Miles deep in the west coast wilderness of New Zealand, I was paddling the Kakapotahi River Gorge on a weekend trip with the Kiwi friends I was already getting ready to miss. Shoulders sore, knees scraped, and hands raw from lowering our bodies and boats down a cliff face, I leaned back in my drifting kayak and soaked in silence. The river was flat but not placid, the surface roiled with soundless blossoming bulges of current, bouncing up from the deep river floor and spreading onto the surface like mushrooms. Through the boat beneath me, I could feel their occasional push and pull, rotating me around in lazy, silent turns.

I've been fascinated by rivers since I was five years old. My feelings of silent awe and allure go back to my first raft trip, peering over the side of our shiny blue raft *Isabel*, watching patterns in the calm muddy waters of the San Juan River in Utah. As soon as I hit the water in my first kayak at age twelve, in a garage-sale boat that was almost as old as me and a size too big, I was in love. You constantly touch the world around you in a kayak. Everywhere you touch the boat, you feel the water: the tug and suck of eddy lines, the lightness of foam and the heaviness of flow. You gain a new perspective on the world; you move into places no other craft can access, with the silence to glimpse what it's like when nobody is there at all. A kayak is a portal to a world only known by those who paddle.

Looking up into the Kakapotahi Gorge, I slipped into calm wonderment and let the sheer stone walls draped in greenery explode into detail—a beautiful, ingenious thrum of mechanisms and actors. The ferns perched on the canyon walls sipped air through lip-like pores, their chloroplasts streamed around their cells like minute green cars in a traffic jam. The trees above

them pulled water skyward along cellular straws, and bored into the rock with fungi-wrapped roots. Beneath the clinging layer of life, even the limestone projected its marvelous backstory. I imagined its calcium and carbonate molecules traced back to their ancient source, being pulled from dissolved rocks by rainwater, carried along an ancient river to the ocean, then cycling from solution to crystals in ancient shellfish, then in sediment, then in rock. A knock on the back of my boat pulled me out of my X-ray vision daydream. Archer was prodding me with his paddle. "The next rapid's around the bend, mate."

I first wrote about the idea of X-ray vision in my application to Pomona, as a way to describe the way I loved biology for transforming the familiar world around me into a alluring landscape of things to visualize and figure out. The thrill of science for me is not in the discipline, but in the worldview. These new lenses for viewing the familiar make the ordinary extraordinary, creating a network of wondrous microcosms below the surface that can turn a simple mossy gorge in New Zealand into a symphonic experience of interconnected beauty.

Pursuing these perspectives made science my passion, and it didn't take long for me to discover the pleasure of sharing them. Lunch conversations with friends about the topics of my most recent geo class became highlights of my week, and I came to relish my late night exchanges with my brother, geeking out in the kitchen together when I came home for holidays. We wanted to share these little worlds that gave us a new understanding of the familiar, so we launched *Microcosm*, a podcast that let us explore media production and storytelling for a wider audience. While my brother focused on history and politics, I told stories about the symbiotic fungi that feed the world's forests, the formation of earth's atoms in the nuclear furnace of stars, and the miraculous skin of cephalopods.

As I worked on our side project, spending late nights burrowing into books and primary literature for our next episode, I constantly tripped across new facts and facets that made my heart quicken. This kind of learning felt like a stark contrast to the slog of pipetting various liquids back and forth in a biology lab. I came to understand that science is my passion, but that it's the learning and communicating of broad, interconnected, and relevant science that I love, not the creep forward at the front edge of a niche field. I want to uncover stories of scientific interconnectedness that help explain the world to myself and others. Science communication became a venue for weaving together my love of learning, storytelling, and art.

It was these interests that brought me to the Smithsonian last summer. Working at the Museum of Natural History, I grew interested in visual storytelling. I combined my photography

and writing to bring vignettes from the museum's collections to an audience of half a million people over social media. Pursuing these stories gave me the chance to seek out and share the subjects that got me excited—sea sponges that grow skeletons of biogenic glass, the venomous spurs that adorn platypus elbows, the octopus specimens collected by John Steinbeck.

Although working among the world's preeminent science educators was a dream come true, it also made me feel that some things should be done differently. When I walked through exhibits on my spare time, I was sometimes frustrated by the feeling that the museum held more wonders and amalgamated understanding than anywhere on earth, but often opted to present its knowledge as glancing reviews of the mere fact *that* something exists or has happened, instead of any explanation of *how* or *why*. The exhibits that electrified me most were the rare ones that strove to connect a phenomenon with its underlying cause.

Working at the Smithsonian magnified my excitement to share the wonders of the scientific world, but also affirmed my conviction that the best way to do science education is to keep the connection between understanding and experience in mind. Learning is most valuable when it helps people perceive their experiences in a new way, and I want to apply my skills and knowledge towards fostering that connection. This mindset and model of education is deeply important to me, but I also want to challenge it. I know that there are places where my priorities and interests will be starkly out of place, where culture, outlook, or survival dictate drastically different ideas about the natural and how it works. If these ideas about science are to be central to my career and worldview, I want the chance to stretch and question them around the world.

Throughout my life, rivers have come to perfectly embody the confluence of understanding and experience. My early curiosity about ripples and swirls has bloomed into endless fascination as I realize just how much there is to know. Developing an understanding of rivers' geology, biology, and history has caused my experience of them to evolve—from the natural interpretation I gave as a raft guide in Montana, to my own X-ray vision in that gorge in New Zealand.

Rivers are vital to the world in more ways than most people even begin to realize. Understanding how they work allows one to appreciate the broad range of ways that rivers impact human lives and history. Rivers form massive interconnected systems, comprising everything from the plant life along banks to their collective influence on global climate. These systems impact every human on Earth. The scope and diversity of human experience around rivers, combined with the wealth of geologic and biologic information to be understood within

them, makes them one of the ultimate venues to explore the idea that understanding shapes experience.

Telling the story of how rivers work, and showing how that impacts human experience around the world, is the perfect application of my passion for learning, experiencing, and sharing knowledge. I want to use my Watson to tell the story of how rivers shape our lives, and I want to approach that idea by way of the interwoven microcosms that compose them. Approaching this task as an act of science communication and visual storytelling is a powerful way to organize concepts and root them in real-world impact.

The stories of rivers, like the waters themselves, coalesce from multiple sources into a single unified idea that is deceptively straightforward but deeply complex: that rivers are vital. With the help of photography and personal experience to anchor abstract concepts in reality, my dream is to ultimately produce a single piece of work that tells this story. This project feels like the synthesis of all I have learned, all I care about, and all I want to do in the future. This is an exercise in the way I want to view, experience, and share the world.