

*“There is a house. One enters it blind and comes out seeing. What is it?”*

Beginning with riddles and crosswords, I continue to find myself addicted to the satisfaction of solving challenging problems. High school math and science classes similarly satisfied me, as each algebraic equation or chemical balance could be viewed as a puzzle waiting to be solved. Observing my ability to methodically work through problems, a mentor recommended chemical engineering as a college major. However, I now understand that **chemical engineering** was only the first piece of my own *life puzzle*.

Fast-forward several years, and I am now pursuing a research-based Master of Science in Hydrogeology in the Graduate Program of Hydrologic Sciences at the University of Nevada, Reno, where I am co-advised by professors in the Political Science and Civil & Environmental Engineering departments. My ultimate professional goal is to analyze and inform water management policies to promote resilient water management. On the surface, the function defining my career trajectory seems discontinuous; however, chemical engineering was the initial value that led me to a particular solution.

During my undergraduate studies, I became increasingly concerned with wastefulness of our food and water resources, which seemed to stem from the disconnect between the public and the environment. As an impact-driven individual, I pursued ways I could integrate sustainability initiatives with a career in chemical engineering. My first research experience in this vein occurred after my sophomore year in college, when I created materials to improve the efficiency of seawater desalination. While technological improvements to seawater desalination remain necessary, I learned the largest barriers to adoption are political, social, and institutional. The interdisciplinary nature of the problem made me fascinated with **water resources management**, specifically how non-traditional water sources could sustainably augment traditional water supplies. This new focus became the second piece of my *life puzzle*.

Wanting to learn more about the broader implications of chemical engineering, I participated in the Washington Internships for Students of Engineering program, where professional engineering societies sponsor student members to spend a summer in Washington, D.C. conducting independent research on a science-policy issue. Still fascinated with water resources management, I analyzed U.S. policies governing seawater desalination and the institutional barriers to seawater desalination implementation in the U.S. The experience taught me the importance of scientists engaging in policy, and **science policy**, a field I never knew existed, became the third piece of my *life puzzle*.

Several months before graduating with my bachelor's in chemical engineering, I was selected for a competitive two-year fellowship with the Science and Technology Policy Institute (STPI). STPI is an independent organization created by Congress to conduct rigorous policy analyses and science and technology assessments for the White House's Office of Science and Technology Policy. My work was highly collaborative, and I learned to lead teams of researchers with a variety of science backgrounds. My portfolio focused on critical infrastructure and

community resilience policies, which are vital when planning and designing for evolving conditions. This topic of **resilience** was the fourth, and clarifying, piece of my *life puzzle*.

My chemical engineering education established a strong theoretical foundation in fluid dynamics, heat and mass transfer, and process design. My policy experience taught me the importance of language, weighing competing interests, and providing actionable recommendations. As the final piece of my *life puzzle*, I am integrating my technical and social skills by researching **resilient water systems and practices in a policy-relevant context**. My graduate research analyzes the factors influencing the use of groundwater banking as a long-term water management strategy and contributes to a collaborative multi-disciplinary project on transitions toward sustainability in urban water systems. By supplementing my technical coursework with case-study research on groundwater banking in different socio-political, institutional, and environmental contexts, I hope to better understand the critical factors that promote or hinder a utility's adoption and implementation of innovative water management strategies that enhance system resilience.

My master's degree will help me make meaningful contributions early in my career. After graduating, I plan to work at a local or regional water management agency coordinating sustainability efforts. I strive to answer the question "how can we manage natural resources in a way that protects them for future generations while balancing competing interests?" As the value of coordinating the management and development of interdependent resources such as water and land gains recognition, I want to facilitate a participatory water planning process and promote a cross-sector approach to implement sustainable, equitable, and efficient water systems.

My training and experiences have taught me that integrated management will involve more than technical solutions and require knowledge on public policy, economics, and social values. This is the new *puzzle* I am trying to solve.

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