

on a career ladder, because your spouse is urging you on, or because you want to please your deceased father, then you're going to dislike the work.

If you want the job because you're sick and tired of the way the provost has mistreated the department or because you can't stand the current leadership, you need to check your motivations. If you believe that merely better championing your department's excellence would result in new faculty lines, more travel funds, and a new wing on the lab, then, oh dear, are you in for disappointment; you need to come up with smarter strategies. (Hint: Going to the provost with your hand out isn't one of them.)

Years ago I was dean of Ohio State's College of Mathematical and Physical Sciences, and I met individually every week with my department chairs. I started each conversation by asking how things were going.

"Excellent," the chair of department A would tell me. "Our senior faculty are going great guns, our students are thrilled with our new curriculum, and we've never had stronger candidates for our graduate programs. We're really on the move."

The chair of department B would say, "I'm worried. Professor Wong has an offer from Berkeley; we've matched the salary, but I think we may lose him. The committee members drafting our strategic plan have unrealistic expectations, and I don't know how to rein them in. Also, the department is unanimously recommending tenure for two assistant professors, and I have reservations about one of them. I'm not sure what to do."

Guess which chair I trusted? When department B's chair said she really needed something, I moved heaven and earth to give it to her. Department A's requests always had to first go through a merciless BS filter, because I didn't want to be flimflammed as I had in the early days of my career. By sugarcoating everything, the chairperson undermined his and his department's credibility. The ability to form honest, working relationships based on trust is the key to leadership.

Once when I was department chair at Ohio State, the provost and I walked across campus together after a staggeringly dull committee meeting. "Why would you want to spend your days this way?" I asked her. She stopped, turned to

me, and answered my question seriously.

"Last week," she said, "I was walking across campus feeling sorry for myself and thinking about my scheduled committee meetings, the speech I had to give that evening to an alumni group, and the dozens of emails that had flooded my inbox since morning. Then I heard the sound of a single cello coming from an open window in the music building. I looked over and saw a student practicing her instrument. I had worked for weeks with her dean to put together the budget for the new cello program. As I listened to her practice, I realized she was pursuing her dream because of what I, an administrator she would probably never meet, had done, and that made me feel really good."

Those are the kinds of satisfactions that come with administrative accomplishments; good administrators rejoice in the successes of those they serve. If you can relate to that little story and see yourself in a similar role, I wish you the best of luck. We need more people like you.

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LETTERS

Broad academic experience is best

I am the chair of the physics department at St Mary's College of Maryland. Our program served as one of the case studies of best practices in the report¹ of the Joint Task Force on Undergraduate Physics Programs (J-TUPP), summarized by cochairs Laurie McNeil and Paula Heron in *PHYSICS TODAY* (November 2017, page 38). The report puts forward a productive vision for improving the career preparation of physics students and provides numerous recommendations, all well supported by research and by theory.

Unfortunately, the same cannot be said of that issue's editorial (page 8). The writer professes little enthusiasm for the US higher education system. In particular, he bemoans US universities' approach of providing a liberal education—that is, using a broad-based curriculum to expose students to a variety

of approaches to understanding the world. The editorial substitutes anecdote for systematic evidence, provides personal opinion in place of research-based theory, and confuses some examples of poor implementation with fundamental flaws.

The writer advocates having students spend more time in their major or on a major-centered project instead of taking so-called general education courses. To see the weakness of those propositions, one can look to the evidence readily available in the career outcomes of students who graduate from the most extreme practitioners of the system that the column decries—US liberal arts colleges.

Broad, general studies in multiple fields are the primary hallmark of a liberal education. Liberal arts institutions educate a small fraction (3%) of the total US university student population. How-

ever, they produce eventual science doctoral students at twice the rate of other US universities.² Even on an absolute scale, liberal arts colleges are disproportionately overrepresented on lists of undergraduate programs that are top producers of science doctoral students in general and physics doctoral students in particular.³ Likewise, graduates of liberal arts colleges make up an even more disproportionately large fraction of National Academy of Sciences fellows² (19%) and Nobel Prize recipients⁴ (20%).

In the private sector, human resources departments may focus on specific technical skills when hiring students into their first job after graduation. Several recommendations from the J-TUPP report help address educational gaps there. However, a large majority of top management personnel think that a broad range of skills and knowledge are also important for long-term career success; 80% recommend that all college students acquire that knowledge through the liberal arts and sciences.⁵ Employers

sometimes refer to “T-shaped skills” — deep in one field but with a breadth that enables collaboration and application across many fields. The approach recommended in the editorial would cut off the broad arms of the T.

To improve the way physics programs prepare students for their careers, the J-TUPP report provides a well-researched road map of recommendations. To improve the US educational system, the data on career outcomes suggest that rather than moving away from broad-based education outside a student's major, the system would better serve students by more closely emulating liberal arts colleges.

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Promising polymers also pose problems

As a physical chemist familiar with polymers, I enjoyed the commentary “The promise of polymers” by Timothy Lodge (*PHYSICS TODAY*, December 2017, page 10). Those molecules, with their remarkable versatility and properties, have contributed much to human

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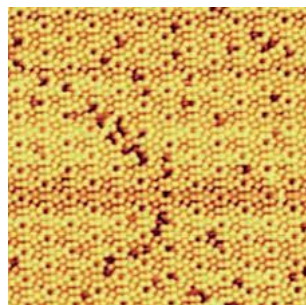
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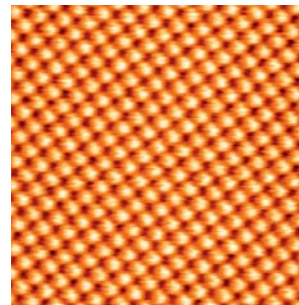


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