Applied Mathematics at the National University of Ireland Galway. He has served on the Editorial Board of Proceedings A since 2011, and here he talks to us about his career.

Tell us a bit about your research

My research interests are mostly in the field of biomechanics. Basically I try to model, describe and predict the mechanical behaviour of soft solids such as gels and soft tissues, including the skin and the brain. I rely on experimental data to guide me, coming from mechanical tests or acoustic measurements.

What prompted you to work in this field?

My PhD was in the field of nonlinear elasticity, with a mathematical and modelling focus on the behaviour of rubber. By the time I graduated, it looked very much like that discipline was on its way out, as computer simulations were quite sophisticated already, so for a while I worked in acoustics of solids. Then it turned out that nonlinear elasticity provided the proper theoretical framework to model the behaviour of biological soft tissues. An explosion of research activity followed in that area, carried on by the interests of biologists and biomedical engineers. I was able to bring my own expertise of acoustics and elastic stability into the mix. Really, in the end it's hard to figure out what is going to bloom and what is going to decay in science. Where you end up is more a matter of circumstances than of strategy.

What has been the biggest influence on your career?

My family of course, for their support, encouragement and patience. Then my mentors, colleagues, friends and students, too many to name!

What are the big challenges still remaining in your field?

They are the same as in any other field of science: too much specialisation! The scope of science is now so wide that no one can hope to understand more than one field, or even subfield. And yet, we need motivation and guidance in our research. These can only be provided by experts from other disciplines now. I recently went to a talk by Cédric Villani, the Fields Medallist, and he said that in his opinion, Henri Poincaré was the last true "savant", able to grasp all aspects of current science. He died more than 100 years ago, so you can imagine how fragmented research has become in the meantime.

The other challenge in my field is gender imbalance. I get upset when people say "What can you do? Girls just don't like hard science" or other broad statements like that. Did you know that the original programmers of ENIAC, the first electronic computer, were all women? At the time, coding was seen as a "girl" activity, while "boys" were more apt at fixing the nuts and bolts of the computer. Now coding is seen almost as a "boys-only" domain. This evolution shows how those perceptions are mostly cultural and can change rapidly to suit the current mood.

Hopefully there will be more and more initiatives put in place to attract more women to physics, mathematics, informatics, etc. Science is not working at its full capacity because of this imbalance.

Why did you join the Editorial Board of Proceedings A?

Because that's an offer you can't refuse of course! But also because I was hoping to attract more articles in my field. The nonlinear mechanics of soft solids is still a relatively small discipline, with huge potential for exciting developments.

I have been lucky enough to see great papers transit by my desk before they were sent off for peer-review. A few of them eventually ranked amongst the most downloaded from the website and some results were even picked up by the media. It's a great privilege to witness science unfolding before your eyes.

What advice would you give to someone who wants to submit to Proceedings A?

Read the "Information for Authors" document carefully, write in an engaging manner, in good English. This advice seems elementary but you'd be surprised how often it's ignored. If you don't care about the readers, then why submit at all?

I expect a good title properly linked to the results, an exciting abstract, and clear pictures and figures that tell a story. If all this is in place, then I know readers will be drawn to the contents, and that's half the battle won.

Then I read the paper and try to figure out if it's worthy of the peer-review process or not. The Editorial Office expects us to reject 50% of submissions at that stage. If it passes the test, then I have to propose reviewers. I pick one or two from the names proposed by the authors, so they should put some thought into that list, and I add a few of my own. Then I disclose my potential conflicts of interests (if any), and send the manuscript off to the Editor-in-Chief, who is free to ignore my advice!

In the end only about a quarter of the submissions make it through. It's hard to be published in *Proceedings A* but it's well worth it!