Faraday’s Tablet

I don’t believe in one staple of science fiction: time travel. The notion that a cause might precede its effect is unphysical. But I’m open to the possibility of another science fiction staple: technologically advanced space aliens. If such aliens exist, we might be able to reap one of the purported benefits of time travel, namely, watching the past.

To see how, imagine that intelligent extraterrestrials visited Earth in 1831. Thanks to their stealth technology, they were able to move among humans undetected. And because of their curiosity about our science, they installed a miniature video camera in the London laboratory of one of Earth’s greatest scientists of that or any other time, Michael Faraday.

Now imagine further that the camera was recently discovered and that archivists at the British Library have figured out how to view the recordings. What would they see? Faraday would be center stage, setting up, performing, and documenting the experiments that would lead to his discovery of electromagnetic induction.

Would Faraday’s work have been made easier and more effective if the aliens had secretly left him with a tablet computer? The aliens in my thought experiment follow a rule akin to Star Trek’s Prime Directive, something that forbids them from interfering in the development of other civilizations. Faraday’s tablet wouldn’t be loaded with knowledge from the future, but it would have a camera, a virtual keyboard, and access to the Royal Society’s Philosophical Transactions and other journals.

My hunch is that even with a tablet, we would still see Faraday going about his research in the same way. The tablet might be convenient, but it wouldn’t be transformative.

A month before the iPad made its debut in April 2010, Wired’s Steven Levy gushed at its potential to change the way we use computers. “No more files and folders, physical keyboards and mice,” he wrote. “Instead, the iPad offers a streamlined yet powerful intuitive experience that’s psychically in tune with our mobile, attention-challenged, super-connected new century.”

Two years later, Macworld published an article entitled, “How the iPad Helps Scientists Do Their Jobs.” The help in question amounted to the convenience of being able to take a camera, notebook, and reference book on field trips and to conferences.

So how could tablets benefit, if not transform, computational science? I received a hint of an answer when I bumped into Victor, a physicist I know, at a recent reception. When I asked him what he was working on, he whipped out his iPad to show me slides from a talk he gave on the statistical mechanics of income distribution, which got me thinking: What if Victor wanted to do more than display his analysis on his iPad? What if he also wanted to conduct the analysis via his iPad?

The app I have in mind for tackling this challenge would interface to a program that runs on a computer elsewhere. Using the app, a scientist could reset the program’s input parameters, and once the run finished, the app would display the results on the iPad screen. Being able to run and examine simulations, wherever and whenever you want, wouldn’t break new computational ground, but it would be fun!

Charles Day is Physics Today’s editor in chief. The views in this column are his own and not necessarily those of either Physics Today or its publisher, the American Institute of Physics.