

Brown Symposium explores 3D printing

By JONATHAN ADAMS

As three-dimensional printing has gained popularity, many early adopters have employed the revolutionary technology for cultural and recreational purposes, such as making toys, intricately designed instruments and art.

Southwestern University Art Professor Mary Visser wants to use the school's 37th Brown Symposium to explore more practical applications.

The symposium — which is curated by Professor Visser and Christian Lavigne, director of Ars Mathematica, an international non-profit connecting technology, science and arts — is scheduled for 8 a.m. to 6 p.m. Thursday and 8 a.m. to 1 p.m. Friday in the Alma Thomas Fine Arts Center on campus.

"I wanted the topic to focus on the impact of 3D technology on the human mind as it endeavors to meet future challenges in the arts and sciences," Ms. Visser said.

"This medium has the potential to solve major issues in our lives, from building environmentally friendly homes and products to exploring other planets."

Ms. Visser invited six people from around the world to discuss how three-dimensional printing has affected their respective fields:

■ Bruce Beasley, a world-renowned modernist sculptor from California, will discuss how the 3D printer has changed sculpting;

■ New York artist Robert Michael Smith will talk about using his own cells to print living sculptures;

■ Dr. Anthony Atala, director of the Wake Forest Institute for Regenerative Medicine in North Carolina, will speak with Mr. Smith about how three-dimensional printing can be used to recreate body parts from the cells of children;

Southwestern University 37th Brown Symposium Alma Thomas Fine Arts Center

Thursday, February 26

9:30-10:30 a.m.

Where Am I Going and What Am I Doing?

Sculptor Bruce Beasley explains how emerging 3D technology has impacted large-scale sculpting

10:45 - 11:45 a.m.

Spark! Creation of a 3D Printing Company

Lisa H. Crump is co-founder of a 3D printer manufacturer

1:30-2:30 p.m.

Regenerative Medicine: Current Concepts and Changing Trends

Anthony Atala is director of the Wake Forest Institute for Regenerative Medicine

3:15-4:20 p.m.

3D Printing: A Bridge to Unlimited Creativity

Professor Olaf Diegel of Sweden's Lund University speaks on printing seemingly impossible objects

Friday February 27

9-9:50 a.m.

In Search of the Lost Coord

Robert Michael Smith is a sculptor, 3D digital artist and professor at the New York Institute of Technology

9:50-10:30 a.m.

What is Computer Sculpture? Its Mythological and Real Foundations

Christian Lavigne is director and president of Ars Mathematica, an international non-profit promoting connections between art and science

10:50-11:50 a.m.

The Creative Mind: Six Pioneers from Around the World in Sculpture and 3D Printing

Panel Discussion

11:55 a.m.-12:55 p.m.

The Future of 3D Printing in the Fine Arts and Sciences: Panel Discussion

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Christian Lavigne
Digital artist



Mary Visser
Art professor

In addition to the symposium, Ms. Visser solicited 3D-printed art from around the world for a companion exhibit on display through March 4 in the Fine Arts Gallery — "What Things May Come: The Third International Digital Sculpture Art Exhibition."

"The Internet has given artists a different type of salon in which to discuss their art and theories about making art," Ms. Visser said.

The works come from Mr. Smith and Ms. Visser as well as fellow artists Paul Higham of France, Corinne Whitaker of Connecticut, Kim Thoman of California and Mary Neubauer of Arizona.

■ Dr. Olaf Diegel, of Lund University in Sweden, will discuss how the printer can help people personalize things like musical instruments;

■ Mr. Lavigne will discuss digital sculpture;

■ Lisa Crump, co-founder of a manufacturer of 3D printers, will discuss how the machines became a low-cost product for the general public.

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From new kidneys to guitars, symposium explores ramifications of 3D printing

By JONATHAN ADAMS

The buzz of excitement combined Thursday with the quiet hum of a printer as it turned a string of plastic into a small object in the lobby of the Alma Thomas Fine Arts Center at Southwestern University.

The 3D printer demonstrated the essence of this year's futuristic Brown Symposium, "What Things May Come."

While the printer whirled, people waited in long lines to have their picture taken. Before their eyes, the 360-degree photos were turned into miniature busts, the machine bonding plastic strips together to form a cohesive statue, like a building going up floor by floor.

Three-dimensional printing technology, also called additive manu-

■ How salamanders inspired regenerative medicine.
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Jonathan Adams

Laura West, with Houston 3D printer maker Engaging Solutions, works on a photo of SU librarian Joan Parks. The photograph can be made into a statue.

facturing, was the focus of SU's 37th annual Brown Symposium Thursday and Friday in Georgetown.

Technological beginning

Three-dimensional printing technology has been around for about 30 years and the concept for a commer-

cial machine has been in the works since 1989, when Scott Crump and his wife Lisa Crump, both of Minnesota, started to tinker with the idea in their garage. They founded Stratasys, a pioneering manufacturer of 3D printers.

Continued on 4A



Jonathan Adams

Josh Gilpin, a junior classical guitar major at Southwestern, plays Louis Armstrong's "What a Wonderful World" on a 3D-printed guitar.

Symposium explores 3D printing

Continued from 1A

The Crumps were working for a tool company for integrating circuit chips when Mr. Crump thought, "there has to be a faster way to get something done," Ms. Crump said, who was a guest speaker at the symposium.

"So, Scott had his 'aha moment' and, of course, like a lot of people do, he went into the garage and started to experiment," she said.

The Crumps' first home-printed product was a "blob" shaped like a toy frog for their daughter.

"So, that kept her happy for maybe 10 minutes, so we had to keep at it and Scott kept working in the garage," Ms. Crump said as she flipped through slides showing the progression of objects created over time.

"In some of our early models, you can see the layering and big seams between the start and stop of layers, but it was enough to kind of say, 'We have something here, let's keep moving on it.'"

Mr. Crump's work was at first funded by friends and family. He eventually sought funding from venture capital

groups. Their first donor provided \$1.5 million, Ms. Crump said.

Despite financial backing, the company ran into problems finding materials, figuring out how to bond layers to create objects and other technology difficulties.

"We were able to work through our initial problems successfully and our first order came from Biomet," Ms. Crump said, referring to an Indiana orthopedic company that helped them out in 1994.

The market has changed since the Crumps labored to build a working 3D printer. The technology has made strides across a range of industries, from aerospace engineering to dental implants and as an educational resource for surgeons.

"If you can think it, you can make it," Ms. Crump said.

Real world applications

While Ms. Crump briefly touched on the artistic and practical value of the printer, Dr. Olaf Diegel, a professor at Lund University in Sweden, elaborated on how the machine is already starting to change everyday life.

"I believe the 3D printer

has the potential to change the world," Dr. Diegel said. "What's exciting is how it's a tool for creative thinking."

At the start of Dr. Diegel's presentation, Gideon Nelson and Josh Gilpin, both SU juniors studying classical guitar, played a song using instruments made by 3D printers and designed by the Swedish professor. The instruments resembled a Gibson Les Paul and a Fender Stratocaster.

"It's lightweight and it sounds good," Mr. Nelson said.

Dr. Diegel has also printed violins and a saxophone, which he said is incomplete and needs more work.

Aside from the arts, Dr. Diegel also talked about how people have used the printers to help those in need — creating a beak for a bald eagle, shells for hermit crabs and prosthetics for children in developing countries or those who cannot afford to buy a high-end replica.