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Interview

## *A Precious Thing*

*An Interview with Jordan Barr, December 3, 2004*

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When I arrived for the interview, I found Jordan Barr doing exactly what he wants to do: sitting beside an environmental science lab and writing an e-mail. That is, using scientific research as a base to interact with a larger community. “The most memorable experience of the whole thing, graduate school, has been the people that I came into contact with, not the science,” he would later say.

Personal contacts led him from an undergraduate degree in Chemical Engineering from the Rose-Hulman Institute for Technology in Indiana to Environmental Science in Florida by way of Virginia. In the middle of his master’s degree in Chemical Engineering at UVA, Jordan audited a class with Jose Fuentes. The class interested him so much that he dove into the work and eventually switched into Fuentes’s Environmental Science department. “I liked being outside and studying the physical processes of nature,” he explains, chemistry in real time, in real settings, rather than in the confines of a laboratory. Moreover, “environmental science is a combination of different things. That’s kind of why I’m interested in it. It’s very diverse.”

Sitting in an aging yellow easy chair across from Jordan’s computer desk, I can see his interest and his energy. He leans back to think about my questions, clasping his hands behind his head, then he folds forward and rolls his chair across the floor as he answers. “Energy makes things happen. A lot of people in science lose sight of that.” He means that literally, or technically. But it also indicates how Jordan conducted his own research. With little practical construction knowledge, he and other students in his research group erected a tower in the mangrove forests of Florida to collect data on temperature, solar radiation, carbon dioxide levels, and

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other properties of the forest's interaction with the atmosphere. Pictures show the group driving pylons by hand into the swamp floor. Another highlights the power supply system Jordan had to design for his tower. Further photos reveal the cat that stayed at the researchers' house or their willingness to swim in the murky Shark River, before they thought about the alligators.

After months of such preparatory work and necessary pauses, Jordan began collecting data. Mangrove forests, spread across the tropics from Florida to Australia and Asia, arguably play as significant a role in extracting carbon from the atmosphere as do the rain forests. The removal of carbon from the atmosphere, largely in the form of carbon dioxide, alters the total amount of greenhouse gases enveloping the Earth, and thus influences global climate change. Furthermore, mangrove forests potentially may mitigate sea-level changes by adding land to keep pace with rising oceans. By studying the interaction of the mangrove forest with the environment, then, Jordan can illuminate key climatic mechanisms.

However, Jordan's work is not at the center of the debates over global warming and has more immediate consequences for the South Florida Everglades Restoration Project. The multi-billion dollar project brings together lawyers, policy makers, scientists, and engineers to try to preserve and restore the wetland ecosystem. The data from Jordan's tower, logged every half-hour, provides a detailed baseline of the mangrove forest in "its perturbed state." If the project is successful in increasing water flow through the swamp, for example, "we can see the results in real time, instead of waiting five to ten years to measure the growth bands of mangrove trees."

The immediate results of the collaboration appealed to Jordan. "I realized how much I enjoyed working with an interdisciplinary group. They can validate what you are doing. People would tell me, 'Wow, that tower's unbelievable.' And I'm also helping the environment."

He ultimately wants to continue both the communicative and scientific aspects of his research after he graduates in May. As a scientist, he sees the necessity to take the results of his research and put them in a form that the average person on the street, as well as the policy-maker, can understand. Part of that desire for communication is to justify spending government dollars on pure science. The other part, however, is that "if scientists start publishing information in a way that policy-makers and engineers can understand, then they have no excuse not to listen." Indeed, only with a common forum, a common understanding, can people act together.

Jordan plans to direct his future work toward sources of sustainable, cleaner energy and conservation. His own experience trying to run all the experiments on his tower with a limited amount of electricity taught him how much people, including scientists, take flipping on the lightswitch for granted. "Energy is a precious thing," he says. "It's funny that you have to go the mangrove forest for that to dawn on you."

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Maybe we should all visit the mangroves even as Jordan leaves them behind. “The mangroves are an entire career for some people, but not for me. I would like to pass off my research to someone who can take it to the next level. There’s other problems out there that I want to be part of the solution. There’s more out there.” I take a quick look around the adjoining lab with its scattered soldering irons and computers before I take my leave. Jordan, I think, research with the community - not just the research community. His energy, too, is a precious thing.