The paths we take

By Richard J. Fitzgerald



Scientific careers are filled with forks in the road—decisions about where to work, which opportunities to pursue, when to change direction, and more. Individual talent and ambition are just two of many factors that inform and constrain the choices. This issue of *PT* explores the relationships and larger forces that help forge the professional paths of scientists.

Drawing on interviews with 22 early-career scientists and engineers, Anne Marie Porter and Trevor Owens report in "How to build long-lasting professional relationships" (page 32) on the formative role of networking—through conferences, collaborations, community involvement, and other activities—for developing enduring professional relationships, nurturing a career, and building supportive communities of colleagues.

In "Navigating academia as a dual-career couple" (page 38), Toni Feder explores the difficult decisions facing scientists whose partners are also pursuing academic careers. She spoke to more than two dozen couples who have had to navigate the "two-body problem." While some couples said they got lucky, others compromised by enduring long separations, accepting less-desirable appointments, or changing career paths. Their stories illustrate the many ways in which dual-career couples try to strike a balance between professional ambition and personal fulfillment.

In "Setting the career compass for transgender and nonbinary scientists" (page 23), Jenessa Duncombe describes how those scientists have to weigh professional opportunities against legal protections, access to health care, and the need for supportive communities. New laws, changing policies, and court decisions have produced rapid landscape shifts, particularly in the US. The extra and evolving factors that trans and nonbinary scientists must consider can limit their career mobility. But there are steps that the scientific community at large can take to support these groups and retain their talent.

More broadly, the current landscape shifts are affecting the entire physical sciences community. The field was similarly roiled five decades ago, as historian Julia Menzel recounts in "The last crisis of US physics" (page 46). In the wake of severe federal funding cuts to basic science in the early 1970s, large numbers of young scientists left the field and sought opportunities elsewhere. Yet the disruptions also led scientists to experiment with new approaches to fund, organize, and conduct research. The community's responses half a century ago may offer guidance for responding to today's uncertainties—and offer hope for the future.

A new dialogue

Also in this issue, Vinton Cerf and France Córdova argue in "On the future of science and its wise pursuit" (page 56) that the scientific community is facing a pivotal moment on the technology front as well. Even as powerful new research tools, particularly AI, are accelerating the potential for new discoveries, the infrastructure that sustains scientific progress is under strain. Noting that the structures supporting science "must be capable of responding dynamically to changing opportunities and needs," the authors call for a persistent, comprehensive conversation about how to effectively "sustain, strengthen, and adapt the scientific enterprise."

Their vision is taking shape next month, with the first meeting of a new annual forum convened by the American Institute of Physics (AIP, publisher of *PT*). The forum will be a venue for leaders from across the science enterprise to come together to explore the emerging public-policy questions that will shape the future of scientific discovery and the scientific discoveries that will shape future public policy. The theme of the inaugural meeting is, fittingly, the future of scientific discovery in the age of AI. PT