

Foreword

Two decades ago, I was at an international science conference in Japan where a few of the presentations there used the computer's emerging power for visualization. The response from the audience was mixed. "Eye-opening!" was the response of a tiny minority. "Irrelevant!" was the response from the greater majority. Of the latter opinion, what I heard was that, "Pictures don't tell us anything more than the equations can. In fact, they cloud and distract us from how we think."

Fast forward twenty years later, and it's interesting that this body of work on biologically-inspired computing for the arts has been collected, because it represents a kind of reversal in the audience (from scientists to artists), and because the utility of visualization is no longer in question the way it was before. The pragmatic usefulness of visualization is now more evident; and now the aesthetic, emotional satisfaction of visualization is coming into play. We are people, not machines. And we love to see things and experience them. And what better way to understand something than through beauty?

Having spent the last three years at Rhode Island School of Design, having moved here from MIT, I've noticed how artists think differently, and naturally, as a kind of *raison d'être*. Given that discovery is all about working from new perspectives, it is clear that the way artists think differently can have incredible value in the STEM (Science, Technology, Engineering, Mathematics) disciplines today. A STEAM-focused approach – add the A, Art to STEM – can expand the horizons of human discovery with impact to both utility and pleasure. Turning STEM to STEAM is exactly what this body of work represents for computing, arts, and the sciences. The world looks forward to more of it to come.

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John Maeda is a world-renowned artist, graphic designer, computer scientist, and educator whose career reflects his philosophy of humanizing technology. For over a decade, he has worked to integrate technology, education, and the arts into a 21st century synthesis of creativity and innovation. A recipient of the National Design Award and represented in the permanent collection of the Museum of Modern Art, Maeda became president of Rhode Island School of Design in June 2008. He seeks to connect RISD to political, economic, social, and business spheres where artists and designers make a difference, and has prioritized scholarships to ensure the broadest possible access to a RISD education. Maeda taught media arts and sciences at MIT for 12 years and served as associate director of research at MIT Media Lab. His books include *The Laws of Simplicity*, translated into 14 languages. *Redesigning Leadership* (2011, with Becky Bermont) expands on his Twitter posts. In 2008 Maeda was named one of the 75 most influential people of the 21st century by *Esquire* and in 2010 he was called the "Steve Jobs of academia" by *Forbes*.