B green mountain

Plastic "Plankton" chandeliers, sculpted from discarded plastic by Burlington artist Rebecca Schwarz. COURTESY REBECCA SCHWARZ

Invention and Mother Earth's future

Sound science vs. artistic vision? Not in this case. Three Vermonters draw viewers closer to our climate conundrum.

JOEL BANNER BAIRD
Free Press Staff Writer

"Industry" is something of a dirty word, long tarred with coal soot, oily solvents and stink.

The associated "Revolution" that fast-tracked humanity's domination of the Earth has left us with an unholy mess.

Might we contemplate a retreat?

No: Invention — and even fiction — was touted as a remedy at a small, ground-floor gathering one recent night in Burlington.

Even art, so often painted as the most aloof of pursuits, plays a star role in planetary stewardship, said sculptor Rebecca Schwarz, who introduced the "Eco Logic All" forum at Generator, a vast workshop beneath Memorial Auditorium.

Schwarz's Champlain College faculty colleagues, Valerie Esposito (who teaches environmental policy and economics) and Ken Howell (of the college's emergent technologies program), rounded out the playbill.

All three agreed on a basic script:

» Regular, emphatic departures from orthodox opinion and culture.
» Geek-outs with new (and old) tools.
» Better blueprints and better ways to share them.
» Motivation to make better stuff, closer to home.

The collaboration, Schwarz said, "was a month in the making and more than a year in the dreaming."

Play on

Early in the evening, about 30 people milled through Generator — a "maker space" — where iron-age metalsmithing tools sit cheek-by-jowl with soldering stations, robotics gear, a laser cutter and a 3-D printer.

Also within handy reach: computers with gigabit-speed access to the world beyond.

Hands-on approaches mean a lot to Schwarz. Throughout the day she picked up discarded plastic drinking cups and stashed them in her workspace: raw material for new projects.

If we believe there exist better prospects for terrestrial life, Schwarz

B cover story

"It's about studying a leaf to invent a better solar panel. The new ecological standard for economic progress will be not what we can extract from the world, but what we can learn from it"

VALERIE ESPOSITO

Bench-space for the Iron (and Gigabit) Age: Champlain faculty members on Thursday discuss the potential for environmental transformation at Generator, a maker space in Burlington. From left: Ken Howell, Valerie Esposito and Rebecca Schwarz.
JOEL BANNER BAIRD/FREE PRESS

said, we need to pitch ourselves into the effort to discover (or re-discover) our place in nature, in "the fabric that supports us all."

Her prescription calls for sound science, balanced with an artist's urgency, high regard for good tools and a keen sense of play.

"I consider everyone an artist, by the way," Schwarz said.

At about 7 p.m., the forum became more formal — at least in appearance.

Champlain College's Schwartz, Esposito and Howell projected images against a big, bare wall. Their presentations, embellished by interruptions from the audience, defied tidy categorization.

Rock steady-state

Valerie Esposito took the crowd on a quick look at civilization's foundation stones and shook loose several well-entrenched specimens:

» For centuries, people have considered ecosystems to be subservient to economies: sources of extractive resources and repositories for waste.

» Consumption of resources and the accumulation of goods remain as underlying virtues in our economic life, as does growth.

"We might start considering ourselves in a plenitude economy, a steady-state economy," Esposito said.

» "Traditionally, we've thought of the economic model in terms of scarcity and competition for resources. I think we have the opportunity to focus on what we have an abundance of, such as cultural resources, imagination — even love," Esposito added.

» Technology, at its best, has a strong element of "biomimicry" — taking design cues from nature.

"It's about studying a leaf to invent a better solar panel," Esposito said. "The new ecological standard for economic progress will be not what we can extract from the

Participants drive an array of lights on "Tower of Power," a sculpture by Burlington artist Rebecca Schwarz. COURTESY REBECCA SCHWARZ

"(Hex) Ring Cycle" — a sculpture made with discarded plastic coffee K-cups and LED lights, by Burlington artist and environmentalist Rebecca Schwarz. COURTESY REBECCA SCHWARZ

world, but what we can learn from it."

» Esposito projected an image of a plunging kingfisher bird, side-by-side with the tapered snout of a Japanese "bullet" train. The designers had studied the bird. The train, as a result, was quieter, cheaper and faster.

Tools and trade-offs

Recycle? Re-use? Solid tenets of maker-space culture, answered Champlain College's Ken Howell, but modern makers must harvest even further afield of established business plans.

"You find new uses for stuff that you already have," he told the audience. "You make repairs, you hack, you modify stuff. It's a much more sophisticated form of resource management.

"The tools you use can add to the conversation, and help you to investigate the environmental impacts of manufacturing," Howell added.

Furthermore:

» "Maker spaces are like public libraries. They serve local communities, and they look for local solutions," he said. "They do what the Internet did for information: They are places that empower individuals."

» Take cheap, easy-to-program electronics, such as the open-source Arduino circuit boards that line one wall. They can treated as toys — but they also have been pressed into service by citizen scientists who have tweaked them to monitor water quality, seismic tremors, sound and even radiation levels — "small contributions that become keys to understanding larger patterns," Howell said.

» 3-D printing's most visible accomplishment is still in the production of knickknacks, Howell said — "it's kind of a glorified cake decorator."

But, he added, the technology's virtues could launch a greener industrial revolution.

How? By being super-stingy with building materials, by on-site, on-demand manufacturing that could greatly reduce costs associated with prototyping, field-testing, transportation and warehousing.

Heavy-duty printers loaded with concrete and mounted on heavy-duty rails, Howell said, can print a 2,500-square-foot house in about 12 hours.

» The transition to industries that hum in closer harmony to the rest of the planet won't be clean and easy.

"Most people look at new technology from either a utopian or dystopian perspective," Howell said. "The truth lies somewhere in between. But my personal belief is that our ability to solve problems can be stronger than our challenges. It's our choice to believe we can fix those things that have gone wrong.

"As a species, we want this to happen," he continued. "It'll take a lot of time and a lot of effort. The possibilities outweigh the problems."

Seeing, believing

A lush landscape painting flashed on the screen, followed by a 30,000-year-old cave painting, crawling with big game.

"Art has always been a way for people to perceive economic challenges," Rebecca Schwarz said.

Other images: An assemblage of cast-off plastic K-cup coffee containers, draped as a chandelier. A giant, breaking wave in the style of a Japanese print, comprised of 2.4 million pieces of plastic — the estimated pollution, in pounds, entering the world's oceans every hour.

Without these objects of beauty, would we pause to examine this otherwise out-of-sight/out-of-mind detritus? Would we consider the toll plastics take on ocean habitat and our own endocrine systems?

Schwarz thinks not: "These are opportunities to examine stuff more carefully, to bring a little bit of a playful approach to a subject that can be depressing, heavy and distressing."

Describing the constituents of her beautiful and eerie "(Hex) Ring Cycle" sculpture, she elaborated on the persistent and "seemingly magical properties" of plastic.

"As they become a part of, and go through, us, they disrupt our hormonal systems — turning on and off bodily systems that evolved to function just-so over millions of years," she said. "Molecularly they act as keys deep within our cells."

Her sculptural metaphors are "both hopeful and grim, ironic and sincere, a celebration of beauty and a fear of our ecstatic consumption," Schwarz told the crowd.

"Basically," she added, "we're asking, 'How can we make this a better conversation?'"

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