

It's the economy

Learning about innovation

SUNY New Paltz is prepared to double down on its investment in 3D printing. Having inaugurated a three-semester program for digital design and fabrication this fall, the college has applied for \$5 million in new state funding. The money will buy about 7500 square feet of space to house this promising technology and high-end equipment with which to teach it. The plan, the college says, is to share these resources with other educational institutions and private businesses in the region.

Many experts in technology have predicted that the interface of digital design and new fabrication capabilities in 3D printing will revolutionize how objects are designed and created. It wouldn't be the first time that prognosticators of technological trends have turned out to have gotten such things wrong, of course; in technology, picking winners and losers a risky business. If they are right this time, however, the New Paltz college could serve a central role in the Hudson Valley getting ahead of the curve in terms of innovation, adoption and adaptation of an important technology.

For the college, this year's big preparatory step was the establishment of a new certificate program and support services in digital design and fabrication at its "organizational home" in New Paltz. Displaying the wide capabilities of the technology, the six-course program is a collaboration between the school of fine and performing arts and the school of science and engineering within the college.

It seems to be attracting non-traditional students. According to interim arts dean Paul Kassel, non-credit students rather than enrolled undergraduates constituted the lion's share of the 24 registrants for the first cohort of the program.

College president Donald Christian is convinced that 3D printing will provide a growing stream of opportunities for local businesses in the Hudson Valley. "It's a portal to all technologies," he explained in an interview a couple of weeks ago, with applications in such diverse areas as 3D art and sculpture, biomedical development, materials science and set design. He offered examples in the region of each.

Educational outreach is a big piece of the college's plan, said science and engineering dean Dan Freedman. Various school districts and county BOCES have been making inquiries. Freedman says the program is collaborating with the state's SUNY College of Nanoscale Science and Engineering, the immediate inspiration for state government's interest in a holistic approach to economic development.

A SUNY New Paltz map proudly displayed the advanced manufacturing center's 14 partners, who range from substantial financial supporters like Sean

Eldridge's Hudson River Ventures and Central Hudson to five community colleges and Marist College's cloud computing center, and include the local secondary school entities Ulster BOCES and New Paltz High School, the local firm Sono-Tek, Sullivan County's Center for Discovery, and two peak business organizations, the Council of Industry and the Hudson Valley Economic Development Corporation.

The curriculum devised for the program demonstrates its unusual scope. One of the inaugural courses, *Crafting in Virtual Space 1*, teaches approaches to three-dimensional visualization and construction in a variety of materials. The other, called *Programming for Media*, introduces novice programmers to a wide range of applications in programming images, animations, interactivity, prototypes and production.

The second pair of courses to be offered next semester will consist of *Crafting in Virtual Space 2*, which will develop a further understanding of the programming tools of 3D technology, and *Introduction to Mechatronics*, the integration of the various technologies in the design of the computer-controlled systems.

In the third and final semester of the program, students will work in a collaborative environment to apply their knowledge to design situations. And in a final course they will take a series of seminars with experts in the field for a look at the broader technological aspects and implications of digital design and rapid prototyping. As anticipated, the program has turned out to be of interest both to engineering types and to those of an artistic persuasion. Kassel likes to say that the technology breaks down the left-brain right-brain duality: both sides of the brain can be involved. Some artists embrace technology, some engineers pioneer artistic expression.

The Next Big Thing

At the end of May, a new initiative termed the "The Next Big Thing" had been rolled out as the centerpiece of the Hudson Valley Advanced Manufacturing Center at SUNY New Paltz. "3D printing provides a great opportunity to build on our strength in the art and in engineering and technology," Christian said at that time.

A couple of weeks ago, Christian reiterated his view that 3D technology could become "a magnet of educational opportunity for the Hudson Valley." A robust commitment to its early development, he suggested, could bring the region an important competitive advantage over other regions. In for a dime, in for a dollar.

The transformation of digital modeling produced by virtually any computer-aided design or animation

modeling software into a three-dimensional object that is built layer by layer is a remarkable achievement. What you see is what you get.

Imagine, explained the techie website mashable.com this March, the transformative possibilities. A wounded bald eagle got a prosthetic beak. Mars-bound astronauts can print what they need as they travel. 3D meat could fill the human need for protein. Recently, we were told we could order a personally designed toothbrush that would brush our teeth in six seconds. We could get scale models, gifts and clothing. We could buy 3D hearing aids or 3D-printed homes.

