

Ask A Genius 15 - The Future of Scientific Experimentation

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What about the future of science? What principles, values, and so on, will be a part of it?

How will technology influence the potentials of science and scientists?

Up to now, we've had great success figuring out stuff about the world using our brains. Our symbolic and information processing technology. Our biological technology, which means our brains.

Plenty of people now are saying our brains have near infinite capacity, but the more brain research that's done. Then it'll be seen that our brains are finite in their capacities. We built a world around those abilities to find regularities in the environment, to dissect what is going on, and figuring out how to exploit the way the world is made to our advantage.

In the future, we are going to augment our current abilities. We are limited in what we can do and what we can think about, and what we are able to add on to the brain. As we more intimately couple data processing and storing capabilities to our thought capabilities, we will be able to think thoughts and do experiments that are much more data intensive.

I always think of the example of Stephen Hawking. When he was unable to use his hands, which meant using blackboards, paper, and keyboards, he had to figure out a symbolic language for physics that would fit inside of his head so that he could keep doing physics with ideas and symbols that he could manipulate mentally.

That's a powerful, but limited, arena. In the future, as we extend that arena and make it more precise in a number of ways, scientific ideas and experiments will become much more data heavy and much more intricate. We'll be able to encompass more variables. We'll be able to tease out subtler relationships.

Currently, our most beloved scientific ideas are really short: $E=MC^2$, Maxwell's four laws, Newton's laws of gravitation, and inverse square laws. In the future, we will come up with law-like things that are really complicated, but that may describe things going on in the world as the simple laws we have now.