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FEATURE

Reinventing the SPHERE
By John Rodat


Masters of molecules: (l-r) V Owen Bush and Kurt Przybilla.

Conceived as a science-education tool, the animated short Molecularium may change the way audiences regard the planetarium

They sure don't look like science teachers.

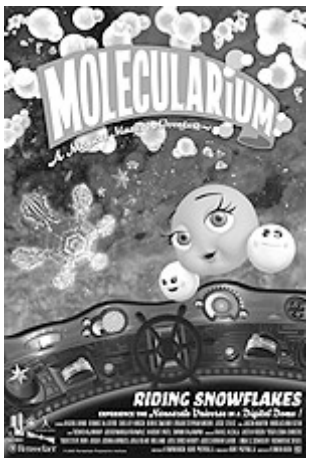
Seated at a diner's booth, discussing their short animated film *Molecularium,* writer-producer Kurt Pryzbilla and writer-director V Owen Bush look and sound, well, like indie-movie makers. They discuss the choices made by other artists and directors, the good and the bad; they talk about the need to balance content and form; they talk character backstory and narrative structure. It's lunchtime, but the duo are slightly rumpled—Pryzbilla in jeans and a T-shirt, Bush in a colorful print shirt, multipocketed safari-style jacket and days-old beard—and look as if they may have been up half the night talking just like this.

Pryzbilla is listing some of the conventions—that is, the failings—of many science-education-themed films. The criticism centers not on the accuracy of those warbly k-5 film strips, but on their craft. First among those shortcomings, he says, is "the disembodied voice of God."

He pushes his shades up his forehead to hold back a sweep of graying hair, drops his already deep voice into a smooth and solemn rumble and intones, "Billions and billions . . ."

"It's the Charlie Brown effect," he says, referencing the mush-mouthed and incomprehensible voicings given the adult characters in animated versions of Charles Schulz' *Peanuts*. Lecture a kid on what he should find

interesting, rather than showing a kid something that is interesting and mwah mwah mwah mwaaah, mwah mwah mwaaaah mwaah—that's the effect. "Kids aren't going to retain information just because Tom Hanks is telling 'em to," he says.



So, when making *Molecularium*, they worked to keep the film engaging and entertaining. They focused on drama, action, humor and storytelling. They thought cinematically—which is, of course, what you would expect of a pair of slightly rumpled, thoughtful and craft-conscious indie filmmakers.

What makes this project slightly different, however, is that they did so in collaboration with a team of animators and scientists—scientists like Dr. Richard Siegel, the director of RPI's Nanotechnology Center; Dr. Shekhar Garde, who was the head of "molecular visualization and simulations" for the film, and material scientist Dr. Linda Schadler, who initiated the project as a way to satisfy the educational-outreach component required for RPI to be selected as a National Science Foundation center. What is different is that they put grad students to work crunching gigantic numbers with some of the most sophisticated computer modeling programs currently in use. What is different is that they did so at the molecular level. And what is different is they did so in a 210-degree hemispheric theater.

Take that, Kevin Smith.

Digital Dome technology is, in the world of planetaria, a pretty exciting innovation in itself. Rather than the nearly static "star ball"-type presentation that people are familiar with—essentially, constellations projected on an inverted bowl—digital-dome tech facilitates the creation of a more "immersive entertainment." High-definition moving imagery (1280 x 1024, progressive—for those of you in the know) projected on a spherical screen combined with a spatial surround-sound system. With such a setup, otherwise unobservable (due to distance or scale) phenomena can be reproduced in a physical space and audio-visualized in a convincing simulated 3-D.

According to Derek Sweeney Kesler, *Molecularium* team member and physical-sciences coordinator at the Junior Museum, local home of the dome on which *Molecularium* is being shown, one of the earliest uses of digital dome technology was to model the process of

"molecular docking" at the labs at Los Alamos, N.M. Such important scientific uses continue; but in entertainment terms, the technology has yielded unintended results and promise.

Molecularium is illustrative, says Kesler, of the combination of science and artistry the technology allows, even encourages. "Basically, what we did was transform a computer for number crunching into an animation server that enabled us to translate the most recent scientific data into Hollywood-style entertainment," he says.