Or, as we know from the media, we could shoot someone with a 3D-printed gun.

What fun.

The most important part of the technology is even more startling than the applications. It's the ability to improve design immediately with a simple programming change. Luana Iorio, who oversees research at GE's laboratory on 3D printing in Niskayuna, last month mightily impressed Tom Friedman of *The New York Times* in explaining the speed of design changes: "The feedback loop is so short now," she said. "In a couple days you can have a concept, the design of the part, you get it back and test whether it is valid."

Friedman made what Iorio told him next the title of his article: "When complexity is free."

State backed local bet on technology

Now it all comes down to the money. If the new state money for SUNY New Paltz comes through — and at this time there is no firm commitment that all or any of it will — the move will constitute a substantial state-backed local bet on 3D printing. With previous funding commitments and college resources already being invested in this program, the total financial commitment to the initiative will in a year or two approach approximately ten million dollars. Meanwhile, the college plans hiring to add to its capabilities.

In a cash-strapped age with fierce competition for limited resources, the SUNY investment is pretty close to real money. And that investment, if the example of state support for the nanotechnology industry is any precedent, could well be just the beginning.

On September 18, the mid-Hudson regional development council announced its endorsement of 21 projects, including SUNY New Paltz's, the only Ulster County project endorsed: "SUNY New Paltz will establish the region as a national center where additive manufacturing technology design, research and manufacturing takes place."

Not all the endorsed applications will get funded, and not all the ones not endorsed won't. The state says the local scoring counts for 20 per cent of the total. The real decision is expected from Albany a few months from now.

— Gedy Sveikauskas

In the near future this column will talk with local digital design and fabrication innovators. For further insights, go to Ulster Publishing's hudsonvalleybusinessreview.com.

Summing it up: "We did nothing wrong. We don't remember the answers to the questions we asked. We need to spend more money on consultants. We need to pick a rapidly approaching referendum date."

Oh, one more thing. At the end they said they'd make up "One Community" t-shirts to wear to the Halloween parade. Advance the video to a couple of minutes before the end if you think I must be kidding. They're going to meet again on Oct. 24. That's a weekday, too, so let's hope they're going to do it after enough people come home from work so we can come down and humbly request their resignations and replacement with all new members. This group has both violated the terms of the state grant and after two full years with repeated public input on the errors being made, failed to deliver a proposal that could be placed before the public. And as they're clearly gearing up to do it all over again, nothing less than this is acceptable.

Steve Greenfield
New Paltz

✱ Mark these three dates now

Friday, Oct. 11 at 8:15 p.m. Showing of the newly released documentary *Gasland II* at the Elting Memorial Library, 93 Main Street in New Paltz. This is a sequel to the Academy Award nominated *Gasland* showing the perils to the environment and public health of horizontal hydraulic fracturing known as fracking — a controversial process for drilling deep below the earth's surface to release shale gas. The event is free and open to the public.

Tuesday, Oct. 29 at 7 p.m. *Gasland II* director Josh Fox will speak and show clips from the sequel in Lecture Center 100 on the SUNY New Paltz campus. Learn how lives of ordinary Americans continue to be upended by the dirty and dangerous process of fracking in the largest domestic natural gas drilling boom in history. Learn how the powerful oil and gas industry is "contaminating our democracy" because of lobbyists and politicians who take their money. Learn how we can move from fossil fuels to a renew-

able energy future now. Free and open to the public. For more info go to <http://on.fb.me/17fzqXO>.

Tuesday, Nov. 5 from noon to 9 p.m. Election day. Vote for these candidates who have shown a commitment to passing legislation to protect our environment. In the District 17 race, Ulster County legislator Ken Wishnick proposed and got enacted the first county fracking brine prohibition law in New York State; eight other counties have since followed suit. Town supervisor Susan Zimet is recognized for her anti-fracking efforts, both statewide and locally, including passing legislation to ban horizontal fracking and all related fracking activities in our town borders.

Every vote counts. Show up and be counted. Support forward-thinking candidates we can count on to continue to advance environmental protection measures. Together we each need to show up at the polls and take a stand to protect this and future generations. See you on Nov. 5

Rosalyn Cherry
New Paltz