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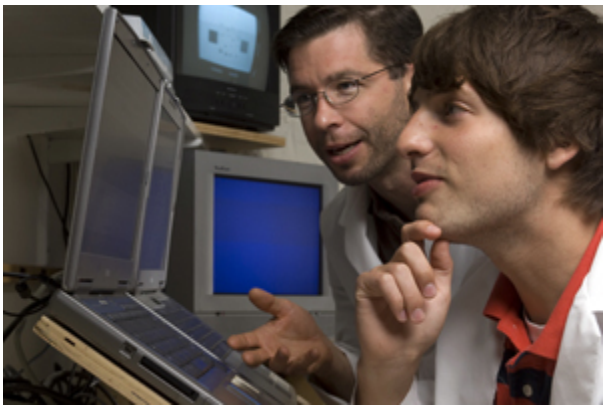
commentary

Under the Influence of Undergraduate Research

—Max Mehlman (Editor: Jennifer Lee)

Max Mehlman graduated from the University of New Hampshire in 2009 with two degrees—a Bachelor of Science Honors in zoology and a Bachelor of Arts in psychology—along with a minor in history.

I always envisioned myself at a college with that quintessential New England campus feel, so when I first visited UNH as a high school senior and found myself in a sea of green quads and red brick buildings, things were looking promising. When the campus tour paused in front of Hood House and our guide described the incredible opportunities available through the Hamel Center and the Honors Program, I became totally sold. One week later I was filling out an application for early decision.



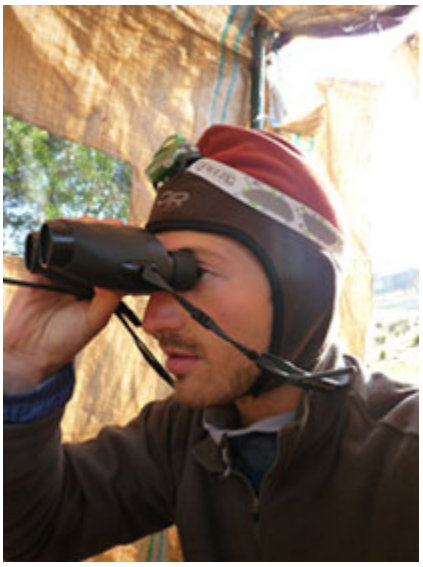
With his mentor, Dr. Brett Gibson, the author discusses his honors thesis research on spatial learning and memory in pigeons.

The following fall of 2004 I arrived at UNH as a wide-eyed freshman filled with a myriad of interests. Accordingly, my first two years were spent exploring everything from sculpture to sociology, philosophy to physics, and history to horticulture. Although my major was "Undeclared" during this time, I romantically considered it to be more along the lines of "Renaissance man."

In my third year I was well on my way towards completing a B.A. in psychology and had become captivated by the study of cognition and behavior. However, this general social science training did not address a key aspect of my intellect: my proclivity to think within a scientific framework of empirical facts. I soon realized I wasn't satisfied studying the psychology of the mind without understanding the underlying biology of the brain. Thus, I began concurrently working towards a B.S. Honors in zoology.

A Mentor Helps Bring it all Together

As I started pondering how to best fuse these two majors, a series of serendipitous events brought me to Dr. Brett Gibson's animal cognition course and shortly thereafter into his laboratory. I would spend the next two years studying rats' navigational strategies as well as the neural substrates for spatial learning and memory in pigeons. Both psychological and biological in nature, this research was the ideal synthesis of my two majors and introduced me to neuroscience, a fascinating interdisciplinary field where my varied interests complemented each other in a wonderfully productive and directed way.



The author, in a blind in the Australian bush in 2009, searches for Satin Bowerbirds to capture and band as part of research on their complex courtship behaviors.