As if to answer any question about the extent to which his Tinseltown comparison may be hyperbolic, Kesler proudly mentions that *Molecularium* was awarded top honors at the 2005 Domefest. The festival, hosted by the University of New Mexico in Albuquerque, is described as "the international festival for large-format, immersive, digital dome theaters." Its mission is "exploring, celebrating, diversifying and advancing the potentials of this nascent and powerful new medium." This year *Molecularium* was selected from among 14 other finalists to win—you guessed it—a Domie.

Subsequently, the film was screened at the 32nd International Conference on Computer Graphics and Interactive Techniques (SIGGRAPH) in Los Angeles. Tellingly, it was shown on a dome sandwiched by booths set up by Apple computers and Pixar, the production company responsible for the hit films *Toy Story* and *The Incredibles*.

There's some serious science behind *Molecularium*'s introduction to the subatomic world and the three states of matter, but science needn't be dull, says Kesler—all previous evidence to the contrary. "Sometimes the combination of stuff needed to make an educational entertainment—mostly math and money—would lead to a bad show," he notes. Sometimes the filmmakers are too caught up in other exigencies to focus much on the art of the piece, and instead they rely on clichéd gags and set pieces. "It's like in horror movies, where there are the same old 'punches.' In science films, there's always the 'whoosh' of something shooting past, then the omniscient narrator." Kesler drops his voice in what may be an impersonation of Pryzbilla's impersonation: He booms, "Space . . ."

Standing at a triple-screened monitor in the control room of the Junior Museum's dome, flanked by a towering rack of AV components, Kesler readies *Molecularium* for a screening; as he does, he further echoes his teammates' enthusiasm for the movie's routine-breaking approach. With relish, he acts out reactions to the short film's characters and structure: " 'Talking atoms? Whoa. Singing atoms? Whoa. A Latin

atom? Whoa!' "

Whoa. A Latin atom? Yes, Carboné, the carbon atom (voiced by Kesler himself, in a credible take on Ricky Ricardo). This is just one of the colorful characters viewers meet as they travel into the microscopic realm aboard a minute spaceship, the titular *Molecularium*, in the company of Oxy, an oxygen atom, and her two hydrogen-atom pals. Along the way, molecules and polymers are encountered and explained—often in catchy songs by local talents such as Jason Martin, or to the accompaniment of musical background by Troy-based musicians Jessie Stiles and Stephan Moore.

It's a lighthearted script, peppered with jokes aimed to appeal to a wide demographic: The gag about the Earth being one giant water park will amuse the youngsters; parents, though, will probably get a bigger—if bitter—kick out of the description of a penny as an "obsolete monetary unit." It is, of course, informative by design. If you go in unaware what DNA stands for, you leave a changed person. But it is also fun and gently irreverent, in the manner of the classic Looney Tunes or the Silly Symphony cartoons—cartoons that Pryzbilla and Bush cite as overt influences on their project.

All of which gives you an idea where *Molecularium* came from, what it's about, what it looks like. But what does an immersive entertainment feel like? What, after all is said and done, is the deal with the digital dome?

Imagine being dropped—a la Bob Hoskins in *Roger Rabbit*—into a "cartooniverse," then being shrunk and injected—at a speed such that you feel your roller coaster car's launched right off its track—into the body of another living creature.

It's a combination movie and flight simulator, cartoon and amusement-park ride. And according to the filmmakers, it's a format with legs. Pryzbilla says they're aware of a number of people trying to mount dome productions in larger "environmental" ways: from "[night]clubs to casinos." The dramatic possibilities, they say, are endless and exciting. It's a new—and intensely visceral—wrinkle to storytelling.

Not that Pryzbilla and Bush are jumping ship. There are plans for a second film to continue the tale of the *Molecularium*, and the pair remain excited about both planetaria-based shows and the educational applications thereof.

"It's a fantastic mission to educate kids about science," says Bush. "*Molecularium* is entertaining, it's a cartoon; but it delivers as much scientific information as they'll get in 25 minutes."

"It's really important that education be entertaining," adds Pryzbilla. "It's one of the failings of our educational system that it's . . . well, let's say it's the opposite of entertainment."

Take that, *Our Friend, the Amoeba*.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