

Mathematics and Industrial Enterprises ... Activities Joined at the Hip

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Abstract

I will discuss the titular question by examining the relationship between Mathematics and its contemporary technologies. In particular, I will ask to what extent mathematicians are co-inventors of era-defining technologies, such as modern computer technology? I will show evidence that, indeed, we often lead the charge.

But I also hope to show that Mathematics is frequently the beneficiary of technological progress. In fact, a lot of what we today think of as ‘autonomous’ or ‘pure’ Mathematics was in fact born from applied research. In addition, some mathematical concepts would never have been conceived, had it not been for technologically enabled methods.

I will show some examples from my own research to highlight how new mathematical concepts can arise from computer experiments and from attempts to address technological problems.

So, what is the future of Mathematics? Will present-day, or emerging, technologies be able to effect a transmutation of Mathematics into an even greater science? Where are the opportunities for us today? We will contemplate these questions together for a bit.