



In Loving Memory of

**Molly K.
Macauley**

1957–2016

Anyone who had a meaningful interaction with Molly Macauley can cite many instances of personal kindness, support, and grace. For those of us fortunate to be her colleagues at RFF, those stories are literally countless. It was just who she was. The personal loss for all of us is devastating.

She was a bold and creative thinker, loved RFF, worked tirelessly to make it better, and had an unshakable belief in its mission and in the merit of every person in our organization.

Her loss is felt deeply in many communities, including the space policy community (whom she affectionately called her “space buddies”). Here, we have collected some tributes and remembrances from Molly’s friends and colleagues at RFF and beyond.

“Others will surely write about what a terrific person Molly Macauley was. Let me remind everyone what a clever researcher she was. As a callow graduate student, Molly recognized that, just as land in central business districts was generally much more valuable than that in the boondocks, so, too, were certain ‘parking spaces’ for communications satellites in the geostationary orbital arc more valuable than others. She traced out how the value of those spots fell as one moved away from the prime location(s). What a ‘cool’ and insightful idea!

We’ve all lost as good and supportive a colleague as anyone could hope for. But all of economics has lost one of its shining stars.”

Paul Portney, former President, RFF

“I admired Molly for her leadership, intellectual curiosity, and dynamism. She embraced new ideas, technology, and interdisciplinary methods. She took a comprehensive approach to Earth observations, helping us to understand the value of civil and commercial remote sensing as well as citizen-based observations.

I loved Molly for the person she was—

kind, compassionate, and genuine. Molly was a tireless mentor and advocate of early and mid-career women, including myself. She served on the scholarship committee for Women in Aerospace. She took many young women under her wing, offering wisdom and positive encouragement, and going the extra mile to recommend them for speaking roles at conferences or connecting them to her network. She was an inspiration and one of my dearest friends. I am infinitely grateful to have known her and will miss her dearly.”

Lea Shanley, Co-executive Director, South Big Data Innovation Hub, University of North Carolina at Chapel Hill

“I got to know Molly as Gilbert White Fellow, a visiting fellow, and a member of the External Faculty Review Committee for RFF. Largely because of our relationship, Michigan undergraduates became RFF interns, RFF interns became Michigan graduate students, and Michigan graduate students became RFF fellows. Soon after we met, Molly and I coauthored two papers on landfills (with Eduardo Ley). Twenty-four years later, she lacked time to coauthor but her thoughtful questions and encouraging manner continued to influence my research. My last memory of Molly was of her chairing the RFF equivalent of a faculty meeting—completely conversant with each colleague’s research. How unlike academia! Molly’s loss is both painful and beyond my comprehension.”

Stephen W. Salant, Research Professor, University of Michigan; and Visiting Fellow, RFF

“Molly loved RFF and was always so gracious and thankful for everyone. I often received emails of thanks for certain things that I did for her. Even if she was rushing to or from a meeting or to an event, she always asked me how I was doing and how things

were. She was a bright, driven, and sweet person. She had a strong affiliation with NASA and space programs, so when major space news broke I would often talk with her about things. She always seemed to have a smile on her face and mentored our staff members in many ways. She did wonders for our organization and research program. RFF is not the same without her, but I know that she would want the best for RFF going forward.”

Mike Brewer, Mailroom and Purchasing Assistant, RFF

“ Even before Molly completed graduate study, recommendations for her as a potential RFF employee could be summarized as: ‘special.’

Molly’s attitude about the purpose and method of RFF is captured by the same word—special. ‘Special’ describes Molly’s connection to, and regard for, those with whom she associated, personally and professionally.

Molly’s belief in the importance of new horizons for RFF research was special indeed. Molly believed RFF would create ‘resources for the future’ as it explored unknown frontiers with special research. Molly was special to us all, as vice president for research at Resources for the Future and beyond.”

Emery Castle, Professor Emeritus, Oregon State University; and former President, RFF

“ Molly Macauley was an economist of the first order, whose interests ranged across a wide range of human activities, not just space, but environmental protection, remediation, and conservation. It seemed particularly apt that much of Molly’s career was at Resources for the Future. Her work focused on ensuring resources for the future, whether natural resources and the Earth’s

environment, or the information, resources, and energy potentially available from space. Molly’s work and mentoring created bridges between requirements for rigorous, quantitative analysis and an understanding of the emotional and sometimes romantic motivations for space and environmental activities. We are all the poorer for her passing and all the richer for her work.”

Scott Pace, Director, Space Policy Institute, George Washington University

“ When Molly became RFF’s Vice President for Research, she took up the task with gusto, dedication, and humility. She was eager to lead, but only if she could lead well. During the recruitment process, she undertook a major research project into leadership, learning from every available source—from books to professional colleagues. She confessed that she had limited experience with team leadership and regularly evaluated her progress in growing into an effective leader, which she certainly achieved.

She and I met nearly every other week to discuss institutional developments and challenges. It was quickly apparent that she adhered to high standards of scholarship and personal integrity and cared deeply about RFF personnel. She exhibited kindness and respect for RFF scholars and high expectations for their work. She was determined that RFF should make major contributions in helping society meet its environmental and resource challenges.

In her professional life, she unquestionably made such contributions—which she never would have acknowledged. But perhaps her greatest contribution was the exemplary character she modeled for us to follow.”

