WIRED IN THE WILD

Even in the Adirondacks, big data is watching you

BY JEANNA MATTHEWS

ONE OF THE REASONS I love the Adirondacks is the invitation to escape technology. This place reminds me of essential truths: It is good to be personally prepared, to know where I am going. I am responsible for the steps I take to navigate through my own life, even when GPS-guided directions are wrong or inaccessible. It is good to focus completely on where I am in each moment. I am

responsible for the impact I leave on the people and places I touch physically. Cyberspace is no substitute for the world of flesh and mountains.

Like most people, I can turn off my cell phone anytime I want, but I rarely do. I am addicted to the tinny bings of incoming texts and Facebook notifications, a digital security blanket connecting me to "help" that I might call in an emergency or to family who might call me. As a computer science professor, my relationship with technology is even more complicated. I am hyper-aware of the digital exhaust I emit as I drive through my life—each phone call and text, each cell-phone tower contacted, each credit card purchase, each Google search, each step recorded toward a daily goal that will likely live in a database longer than I live on this earth. The implications of this digital exhaust are far-reaching and profound. I am not anonymous. I am handing companies and governments a rich and detailed map of my life—where I go, who I see, who my friends are, what I wish for, what I worry about. They are sucking up all the data they

can and finding new uses for it every day, some I approve of and many I do not. Data is not fundamentally good or bad, but it is powerful, for both. For example, cell phone location data could be used to find lost hikers, but it could also be used to enable privacy-invasive questions like, Who attended the Earth Day March for Science in Washington DC in 2017?
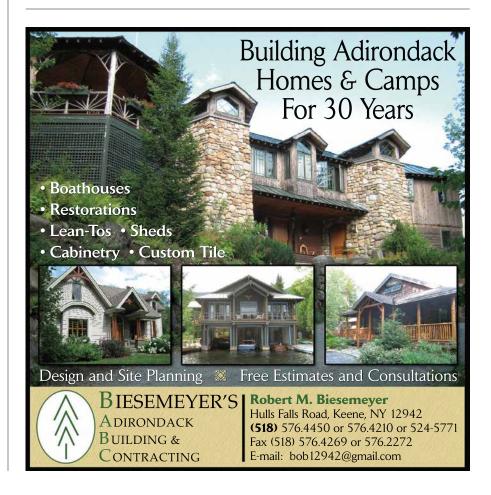
I recently led a group of nine students in a semester-long project to assess the role of big data in the Adirondacks. The students, part of Clarkson University's Adirondack Semester program, along with the faculty guides, asked about data collection in the park—what is being collected, by whom and for what purposes. They lived in Saranac Lake from January to May. They considered whether it is still possible to escape technology by running away to the woods and what the answer says about the kind of world they want to live in—both inside and outside of the Adirondack Park.

We visited scientists, nonprofits and government agencies to ask about the data being collected today. *The Adirondack Atlas* brings together maps of snowmobile trails from private clubs, towns and public land into one publicly accessible data set that for the first time highlights the connections between them. The Adirondack Park Agency surveys waterways, photographing the shores, to document existing land use patterns. This allows them to evaluate claims like, Those trees along the riverbank have always been cut back. The State University of New York College of Environmental Science and Forestry (SUNY–ESF) Ecological Center monitors beaver colonies, breeding birds and water flow patterns. The Wildlife Conservation Society measures the changing dimensions of bogs. Outside the Adirondack Park, similar data collected by the Environmental Protection Agency is being archived by hackers and activists who are concerned it might be deleted in a game of political football. Not everyone likes

ILLUSTRATION BY BRUCIE ROSCH

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the picture of climate change that emerges from data like this.

The students also experimented with data collection of their own. They monitored temperature at five locations in Bloomingdale Bog, documenting distinct microclimates in the bog canopy, the bog base, the forest canopy, the forest ground and the forest snow surface. They experimented with limnology, collecting water from Lake Colby and bringing it back to the classroom for an analysis of the chlorophyll-a, microplankton, nanoplankton and picoplankton.

Beyond scientific data collection, the students learned principles of ethnography and observation. They shopped and volunteered at the Grace Pantry, in Saranac Lake, and learned about the complex web of community support that helps pregnant women find maternity clothes or disabled veterans find a ride to the doctor. They attended a meeting of the Saranac Lake Winter Carnival Committee and volunteered to help, building the ice palace and dressing as characters and marching in the parade. In the process, they were reminded of one of the oldest forms of data collection, storytelling, and the importance of remembering human stories behind a mass of numbers.
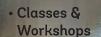
In the final weeks of the semester, we contributed to a project digitizing the registry books that hikers sign at trailheads throughout the Adirondacks. In 2013, the Adirondack Trail Registry Database project had digitized registry books across the region. The resulting data set has been used to estimate tourism impact and to track the spread of invasive species on hikers' shoes—more visitors correlated with higher rates of invasives. We decided to update the data set for a number of trails, among them the Hays Brook Complex, Baker and Scarface Mountains and Cranberry Lake Wild Forest. Students photographed all of the trail registry pages and the trailhead itself, then uploaded the photos using a cell-phone application provided by Steve Signell

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at the *Adirondack Atlas* and Bryan McBride from Fulcrum, a mobile application company. They also manually recorded the data from the trail registries in a spreadsheet—trailhead location, date, group size, length of stay and destination. For every fifth row, they recorded the city and the state of the person signing in, but never the name or cell-phone number that can be used to help locate lost hikers.

Students considered carefully whether they would want to have today's trail registries that require paper and pen replaced with mobile apps that digitized and reported the information automatically. Many people don't bother to sign in at all and the opportunity to automatically extract detailed, accurate information is tempting. Despite this and the effort to digitize, our group concluded that we wouldn't actually want an app that automatically tracked our steps in the Adirondacks. In this case, we felt that restraint in data collection and manual effort was a better compromise between data use and personal privacy.

We go to the woods and breathe a little easier knowing we can have a truly private conversation or that the ding of an unexpected item falling onto our "to do" list will go unheard, but even the "forever wild" Adirondacks is increasingly wired for surveillance, of humans and animals, rivers and shores, roads and mountains. It is a microlaboratory for understanding the impact of our digital exhaust and the importance of our conscious choices to use the power of big data for good. We may not be able to escape technology, but perhaps the Adirondacks can help teach us to strike a balance we can live with. ▲▲

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