Blackboard Mavericks

HEINZ BAUSCHKE, ASSOCIATE PROFESSOR, MATHEMATICS, CANADA RESEARCH CHAIR in CONVEX ANALYSIS and OPTIMIZATION
YVES LUCET, ASSISTANT PROFESSOR, MATHEMATICS
SHAWN WANG, ASSOCIATE PROFESSOR, MATHEMATICS

Mathematicians are crazy. They don't just want a proof, they want a beautiful proof.

"There is something about math that makes it quite different from many other disciplines," says Heinz Bauschke, Canada Research Chair in Convex Analysis and Optimization. "It's about the truth. You can't argue it; you can't weasel your way out. Something is either true or false and I find that very attractive. There is honesty, there is truthfulness and there is beauty in mathematics."

Bauschke, a world leader in convex analysis and optimization, finds it inspiring and enjoyable to do mathematics that other people find useful. In fact, he is quick to identify mathematics as the language of natural sciences.

"For me, the most satisfaction comes if I prove a nice theorem. Mathematicians are crazy. They don't just want a proof, they want a beautiful proof. I fell in love with math right away because it is very beautiful. It's very pure."

The concept behind optimization is to become as fast, as good and as efficient as possible—and this generates interest from many other disciplines. Optimization is at a particularly exciting and vibrant state—recently discovered tools and algorithms make it possible to solve problems previously considered computationally impossible.

One of these problems, posed by Dr. Terry Rockafellar, a founder of convex analysis and optimization, was recently solved by Bauschke and colleagues Yves Lucet and Shawn Wang. The trio looked at the "proximal average," an entirely new way of computing the average of functions even if they have completely separate domains.

The complementary research strengths each lent to the effort allowed them to collectively solve the problem. Bauschke's interest lies in convex analysis—simply put, functions that resemble parabolas and curves.

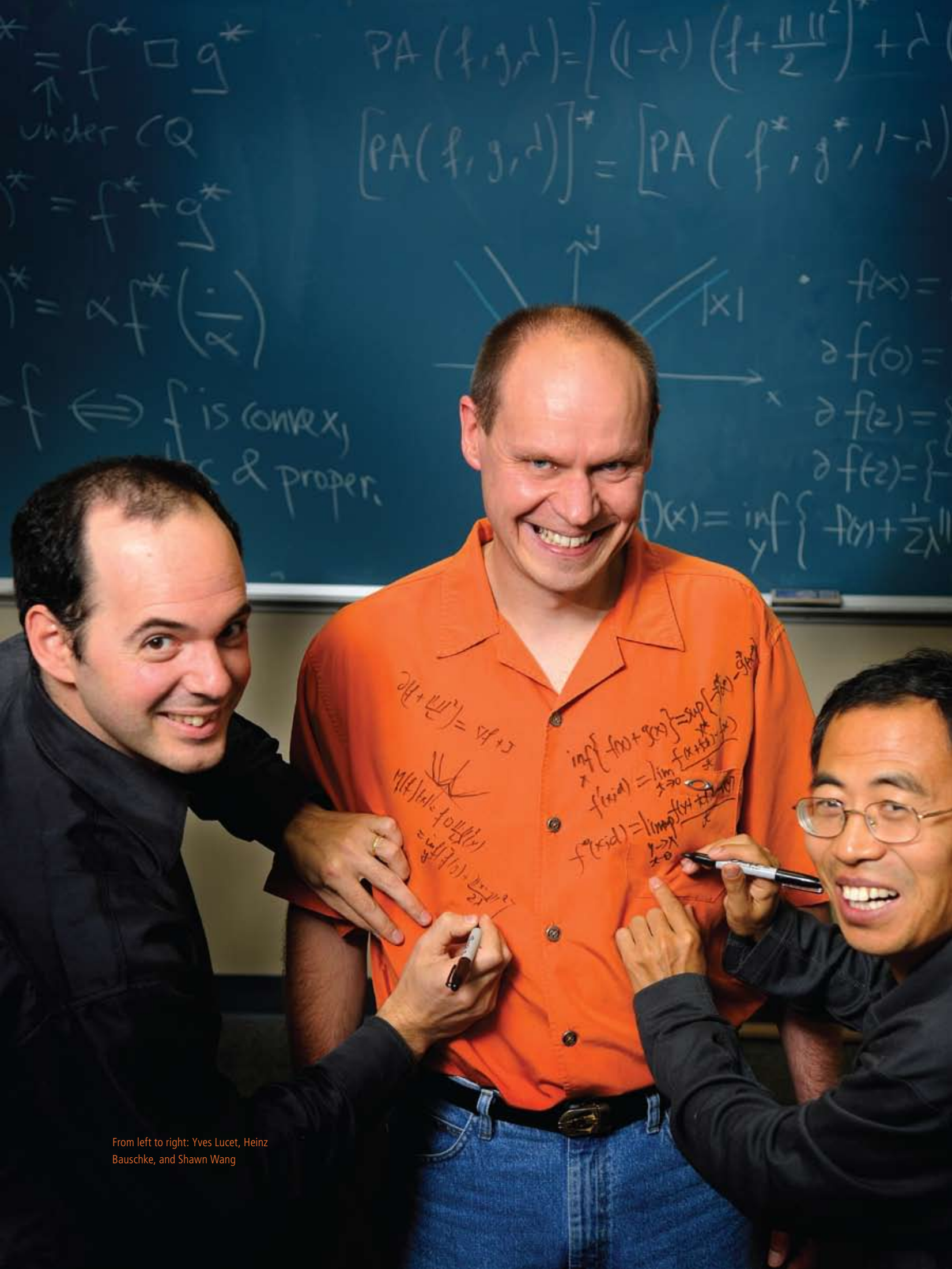
His "mathematical brother," Wang, is interested in non-smooth analysis—"he likes things that can be bizarre and not very regular, jagged and fractured," notes Bauschke.

Lucet, positioned at the boundary of mathematics and computer science, focuses his research on the numerical computation and visualization of fundamental transforms arising in convex analysis—essentially allowing Bauschke and Wang to visualize their work.

Among other things, the three share a common goal of making UBC Okanagan a leader in optimization.

"We have the opportunity to build something truly unique," says Bauschke, who also works alongside fellow UBC Okanagan optimization researchers under OCANA (Optimization Convex Analysis and Non Smooth Analysis).

OCANA researchers regularly organize campus conferences and events, attracting participants from around the globe. Soon OCANA will operate out of Bauschke's OCANA CoLab—a collaborative space where research, remote workshops and seminars will occur, building an important new area of expertise for UBC Okanagan, specifically in building remote technologies.



From left to right: Yves Lucet, Heinz Bauschke, and Shawn Wang