The Past, Power, and Our Future with the Earth

Mark Gabriel Little, *Executive Director, NCGrowth, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599, USA*

I stand before you thankful for my family, grateful for good health, and in awe of our beautifully complex Earth.

On this afternoon, I would like to speak with you about many simple things. Not always about the earth, but always of the earth. I ask of you a willingness, if only for a few minutes, to wonder with me, to be speculative. To allow us to question ourselves together, and without judgement.

When I was growing up, I spent many weekends at thrift stores with my father looking for musical instruments, home organs in particular. I was not proficient on the keys, but I love to tinker and repair. Perhaps the most beautiful organ I ever found was built of natural maple with dual keyboards, a two-octave pedal board, and an array of switches and pulls. But like every organ I had, I eventually donated it. Parting with this particular organ was my first consciousness of "Princeville." My father suggested we donate the organ to an African Methodist Episcopal church in Princeville, North Carolina, because the town was recovering from devastating flooding in the wake of Hurricane Floyd. At the time, I may have been told that it was a very special place, in fact, the first town in the United States chartered by formerly enslaved Africans. But I was surely ignorant of the layered ways in which geomorphology and climate were implicated in its story. For like all places we humans inhabit, Princeville has an intertwined natural and human history.

***

I think I became a geologist for the wrong reasons. Among those who study the earth, I wanted to leave.

I wanted to travel among the stars, to set foot on another planet, a moon, or perhaps an asteroid. In my pursuit of becoming an astronaut, I found geology.

It was a dream to fly that eventually brought me down to earth.

My graduate work sought to understand and model how our continental crust deteriorates through chemical weathering and physical erosion. How these processes are connected, how they can be measured, how they can be modeled, and how they affect the long-term carbon cycle and sedimentation in the ocean.

I enjoyed research, but I didn't have the passion for it. I saw it in others, in my advisors, Rick O'Connell, Maria Zuber, and especially my good friend, Cin-Ty Lee. What I most enjoyed was the beauty, intellectual challenge, and profundity of deep time. So, after a couple of postdocs, I no longer did academic research. And since I wasn't much use to industry, I no longer worked in the geosciences.

But yet, here I am, addressing a congregation of scientists. And I am grateful for the opportunity.

I think perhaps you, of all the people in the world, might understand a bit of where I am coming from. While I may have become a geologist for the wrong reasons, I have remained one for reasons that may resonate with you.

I have a deep affection and aesthetic appreciation for places, not untouched by humans, but not yet destroyed by us—our mountains, rivers, deserts, oceans, and forests. My desire to explore space, to study the geosciences—even my current work imagining and building new economic futures—is all conceived from a deep sense of wonder.

***

When we weren't looking for organs in thrift stores, my father would take my sister and me to events among the First Nations of the southeastern woodlands. Many spring and fall Saturdays were spent in rural North Carolina, at powwows and gatherings, with the Meherrin, Saponi, and Waccamaw Siouan nations, in community among distant cousins with whom we shared a common history.

Today, working with Indigenous nations is an essential part of my work in economic development. My team has supported business, agriculture, and climate resiliency initiatives with Tribal governments and organizations. Each collaboration is characterized by different assets, challenges, cultures, histories, and legal structures, leaving perhaps only one consistent similarity across nations: the importance of land and connectedness to place. One of our most enduring, exciting partnerships is with the Coharie Tribe. This small nation is using their river to center a cultural renaissance, a youth workforce development initiative, and an ecotourism strategy. My team brings additional resources to this effort, representing both a commitment to being good stewards of the earth and to sovereignty for all Indigenous peoples. Goals which I believe to be indivisible.

***

To be clear—I was once a real geologist, in the way that many of you are. I collected samples on mountain slopes. Dissolved rock powders. Built models. Ran a mass spec. Taught students.

And GSA has played a key role in my career, providing the grants that supported my education, the opportunities to present my work at conferences, and a congressional science fellowship in D.C. that served as the transition to the work I have been doing these past ten years. And since I ceased being a "practicing" geoscientist, GSA has been the primary means by which I have stayed connected to the discipline. My service to the Society has been recompense for all those resources and opportunities afforded me.

