

Jorge Nocedal – Acceptance Speech, 2017 Von Neumann Theory Prize

I am deeply honored to accept this award and share it with my mentor and friend of so many years, Don Goldfarb. What a great moment.

Research can be done in so many different ways...

For me, it has been a collaborative experience where ideas came through brainstorming. And none of those interactions proved as crucial as my long-time exploration with my constant friend and colleague, Richard Byrd. We have spent uncountable hours working on ideas and problems together. Recently I heard a senior faculty tell a junior colleague: “it is not just how good you are at climbing ladders, it is where you place the ladder”. Richard and I spent – it seems – endless time debating where to place the ladder. I could not have achieved nearly as much without Richard’s brilliant insights and world-class mathematical skills.

Standing here with Don Goldfarb is particularly moving as Don greatly impacted my professional life – and that of so many others. One example: Don gave me the opportunity to present some theoretical results on quasi-Newton methods, in the form of a plenary lecture, at a SIAM Meeting. Plenary lecture? I had hardly been invited to give any lectures at all! And that experience proved to be decisive as it connected me with Mike Powell, whose vision of nonlinear optimization guides my research to this day. Here, algorithmic innovation comes through numerical experimentation *and* mathematical analysis. The right balance is not for us to decide but is driven by the topic. It has its roots in the numerical analysis school of Wilkinson as much as in the optimization school of Dantzig and his generation.

Research can be done in so many ways. I have always admired the theoreticians, the model builders, and the software creators. I hope that this community continues to support them all.

Falling down from ladders can happen in so many different ways... You, young people should be prepared. I am eager to see where will you put the ladder.

My heartfelt thanks to Michael Overton, Steve Wright, Nick Gould, and Jong-Shi Pang from whom I learned so much, and to my wonderful Northwestern colleagues and students. By far my greatest fortune has been my super-fun family: Sue, Isabel, Martin and my three siblings. Thanks to all.