While working with Dr. Gibson, I obtained over $5,000 of funding from the Hamel Center through an Undergraduate Research Award (URA) in 2007 and a Summer Undergraduate Research Fellowship (SURF) in 2008, presented twice at UNH's Undergraduate Research Conferences, completed an honors thesis, and received the Herbert A. Carroll Award from the Department of Psychology. I attribute much of my success to the fantastic mentorship of Dr. Gibson, a close friend whose guidance has been tremendously valuable not only during my undergraduate career but also throughout all my subsequent endeavors. With Dr. Gibson, my training was just as important as the research itself. He treated me as a genuine collaborator, and I ultimately learned how to function as an autonomous scientist.

After graduating in 2009 I planned to pursue a Ph.D. in neuroscience and continue my exciting exploration of the mind and brain. However, before delving into more laboratory research, I wanted to learn more about the techniques used to study cognition and behavior in natural settings. Valuing the importance of pairing interests with experiences, I temporarily traded in my lab coat for a pair of hiking boots and spent the next couple years conducting field research.

I first traveled to the Australian outback where I worked with Dr. Gerald Borgia from the University of Maryland investigating the complex courtship behaviors of bowerbirds. By administering a battery of cognitive tests to male Spotted Bowerbirds, we were able to correlate relative intelligence with mating success and thereby help unite the previously separate fields of animal cognition and sexual selection.

Next, I ventured to the rolling oak woodlands of California to assist with a 40-year study of Acorn Woodpeckers. These birds exhibit cooperative breeding, a social system that is among the most complex of any vertebrate. Working under the supervision of Old Dominion University professor Dr. Eric Walters, a great friend and mentor, I conducted behavioral observations from blinds and utilized an array of climbing gear to access the birds' nest cavities high up in trees.

I stayed in California and, applying the skills acquired as a field researcher, joined an environmental nonprofit organization to help design and implement various projects aimed at restoring the unique dune habitats of California's central coast. As a life sciences researcher whose experiments depend upon resources from the natural world, it is important that I do my part to ensure their protection.

From Undergraduate Researcher to Mentor

These exciting adventures conducting field research around the world would not have been possible without the fantastic experience and credentials I obtained at UNH through the Hamel Center. In addition to stimulating my passion for research, these formative years at UNH also fueled my interest in teaching. Having had a wonderful time my senior year working as a teaching assistant, I eagerly sought out more teaching experience after graduating. Fortunately, I had the pleasure of spending the following three summers assisting with a variety of courses at the Shoals Marine Laboratory, a unique teaching and research facility located in the Gulf of Maine. Valuing my research experiences at UNH, I strongly encouraged all my students to seek out undergraduate research opportunities themselves. I came to appreciate how much one can contribute to the scientific community simply by bringing others into it.

After acquiring this wide range of research and teaching experiences, I felt ready to embark upon what had always been my ultimate goal, obtaining a Ph.D. in neuroscience. However, I quickly learned that, even with years of preparation and planning, life still has a way of throwing you the unexpected. In the fall of 2011 I joined a graduate program in San Francisco. While it was a prestigious program, the school lacked

undergraduates; therefore teaching and mentoring opportunities were very limited. I quickly realized that these components of graduate school were simply too important for me to live without and decided I had to be somewhere where I would be working closely with undergraduates. Fortunately, everything worked out and in the spring of 2012 I will join a neuroscience Ph.D. program at Dartmouth College. In addition to working in a fantastic laboratory studying the neural mechanisms of spatial cognition, I will have endless opportunities to teach and mentor undergraduates in both the classroom and laboratory. Undergraduate research is thus going to be once again a part of my life, only now I have made the exciting transition from student to mentor.

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Author Bio

Max Mehlman *came to the University of New Hampshire in 2004 from his hometown of Bethlehem, New York. As he describes in his commentary, he packed a wide variety of research projects and teaching and learning experiences into the years between graduation (2009) and the spring of 2012, when he enrolled in a neuroscience Ph.D. program at Dartmouth College. Max hopes to one day become a college professor and continue to dedicate his professional life to the exciting and rewarding roles of researcher, educator, and mentor.*