Outside of the conferences and committees, my professional work is not obviously related to the geosciences. But they are in conversation, informing each other in ways I have only recently begun to understand.

I lead NCGrowth, a national center that is building a different, more equitable economy by creating good jobs and new wealth in distressed communities. We are building power, the means by which an individual or a community can construct its future. Power enables communities to declare their own measures of success and construct their own solutions to the challenges they define. And a community can draw its power from within, through the collective recognition of and respect for its own assets. We believe that empowering all peoples—be it through financial, political, or other means—is the clearest path to

economic equity, to addressing health disparities, to justice, and to environmental sustainability.

Today our team includes more than 40 full- and part-time staff based in North and South Carolina, Tennessee, and Washington, D.C. Our partnerships extend our reach across and beyond North America, from Cote D'Ivoire to China.

Our work is to wonder—in partnership with individuals, communities, and nations—what could be and to try to build it.

We help mountain communities leverage their geomorphology and ecology for responsible tourism development. We help rural manufacturers grow and hire more local people. We help legislators see the fullest potential of their constituents. And we help historic Black communities like Princeville and Indigenous communities like the Coharie Tribe achieve diversified revenue, and support business development opportunities for their citizens.

We use the past to envision a radically different future.

***

I eventually had the opportunity to work with the town of Princeville. In the intervening decades since donating that beautiful organ, I learned some of the history of the town and decided that I wanted the work of my center to include places, like Princeville, that were abundant in histories, cultures, languages, and ways, but that were also disrespected, devalued, disinvested, and denied. Applied economic justice, you might call it.

The town of Princeville has survived since 1865 on low-lying, flood-prone land—land unwanted by the European colonists who had stolen it a century and a half prior as spoils of war with the Tuscarora Nation. Located just south of Shiloh Landing, a bend in the Tar River where small boats left the ancestors of the founders of Princeville—and likely, some ancestors of mine—having made the journey south from Port of Richmond, and prior to that, west from the Gambia, Angola, Benin, Ghana, the Bight of Biafra, and other West African ports. This town, Princeville, was built on land that would forever bind the community to the fate of the river.

So, in 2015, when Mayor Bobbie Jones told me his wonderous vision of an economic revival inspired by their vibrant economic past, I was game! The plan included an amphitheater at Shiloh Landing, consecrating that place with a sanctuary for community events, historic tourism, and the memory of those lives who were left irrevocably altered by the transatlantic trade of human bodies. We even managed to secure a partnership with Skanska, an international construction firm that saw a manifestation of their corporate mission in the story of Princeville's resilience.

But within one year, this work was interrupted by another storm—Hurricane Matthew. That left the town under more than 10 feet of water for a week. In the flooding was despair.

***

All my work has been shaped by the methods I learned in studying and practicing the geosciences.

Almost always, we begin with an observation or measurement of something that is unknown, unusual, or uncertain. New hypotheses emerge from established theories. And, perhaps, in what most distinguishes geology from other sciences—we understand that the past creates everything that we see and that what we observe now will shape the future. The world is a complex, recursive function, each minute of output as input for the next. And this perspective colors my work. It has meant that my team's approach is very different than my colleagues with backgrounds in economics, public policy, economic development, or business.

The converse is true as well. My experiences with communities that are working to reimagine and realize new futures have changed my understanding of the sciences. Not of any particular conclusion or data point, but in the questions we choose to ask. The questions we dismiss. The possibilities we can't see. The conclusions we reject.

The European scientific revolution, Reformation, Age of Exploration, Enlightenment, and Market Capitalism have for more than 300 years laid the foundation for how we practice our science. Most extant nation states are founded on ideas birthed and cultivated by these philosophies. The arts, science, and wealth produced as a product of these movements are vast. But core to these ideas is a belief that mankind has been given the earth by God for its exploit. That value is only created when labor creates products. The erroneous thought that some homo sapiens—those least European in their appearance and culture—are demonstrably inferior, and are, like the flora and fauna, part of the natural world to be exploited as is God's will is also the heritage of geoscience. And despite the great progress made in the sciences to reject some of these ideas, I believe that the process and practice of science—separate from its conclusions—is still subject to these philosophies. Thus, science has a voice, a culture, and a subjectiveness that restricts how your knowledge and your ways of seeing wonder in this world could otherwise be called upon to contribute to humanity and to our planet.

