



## Editorial

### What Is Still Neglected about Experiment?

Allan Franklin's *The Neglect of Experiment* appeared over three decades ago. The book sprang from the observation that theory-besotted historians and philosophers of science, when they did not ignore experiment outright, depicted it principally through crude myths—Galileo thumbing his nose at Aristotle from atop a Pisan tower, Michelson and Morley signing the luminiferous ether's death warrant. Franklin asked what we could learn about the epistemology of theory choice by confronting the historical practice of experiment in all its messy detail. His paper in this issue of *Physics in Perspective*, which extends that fruitful line of research, occasions us to ask how historical and philosophical study of experiment have fared in the three decades since he remarked on its neglect.

Looking back on those years reveals a great diversity of ways in which experiment has figured in historical and philosophical work. In parallel with Franklin's work on the epistemology of experiment, historians such as Lillian Hoddeson and her many collaborators have examined the way experiments evolve into experimental strings within the context of large laboratories. Peter Galison and others have examined the constraints experimental apparatus place on theoretical exegesis. Organizations such as the Scientific Instrument Society, founded in 1983, have become a hub for historians interested in apparatuses and their applications. "Practice" has become a watchword for philosophers and historians of science; several societies now support its study, such as the Society for Philosophy of Science in Practice, as do conferences, such as the Philosophy of Scientific Experimentation sequence, which assembled its fifth meeting last year. Many aspects of experimentation, in short, have become important for historians and philosophers to understand. Is anything still neglected?

Experiments have many intriguing dimensions. They can be thought of as performances—material acts planned, produced, and perceived in order to bring something new into the world. Another of their little-discussed dimensions is production, meaning the advanced set of behaviors and decisions that must be in place for an experiment to occur at all—decisions about the laboratory, personnel, budget, materials, and so forth. Experimental productions do not have a single solution, and one could choose to study how production decisions affect experimentation itself.

Still other natural and routine dimensions of experiment will be familiar to every physicist, yet they are all but undiscussed by historians and philosophers.

One is the affective power of experiments. In the offices of many experimental physicists, we have seen bottles of champagne with the labels signed by collaborators on some noteworthy experiment. The bottles are celebratory markers testifying to the passions that successful experiments generate in those who stage them—proof that experimental practice is not a robotic process of hypothesis and testing as textbooks often suggest. The passion generated by experimentation is another little-examined dimension to scientific practice. It is easy to underestimate these passions if we see them as simply expressing the sentimental feelings of administrators, operators, and users about some task that once occupied them. Yet there is so much more to be said. These experiments brought together a community of people and made them share an entire way of life. If we know science only by its products or its politics, we hardly know it at all.

If aspects of experiment remain neglected in the history and philosophy of science, it likely owes much to their being undervalued in physics itself. This past October, the Nobel Prize in Physics was awarded for an experimental accomplishment: the detection of gravitational waves at LIGO. Physicists consider the Nobel Prize the field's highest honor, but many also point out that its restriction to three individuals has become increasingly unsuited to the way today's physics is actually conducted. How to select three people to stand for the 1,200 represented in a large experiment like LIGO? The particular way in which the committee made this decision tells us much about how that prestige calculus is done. The LIGO prize recognized theory, project management, and experiment design. Historians and philosophers would certainly find these aspects interesting, but they are not obviously the only, or even the most interesting components of a remarkable collaboration like LIGO, which distinguishes itself through the steady, day-to-day precision work that allows the hypersensitive measurements such as those that detected gravitational waves to be taken.

The remarkable growth of the history and philosophy of experiment over the past three decades has demonstrated the versatility of the field, its ability to look beyond these and similar omissions and to open new and fruitful areas of inquiry. But it also shows that much about experiment remains comparatively obscure, and that, although rescued from neglect, it still promises new vistas.

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