

Physics does not exist in a vacuum



Doing physics and being a physicist is shaped by complex social factors. This month, we launch a Collection to explore the social and historical context of physics research.

A good Review article tells a good story: a narrative curve that links recent research findings to key ideas from the past, showing how the field has progressed in time. Yet every physicist knows deep down that, in practice, research is far from a smooth, steady march of progress. Rather, it is littered with failures, dead-ends and tangents. “There are many curves, each with multiple forking branches, some veering off at unexpected angles, and some petering out altogether,” write historians of science, Lorraine Daston and Peter Harrison in an essay¹ arguing for increased dialogue between scientists and historians. This year, we launch a [Collection](#) of articles, *Physics as a Human Endeavour*, to provide a platform for an interdisciplinary conversation on the practice of doing physics, in all its complexity and human-ness.

Physicists are no strangers to messiness and failure. Indeed, the scientific method incorporates failure into its framework – when an experiment does not work, scientists try to pinpoint the reason for failure, and correct it, before repeating. But this process, and the learnings that come from it, rarely make it beyond the notebook and into the published literature. In a [Comment](#) in this issue, Pietro Barabaschi, director of ITER, calls on the physics community to be more mindful and systemic in documenting their failures, so that lessons can be learned for the next iteration of a (sometimes multigenerational) project. Incorporating an honest account of poor decisions, mistakes and failures into our scientific narrative is important to be able to learn from them and improve.

If doing physics is messy, being a physicist is even more complicated. Today, every physicist faces a complex reality of human and systemic factors when pursuing research: grant deadlines, peer-review commitments, funding priorities, and teaching responsibilities, to name but a few. The details may change, but social and political forces have always shaped who has done physics, what physics has been done, and even what counts as physics. A historical view can help to contextualize the current physics landscape (as we argued in our [Editorial](#)² on how gendered stereotypes about physics are a relatively recent, localized phenomenon). Understanding where the current system comes from can help physicists to imagine a better way of doing things in the future.

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Tackling such questions requires analytical methods and contextual expertise that are not in the toolbox of a typical physicist. The field of science and technology studies (STS) evolved in the 1960s, incorporating the expertise of historians and social scientists to examine the creation, development, and consequences of science and technology. Today, many universities offer academic programmes in STS, but most physicists remain unaware and unengaged with this field of research. There have always been individual cases of friendships between disciplines: in this issue, we publish a [Comment](#) from historian of science, Arthur I. Miller, on the unlikely friendship of Wolfgang Pauli and the psychologist Carl Jung, and their influence on each other’s work. But there is a case to be made to create a more concerted, collective effort to reach across academic boundaries. A great example of this is a salon started by a group of optics researchers to explore the social impacts of optics research, as they explain in this [Comment](#).

With our [Collection](#), we hope to bring insights from other research communities to our readership. For example, Andrei Cimpian and colleagues, a group of psychologists, have written about the culture of brilliance that exists in physics – the idea that to succeed an individual must have exceptional intellectual ability – and the impact of this culture on the physics community³. Melinda Baldwin, a historian of science, has tackled the ever-timely topic of peer-review, by going back to its roots, discussing how it has developed and where it could go next⁴.

At *Nature Reviews Physics*, we believe that it is important to look up from the microscope, or from debugging a line of code, and consider the broader context and impacts of physics research. Through this [Collection](#), we invite physicists, historians, sociologists, psychologists and other scholars to consider the following questions. How does physics work today? How did we end up with this system? How could we imagine physics in the future?

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References

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