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## The Many Facets of Matthew Dearing

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## The Many Facets of Matthew Dearing

**Whether crafting custom jewelry, performing onstage or sharing the excitement of citizen science, Matthew Dearing '00 explores life's dynamic patterns.**

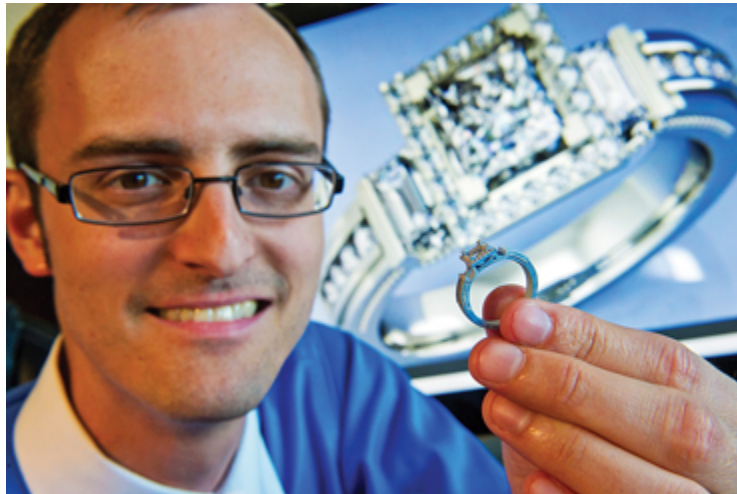
Story by CELESTE HUTTES

Photos by MARC FEATHERLY

Looking for Matthew T. Dearing? You could try his family jewelry store in Springfield, Ill., where he crafts custom fine jewelry using sophisticated design software. You might also find the former IWU physics major on stage, performing with the independent theatre company he created with his wife Michelle.

If it's summer after sunset, Dearing can be spotted in his backyard, counting fireflies or stargazing with his children, Elizabeth and Andrew, ages 6 and 3.

Day or night, one sure place to track him is online. Dearing maintains a popular website that promotes opportunities in citizen science and translates complex research into thought-provoking yet readable prose.



*Dearing's many interests include jewelry design using CAD/CAM technology, performing onstage and promoting citizen science projects. His physics research at IWU garnered worldwide attention.*

Fueling all these endeavors is the Class of 2000 graduate's desire to explore his own potential and inspire others to do the same.

Both his website (which he describes as a "lab") and the Dearings' theatre company have evolved under the banner "Dynamic Patterns." Those two words summarize "nature's method," he says.

"A pattern is wonderfully constant and stable, but it is dead," Dearing has written on his website. "Life is dynamic; if it is to persist, it must continually change.

"The universe is an organization of many dynamic patterns. They are the essence of everything."

Among the most impressive of these dynamic patterns is the human brain, he says. "Your brain is the most awesome thing in the universe. We know so little about it, but we are on the cusp of a revolution in a new understanding of what it is and how it works. Now, citizen scientists can be an integral part in this revolution so that anyone can scientifically better know their inner self."

He cites recent breakthroughs at the MIT lab of Sebastian Seung, who studies and maps the brain's neural pathways. The main idea of Seung's new book, *Connectome*, "is that you are the emergent result from the interconnections of some 100 billion neurons in your brain," Dearing writes on his website at research.[dynamicpatterns.com](http://dynamicpatterns.com). "Mapping the interconnections of these neurons will be a massive task — one in which citizen scientists could play a key role."



*A fine-jewelry line designed and crafted by Dearing was launched this fall.*

Citizen science, which invites the public to participate in scientific research, has exploded in the past two decades, Dearing says. Projects range from the furthest reaches of the universe to the birds in your own backyard. “With many people looking at the same set of data simultaneously,” says Dearing, “it can help filter out incorrect decisions almost automatically.”

Citizen science is ideal for projects generating massive amounts of data — far more than a handful of graduate students could reasonably tackle. Researchers also rely on citizen scientists to perform tasks that humans simply do better than machines, such as image recognition.

One such project made headlines last fall. Over a three-week period, hundreds visited the website Foldit to play an online protein-folding game. Their combined efforts solved a problem that had perplexed scientists for years. They mapped out the structure of an enzyme with potential use in making drugs to fight HIV and AIDS. “People have spatial reasoning skills — something computers are not yet good at,” said Seth Cooper, Foldit’s lead designer, in a statement to the press.

On the Dynamic Patterns Research website, Dearing also promotes the work of Zooniverse, which supports many citizen-science projects and has more than 600,000 volunteers. One Zooniverse project, Planet Hunters, asks the public to visually evaluate mountains of starlight-intensity data generated from NASA’s Kepler space telescope. The goal is to pinpoint possible signs of planets as their orbits cross in front of stars.

“You might see the light intensity from one star change — one day it might dip, and then the next day it might be back to normal,” says Dearing. “The idea is that something could be crossing in front of the star to cause that change, and it could be a planet.”

