C rudely simplified, artists operate in the first-person, subjective realm. Scientists, on the other hand, require a third-person, objective viewpoint. Even though both may seem to chart vastly dissimilar territories and work with different toolboxes, sometimes when the right collaborations emerge, wondrous results can happen. When artists and scientists share similar concerns, they influence and invigorate each other’s perspectives.

Vandal Ideas

Enter the Vandal Ideas Project, a competitive grant program launched in 2015 at the University of Idaho to encourage collaborative work. The project funded and held an exhibition, “Visualizing Science,” at the University’s Prichard Art Gallery from February to April 2017. Seven different collaborative teams of artists and scientists, all faculty members, produced the works in the show. After an initial roundtable discussion, participants were assigned to each other, but no one got to choose his or her collaborator. No one was familiar with anyone else’s work to any degree of depth. Fortunately, as a result, everyone developed an enthusiastic willingness to navigate unfamiliar territory.

The collaborative projects did not deal with data visualization in the scientific sense, but more with how artists and designers can translate scientific methods of inquiry into something visually engaging for a gallery audience in order to produce an emotional response. One of the participating artists, Sally Graves Machlis, helped write the initial Vandal Ideas Project grant.

“One of the examples we used when we were pitching the grant was if people don’t believe in climate change, you could make some very beautiful graphs and charts and maps, but you probably won’t change their minds,” says Machlis. “But if you could immerse them in an artistic experience, give them an emotional experience, that would then maybe make them think differently. That was part of the goal of the grant and the whole project.”

Machlis, who also chairs the University of Idaho’s Art and Design Department, works primarily with ink, watercolor, and mixed media. As part of the Vandal Ideas Project, Machlis teamed up with Delphine Keim, a visual designer whose work is grounded in the interplay between text and image, and Sanford Eigenbrode, a university distinguished professor of entomology, a self-described “aphid guy” who studies insects and their relationship to climate change and agriculture. Together, the trio collaborated on a project called Abundant, which yielded the images on the cover and in Figure 1.

Figure 1. Abundant. Artists and designers Sally Graves Machlis and Delphine Keim collaborated with Sanford Eigenbrode, a professor of entomology, to use art to articulate the effects of minute turbulence on aphid swarms. At the “Visualizing Science” exhibition, (a) 3D-printed ladybugs and aphids were placed in bowls with seeds below (b) large hanging scrolls that depict the insects’ geographical contexts.
Abundant unfolded as a three-way conversation in which scientific research interwove with painting, graphic design, and installation. Eigenbrode communicated “the miraculous beauty of the individual aphid” and the connections between aphid abundance, climate change, and food security. He articulated the effects of minute turbulence on aphid swarms, while Machlis and Keim plotted how to represent the science artistically.

“It wasn’t a subject they knew a lot about,” recalls Eigenbrode. “But they were smart, inquisitive, interested people, so we were able to move the conversation from an introductory to a more intermediate level on the biology of aphids. And keep the art in mind the whole time.”

Machlis and Keim used several different media to address the issues. Large hanging scrolls were painted with scenes emphasizing the insects’ geographical contexts, along with the words “prolific,” “resilient,” and “adaptable.” 3D-printed ladybugs and aphids, tiny but life sized, were placed on the rims of bowls filled with seeds, highlighting the relationships between insects and food repositories. The bugs were conceived as metallic-painted milagros, giving an almost mystical aspect to the relationship. In every respect, Machlis and Keim were able to vamp on Eigenbrode’s enthusiasm for the miracle of the aphid and its reproduction and bring it into an artistic space.

“We learned a lot about aphids and the connection to food security and the interplay of science, commerce, and our farm systems,” Keim explains. In addition to having never used 3D printing before, she and Machlis had to prioritize making the science relatable for the lay person, the gallery attendee. Aphids are not sexy. After all, they’re sometimes referred to as plant lice, which can be a tough sell.

“We had to mediate the information for viewers,” Keim says. “And so we decided, well, what is essential to what we’re saying? There were several themes, but I think there’s a precariousness that climate and food security must be in balance with each other.”

Meeting of the Minds
As a result of the collaboration, the teams discovered similarities between their working methodologies that they might not have understood otherwise. Like artists, scientists can often trace an interest in their topics to something emotional, at least in the beginning, but they tend to move quickly into methodologies to figure out how the topic fits into known bodies of knowledge. Artists, on the other hand, prefer to revel in the unknown. In fact, they cultivate it.

“Artists, the way they create, relies a lot on getting a concept, a feeling, a message, but not necessarily immediately cleaving to the tools you would use to express that, or the paradigm in which you would locate that,” Eigenbrode says. “Whereas scientists, we tend to go very quickly from inspiration to trying to figure it out. I think it’s probably the same process, but we just move through it at a different pace.”

Other collaborations in the Vandal Ideas Project included Hyperelliptic Threshold Noise (see Figure 2), in which Jennifer Johnson-Leung, an assistant professor of mathematics, teamed up with printmaker Mike Sonnichsen to visualize polynomial equations. Hyperelliptic curves were plotted over finite fields and then printed over a black background that eventually elicited various degrees of symmetry from the pixelated noise.

In yet another project, Pivot, interactive sculptures of steel rods created by Val Carter were based on muscle and tendon research by Craig McGowan.

“I think every artist used technology in creating their artwork in some way,” Machlis said. “They did a lot of hand work but they also used a lot of technology. The scientists were fascinated about the artistic process and how we came to our conclusions—how sometimes we had ideas that we abandoned and how we used technology. That was a really interesting thing for them to watch.”

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