

The Obligations of Knowledge

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In his profound essay on the life and death of Terry Wallis, physician and neuroethicist Joseph J. Fins writes that as science advances, so do humanity's obligations. Wallis, who suffered a severe brain injury in an Arkansas car wreck, seemed to be unconscious for 19 years before greeting his mom—who had visited him regularly—and saying the word “Pepsi,” his favorite drink.

Wallis's awakening set off a revolution in neuroscience. “Terry's narrative helped to rewrite expectations about time and the brain, revealing both biological processes of recovery and the contingent construction of knowledge in this field,” writes Fins. He argues that this new knowledge of the brain—both its extended timetable of repair and the possibilities for treatment—gives society new moral responsibilities.

Early in his own career, Fins relates, severe brain injury was considered hopeless for patients, but new medical insights make the need to provide rehabilitative care for disorders of consciousness increasingly urgent. Because the US health care system reflects social inequalities and geographic disparities, many patients still miss out on neuroscience's gains. And as neuroscience progresses, these gaps in care may increase. Without deliberate action, society risks ignoring its moral obligations, Fins warns. “Now that scientists are on the cusp of having the technological means to provide imaging, stimulation, and drugs that may allow for more human flourishing, the nation must begin to grapple more meaningfully with the care and regard of marginalized people with disorders of consciousness.”

Fins's recognition of the obligations brought by new knowledge are at odds with the American public's dialogue around science and technology, which is often framed individualistically, in terms of increasing personal choice and convenience. In 2012, shortly after the debut of Siri, Apple's sophisticated voice assistant, TV ads featured celebrities such as director Martin Scorsese cancelling his appointments from the back of a taxi, and actor Samuel L. Jackson making risotto alone while talking to Siri in a commercial called “Date Night.” Of course, even a decade ago it was clear that whatever untethered freedom a mobile phone offered was offset by its “always on” availability to family, bosses, and advertisers. But in a culture that so highly values both science and independence, the first is often portrayed as a route to the second, even when the promised independence is an illusion.

And that reasoning—that scientific advances are for personal gain—obscures deeper ethical obligations. Vaccines, for example, are often promoted as a means of self-protection. But their effectiveness is partly rooted in their implications for public health.

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Terry Wallis (1964–2022) out with his family on a mountain in Arkansas. His brother George pushes his chair with his brother Perry behind. Terry's sister, Tammy Baze, is reflected in his glasses. (Photo courtesy of Tammy Baze.)

outgoing chairwoman of the House Science, Space, and Technology Committee, has thought about deeply during her half-century in public service. Johnson has seen—and led—historic efforts that combine advances in both. As a schoolchild in Texas in the 1940s, teachers discouraged her from being a doctor and segregation forced her to go out of state to attend an accredited nursing school. She later got involved in civil rights activism, entered politics, and in 1993 became the first registered nurse in Congress, where she joined the House Science Committee. After nearly 30 years of influencing US science policy, Johnson recently steered the landmark CHIPS and Science Act to passage. She now leaves a legacy that may last for generations.

In her interview with *Issues* editor Molly Galvin, Johnson talks about watching Texas Instruments and the chips it made transform her district and then the world. To deliver on the promises of the US research and innovation system, she has long argued—and reinforced in legislation—that science has an obligation to be more inclusive. “Our society has gotten into a rut of doing it the way we’ve been doing it,” she says. “Not much imagination has gone into how to expand opportunities and expand outcomes.”

Another of science’s obligations is to nurture the students, staff, and junior researchers who embody both its workforce and its future. This edition of *Issues* features new thinking on ways to change the culture around sexual harassment, which was first named as a problem in academia in the 1970s and was the subject of an influential National Academies report in 2018. Karen Stubaus, vice president of academic affairs at Rutgers University, shares that the report sparked a “sea change” in thinking about sexual harassment that continues today in committees at both the national and collegiate level. “And it has sparked a truly national conversation about the need to move beyond mere compliance to a focus on prevention and culture change,” she writes. Stubaus and early-career neuroscientist Vassiki Chauhan describe different ways to shift the dynamic away from its current focus on enforcement and toward creating more productive and accountable research environments.

Scientific progress is conventionally framed as advancing frontiers of knowledge, but as these articles show, progress on social frontiers can be productive for both society and science. In a randomized controlled trial that provided some congressional offices with structured scientific advice but not others, Penn State

University researchers Max Crowley and Taylor Scott found that offices that received the advice were more likely to include research-related terms in legislation they proposed. Less expectedly, the researchers who engaged with congressional offices became significantly more likely to say that their research had benefited from the interaction than those in a control group.

Similarly, there were unanticipated benefits for science when NASA participated in two-way dialogue with the public about defending Earth from asteroids. In an oral history of the project, Mahmood Farooque and Jason L. Kessler explain how the results of citizens’ deliberations on technical tradeoffs in space missions enriched the work of agency experts. Their story suggests that shared decisionmaking could bolster agencies that conduct science in the public interest—and might even provide creative solutions to seemingly intractable problems. The authors argue that to make the most of this new knowledge, agencies need to develop the capacity for regular public engagement.

And decision researchers Kara Morgan and Baruch Fischhoff describe how federal agencies can communicate more successfully with the public about risk by using a structured approach called mental models. “Risk communication seeks to inform decisions, not manipulate them,” they write. “Thus, it protects agencies and the scientists who work within them from the charge that they are spinning the facts to achieve policy goals, or that they are acting as advocates rather than resources.”

Today, these important relationships among researchers, citizens, and policymakers are largely the result of serendipity—a single study, or a grant that results when an intern happens to write a blog post at the right moment. The United States has much to gain by institutionalizing the capacity for this three-way dialog. And the scientific enterprise could benefit by defining problems and solutions more inclusively, making research more meaningful, and increasing the usefulness of science for society.

In this magazine and through our website, podcast, and events, *Issues* aspires to fulfill its mission to be a space for ongoing conversations “to enhance the contribution of science and technology to the creation of a better world.” As you read through the articles in this issue, you’ll see again and again the intertwining impacts and obligations of expanding scientific knowledge. Reaching that “better world” requires, crucially, more deeply exploring our moral obligations.