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Arts

Finding Beauty in Biology

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Brian Knep is wary of technology.

"There's no personal connection, and I hate that," he says. However, the artist uses computers on a daily basis to produce work for his joint fellowship with the Office for the Arts and Harvard Medical School—the first of its kind here at Harvard. Does that make his work a contradiction, or some kind of revolutionary synthesis?

As with all aspects of Knep's work, the answer depends on the day you experience it.

Using a novel form of semi-interactive computer art, Knep (pronounced "Kuh-NEP") has been at Harvard since the start of the academic year as an artist-in-residence through an unprecedented joint collaboration between the OFA's Public Art Program and HMS's Department of Systems Biology (DSB). He will stay at Harvard until the end of the academic year and has expressed interest in lengthening the residency.

Knep possesses the skills of a computer programmer and the sensibilities of an artist. Rather than learning to mix pigments, Knep has learned to craft mathematical equations to suit his artistic vision. Once he codes a suitable computer program, he plugs it into a projector or video screen and makes it available for public viewing.

"My long-term goal is to find a way to make our interactions with computers and technology in general more soulful," Knep says.

Along these lines, he makes many of his pieces interactive, with motion sensors that change the artwork depending on the position or actions of the viewer.

That's all well and good, but what exactly does interactive art have to do with Systems Biology at the Med School?

FROM BROWN TO BRONTOSAURS

Knep doesn't look like an "experimental artist." With his average height and conservative dress, he's easy to lose sight of in a crowd, and wouldn't be caught dead in a beret. Yet, he's been quietly redefining artistic expression for more than a decade.

"I'm a computer scientist and a mathematician. That's my palette," he says. He possesses degrees in computer science and math from Brown University to back up that claim.

For a long time, he used this palette to write CGI programs for George Lucas' Industrial Light and Magic special-effects team, allowing them to add color and texture to the models they made (a brontosaurus would look pretty fake without its scales). His tools were used in movies like "Starship Troopers" and "Jurassic Park," and won him two Academy Awards.

Despite the accolades, Knep felt trapped. "I wasn't satisfied with what I was doing. I was a small cog in this giant machine," he says of his Hollywood days. So, he quit.

Knep decided that if he were going to stick with computers, it would have to be in a radically new way, in order to preserve his own sanity.

"I think technology has a way of really separating us," he says, his speech slowing slightly. "People are ruder on cell phones. We lose this sense of close community. I think the same thing happens when I'm programming. I lose touch with my sense of self and my sense of environment."

When discussing the aspects of technology that he actually loves, Knep's speech becomes more articulate and his posture relaxes. "I love the fast feedback, I love that you can create this entire world, I love that there are these amazing opportunities that I can program—I can imagine something and make it happen."

"The thing that drives me is to make the artwork I do with computers as satisfying as pottery or other artwork that's very hand-made," Knep says. "I've been trying to bring it all together."

MIRRORING INSPIRATION

Science and art are two disciplines that aren't easily mixed, and Knep knows that. "I don't really see myself as the connection between science and art. That's not how I advertise myself. I have both backgrounds and they come together in my work," he says.

"I look at science as a way to bring out metaphors about human interactions," Knep says.

Knep is satisfying this fascination at HMS's DSB, a new department that approaches biology from a multidisciplinary viewpoint. He spends at least one day a week in the lab working with researchers, peering into microscopes, and talking with them about their projects, such as the study of cellular locomotion. Knep talks with these researchers inside and outside the lab, enhancing his own scientific understanding while finding how best to artistically represent their work.

"When I go over to the Med School and I talk to those folks, they see in my work a reflection of their own inspiration," he says. "I think they almost get gleeful, they get so excited. Instead of writing these trite papers or looking at a microscope, they see it in some beautiful form. It's almost this mirror of their inspiration back at them."

Much of his work features round, globular shapes that evoke lava lamp goo given a Salvador Dalí treatment—a look and feel that Knep describes as "organic." He often mimics the shapes of cell organelles or other microscopic biological structures, as in "Drift"—a series of screens that depict a red-brown, cell-like material morphing shape as it drifts from one screen to another.

Computers sense which screen the observer looks at, and that screen stops drifting. Recently, however, he's looking towards projects with more macroscopic subject matter.

"Imagine a field of wheat or corn, and it's growing," says Knep, outlining a future project for a DSB building. "You walk by and create some wind and the whole thing moves. Because you walk, the next person sees a different field than what you saw as it continues to grow. It's there before you, doesn't quite care about you, when you come it's aware of you and changes a bit, and then it will be there after you."

PUTTING THE "A" IN FAS

Obviously, Knep's residency represents a highly interdisciplinary project, and could potentially raise eyebrows among some medical and artistic purists. But, surprisingly, faculty and administrators seem to be on-board.

The OFA stresses the interdisciplinary nature of both art and medical science. "OFA is multidisciplinary; we serve all art forms," says Cathleen McCormick, director of programs at the OFA. "Systems Biology is multidisciplinary; it's a new field in Biology."

Faculty members seem to agree. David A. Edwards, Gordon McKay professor of biomedical engineering at the Division of Engineering and Applied Sciences, says, "I am convinced that the work Brian is doing is very important both for the creative expression that Brian's work represents itself, and more generally as an expression of the very rich dialog that is happening today at the art-science interface."

Bill Brieher, a researcher at the Mitchison Lab at HMS, concurs with Edwards. "I think that it's really excellent that he's getting coverage and that Harvard did this," Brieher says.

Brieher thinks the most crucial aspect of Knep's work is its ability to show complicated medical information to the masses. "What's nice about that is that here's a person who now has an opportunity to convey this scientific information to the public," he says.

"We have all these scientific breakthroughs, but if we're only explaining it to a handful of scientists who can understand it, maybe something's lost there," Brieher adds. "What [Knep] brings to the table is that he can disseminate some of this information in an alternative language."

The aesthetic and cultural value of his work notwithstanding, it's unclear whether or not students with similar interdisciplinary interests will be able to appreciate Knep's work on a deeper level.

N. Jack Morley '08, a Visual and Environmental Studies-turned-Applied Math concentrator who also plans to apply to medical school, says that it's difficult to relate to Knep's work on more than an aesthetic level.

"I think it's hard for students, such as myself, who are not familiar with computer programming to really get into this kind of stuff," Morley says. "There's so much technology behind it all that I think it's hard for an art student to get proficient enough to do sophisticated work."

Perhaps Knep unconsciously senses this distance in his work, as his next exhibition intends to explore a more human theme: "the territory of healing" in Memorial Hall's remembrance of the Harvard students who died in the Civil War—given historical significance by the fact that the space doesn't memorialize Harvard Confederates. The exhibition will be active from April 6 until April 23; Monday through Friday 9 a.m. to 7 p.m.; Saturday 2 p.m. to 7 p.m.; and Sunday 3 p.m. to 5 p.m..

Even though Knep's craft may be difficult to understand in layman's terms, Brieher believes that it is "absolutely" easy to connect to Knep's work visually, and that artists who wish to understand Knep's craft are facing a problem that scientists face regularly.

"There's a lot of science that can be driven with just a few techniques," Brieher says. "Every now and again, another technique comes up that is sometimes a bit difficult to understand. I assume that artists are going to find themselves in the same situation as technology becomes a part of some artists' repertoire and skill set. I hope that artists don't see this as an obstacle but a challenge."