An example: Geoscience is essential to understanding climate change and addressing its impacts through mitigation, remediation, adaptation, and low-carbon energy development. But in conversations among scientists, policymakers, and engineers about the "energy transition" or "green revolution," I am always left thinking that the promises of technology address the symptoms but obscure the underlying cause.

Fossil fuels are remarkable. The preserved energy of an ancient sun, captured in the bodies of billions of organisms, distilled through pressure, heat, and time into extraordinarily convenient energy sources.

But firewood is the original renewable energy.

And solar, wind, and geothermal power are all remarkable.

In our journey to transition from one to the next, we are running away. Running away from mass deforestation, air pollution, and global warming. Overlooked is the irreplaceability of an old-growth forest, the 300 million years of history in a lump of glinty anthracite, and the choreography of melting, crystallization, and weathering required to create a regolith rich in rare earth elements.

Perhaps we have been using too much too quickly? Perhaps we've constructed a pervasive system and culture that disincentivizes conservation and reuse? Perhaps the creativity and innovation that come from limitation and constraint remain ignored?

***

Since the flooding of 2015, Princeville has been on a long road to recovery, navigating FEMA, housing displaced citizens, and coping with collective emotional trauma. But Princeville is the aquatic corollary to the mythical phoenix, perennially rising from the receding waters. Just a few weeks ago, the town hosted a highly successful bike ride and farm tour event. For the past year, my team has been helping the mayor develop plans to move municipal services,

housing, and the business district to a higher tract of land, outside of the flood plain.

And we've had the great privilege of continuing our partnership with the Coharie Tribe—most recently discussing how their experience rejuvenating their river and nation can serve as a blueprint for other communities trying to build on their inherent assets.

***

The power of Indigenous knowledge lies in the information itself, and in its provenance. For example, the technical knowledge of nations like the Yurok, Karuk, Hoopa, and Wintun is preventing catastrophic forest fires in the state of California and is used by Cal Fire and the U.S. Geological Survey. And, for example, the complex hunting practices of the Mbuti, Baka, and Batwa peoples, practices that vary by species, season, gestational-state, and other factors, promote biodiversity and conservation in the forests of the Congo Basin.

But as useful as the information is, we can learn as much or more from understanding the ways in which it was created. Knowledge generated from many generations of a people inhabiting a place, observing, testing, and understanding will result in different approaches, questions, and possibilities. The ingenuity, innovation, and creativity that is derived from not being able to escape the consequences of one's actions over the course of generations is profound. A wonder in and respect for the earth are needed to exist, survive, and thrive in place.

***

That word, "wonder," is a good one. It means surprise, admiration, curiosity, and doubt—it is this feeling, evoked by our natural places, to which I am drawn and from which I draw motivation. Wonder, the emotional manifestation of taking that first breath in the face of a cold wind.

I think, that for many of you, it may also have been a feeling of wonder that initially brought you to study the earth. The topography of a landscape, one rock, the movement of the tides, all that surrounds us at once invokes the lexicon of the geosciences. And now raising children of my own, seeing their surprise, admiration, curiosity, and doubt in the face of nature, I am reminded that the ability to experience the wonder of this planet is primary.

Fjords and mountain lakes, rolling hills and ordinary cloudy skies, even Colorado's own red rocks populate the desktop backgrounds and locked screens of hundreds of millions of computers. The high and low, wet and arid, snowy and scalding places that humans dream of visiting are celebrated for their geology, whether or not people would use that word. The earth's ability to arouse us is basic.

Many of our colleagues emphasize the utility of the geosciences to garner student interest in a course or to solicit more funding in a national budget. And that's understandable given that geoscience is indispensable to understanding climate change, finding natural resources, and predicting earthquakes and other hazards. But more basic than any of those practical and existential subjects is the naked wondrousness of the earth itself—of those places not untouched by humans, but not yet destroyed by us. *That* brings the laity in closer communion with our work than anything else.