Phil Sharp, Fellow, Center on Global Energy Policy, Columbia University; and former President, RFF

In Her Own Words

Molly was a frequent Resources contributor, and her pieces opened our eyes to new possibilities for learning about the natural world, opportunities to apply economic principles to space policy, and burgeoning environmental problems on Earth and beyond. We've collected excerpts from some of those articles here, attempting to give a glimpse at the breadth, creativity, and razor-sharp intellect that we all admired in Molly.

On Environmental Protection in Space
Landing a robot on the surface of a planet to look for evidence of life automatically introduces our own germs into that planet's environment. The microbe we find on Mars may be our own.

How might planetary exploration go forward? Protecting planets and other celestial bodies while exploring space requires the balancing of competing objectives, wholly analogous to the tradeoffs involved in environmental protection on Earth. An example is zoning. On some planets, researchers have identified special regions where there is a high potential for the existence of indigenous life, such as where liquid water may be present. International protocols now require additional sterilization requirements for spacecraft making contact in these zones.

—“Space as the Canonical ‘Global Commons’: An Introduction to Its Economics,” *Resources* 168, 2008

On Long-Lasting Environmental Pollution

The intergenerational nature of “forever-ours” problems strains the capacity of effective governance. Most governing institutions are subject to harsh myopic pressures. Regulators are stretched thin by the short-run pressures of fiscal year budgets and immediate concerns. This problem

of managing some types of intergenerational environmental issues suggests that the nation may benefit from institutional innovation in capacity to think long term—maybe something like a “science court.” Might a Supreme Court for Intergenerational Resource Allocation make sense?

—“Forever Ours? The Challenges of Long-Lived Environmental Problems,” *Resources* 185, 2014

On the Value of Information Related to Climate Change

The specter of tipping points raises additional questions about the provision of information if, despite best efforts, society is unable to adapt to abrupt changes in climate. What information is required to monitor the approach of possible extreme changes in climate? How early is early enough for action to be taken? At present, no US agency has the responsibility to ask and answer questions such as these, despite their relevance to long-term thinking about both adaptation and our recourse if our best efforts to adapt fall short.

—“Investing in Information to Respond to a Changing Climate,” *Resources* 178, 2011

On the Promise of Drones

Drones are low cost and offer an unmatched ability to acquire critical data for understanding our planet and the effect of humans on it. Perhaps most interesting is the romance of the drone: it enables ordinary people to see, explore, and appreciate nature and the environment in new ways. Regulators should not lose sight of these benefits in designing rules to promote the safe and nonintrusive use of this evolving and promising technology.

—“Data from Drones: A New Way to See the Natural World” (with Timothy Brennan), *Resources* 192, 2016

On Virtual Mapping Tools

For thousands of years, maps and the sense of distance they connote have contributed a spatial dimension to places unknown. But today's technology enables us to "virtually" be anywhere, under nearly any condition or scenario. Tools such as Virtual Earth, Google Maps, and Geographic Information Systems (GIS) software have moved map making from the province of cartographers to anyone with access to a laptop or cell phone. These and other tools allow Earth science data and social science information to be combined with traditional maps. And merged with photos and three-dimensional, often near-time dynamic renderings, these maps allow us to virtually be in places we may never visit. We can walk around and explore or see the effects of proposed activities—say, pesticide applications that affect runoff transported to a watershed hundreds of miles away.

This ability to communicate remotely sensed information about the ecosystem, both in 2D form and in the "I am there" feeling of 3D, will enable us to both measure and understand ecosystem services much more effectively.

—"New Opportunities to 'See' Our Environmental Relationships" (with William B. Gail and Shalini P. Vajjhala), *Resources* 165, 2007

On Regulating Space Debris

To be effective, debris mitigation actions will probably require the consensus of those currently using space, those who will be using space in the future, and those who may never use space directly but who benefit indirectly from space activity. If the record of global environmental cooperation on Earth is any blueprint, however, reaching consensus on space debris policy may require an explicit resolution of the poten-

tial clash between environmental protection of space and the development of spacefaring capability by nations not presently active in space.

—"In Pursuit of a Sustainable Space Environment: Economic Issues in Regulating Space Debris," *Resources* 112, 1993

On Allocating Resources on the International Space Station

The use of prices to allocate station resources may be the most effective mechanism for allowing station users to assemble the best set of resources in the most efficient quantities and at the right time. The relative scarcity of a multitude of resources can be arbitrated by prices. ... [U]nlike the tendency of administrative rationing to become politicized, prices operate without partisanship.

—"Decision Time for Allocating Resources on the Space Station," *Resources* 89, Fall 1987

On the Pricing of Remote-Sensing Data from Space

The pricing of remote-sensing data at short-run marginal cost could make remote sensing from space financially unsustainable and could limit the potential of private operators to profit from the provision of these data. ...

To avoid undue entry limits and provide for cost recovery, prices should be set so that on average they recover the long-run cost, including capital replacement charges, of the data provision services. Where prices are set above marginal cost to recover fixed expenses, users making the least flexible demands should pay relatively more in order to minimize distortions on the demand side.

—"Remote Sensing of Earth from Space: Economic and Policy Issues" (with Michael A. Toman), *Resources* 107, Spring 1992 ●