This past September, astronomers confirmed Planet Hunters’ discovery of two exoplanets (planets outside our solar system), both with diameters much larger than Earth’s.

Dearing first learned of citizen science at Illinois Wesleyan while attending a talk by Shawn Carlson, who left a lucrative lab position to launch the Society for Amateur Scientists in 1994. With its mission, “helping ordinary people do extraordinary science,” the nonprofit group supported projects by amateur scientists and inventors.

Dearing has done his own share of extraordinary science. At IWU, he worked with Professor of Physics Gabe Spalding in developing lasers and holograms to move matter in the microscopic world. Physicist David Grier, now at New York University, invited Spalding, Dearing and Steven Sheets ’01 to help with ongoing optical micromanipulation studies he was doing at the University of Chicago. A paper on the work, published in *Review of Scientific Instruments* in 2001, caught the attention of physicists worldwide. Co-authored by Dearing, it detailed “how to design your own computer-generated holographic optical tweezers,” Spalding said at the time. “We explained how to calculate it, how to generate it. It was a full recipe, and that had a lot of impact. It empowered other groups to go and do things.”

Dearing enjoys the process involved with experimental physics. “It helps you develop the ability to figure something out. Compared to just reading or memorizing, whenever I’ve learned experimentally I feel I have a real understanding and appreciation of the material. I learned how to learn at Illinois Wesleyan, and that’s the point of education.”

After graduating from IWU and a summer internship at Argonne National Laboratory near Chicago, Dearing began his master’s work in physics at Cornell University. That same year, he married Michelle, his high school sweetheart, and the

two opened a paint-your-own-pottery studio in downtown Ithaca, N.Y., with a familiar name: Dynamic Patterns Pottery Studio. “Starting our own business was amazing — I loved that experience,” he says.

In 2005, the Dearings moved back to central Illinois to help run Michelle’s family’s jewelry business. Denney Jewelers has a 10,000-square-foot showroom, one of the Midwest’s largest, and a staff that includes four on-site jewelers and two graduate gemologists.

For his part, Dearing focuses on business operations, sales, and designing and manufacturing custom jewelry using CAD/CAM technology. This year, the store is launching its own in-house fine jewelry collection, called “infinity by Denny,” which will feature pieces designed by Dearing and crafted on site in Springfield. To further perfect his skills, Dearing is also studying to become a fellow of the Gemmological Association of Great Britain. He chose the two-year gemology program for its heavy focus on science, which puts Dearing soundly in his comfort zone.

“I get to apply a lot of what I learned at Illinois Wesleyan — things like optical physics, crystal structures, colors and light; why gemstones form and look the way they do.”

Against a backdrop of brightly-lit cases brimming with jewelry and gemstones, a dapper Dearing — dressed in suit and tie — also gets to hone his skills in translating technical information to a broad audience in accessible, even inspiring, ways.

On stage, Dearing connects with an even wider audience. Last May, he played Detective Trotter in Agatha Christie’s *The Mousetrap* at the Hoogland Center for the Arts in Springfield. It was the first production by Dynamic Patterns Theatre, the independent company he and Michelle launched last year. Each show was sold out, with profits donated to local charities. Three more shows are planned for the Dynamic Patterns’ second season, and this fall Dearing once again took the Hoogland Center stage in *12 Angry Men*, tackling the role made famous by Henry Fonda in the film version.

Dearing has especially fond memories of a 2011 performance in the two-man show *Tuesdays with Morrie*, which his IWU physics department mentors Gabe Spalding and Narendra Jaggi both attended.

Dearing’s support of the state capital’s burgeoning arts scene — including serving on boards of both the Springfield Ballet Company and the Springfield Theatre Center — was among his achievements cited by the *Springfield Business Journal* in naming Dearing to its 2012 “Forty under 40” list of top young community leaders in central Illinois.



*Dearing played a detective in his theatre group's production of "The Mousetrap"*

The performing arts are just one more outlet for the dynamic patterns of life upon which Dearing thrives.

“I’m not a professional scientist or actor, and will probably never reach the top level of whatever I get involved in,” he says, “but I’m really interested in learning and getting better at whatever I’m doing.”

Among his goals is to do more independent research, perhaps collaborating with a professional scientist. As a writer, he wants to further develop his skill in making the abstract accessible, building bridges between the ivory tower and the everyday. In the future, he also hopes to develop unique productions that “introduce audiences to great theatre and great science,” he says

“Being able to communicate basic scientific ideas to the general public is critical,” he adds. “It’s something I want to do well.”

Ultimately, the value of citizen science goes far beyond any one project by engaging people with the world around them, he says. At its best, citizen science may foster a humble sense of awe like that felt by Dearing.

“It is impossible to understand how big the universe is. It’s so ridiculously large ... it’s very awe-inspiring,” he says. “Citizen science gives people a better appreciation for the world they live in, and helps us see the big picture.”

[CLICK HERE](#) TO VISIT MATTHEW DEARING'S DYNAMIC PATTERNS WEBSITE.