



## Living science and art

University students reshape scientific inquiry using Adobe® Creative Suite® 4 Master Collection tools to create innovative interactive and animation projects



### Animation as scientific visualization

Where art and science converge for the benefit of scholarly research, digital art and animation are most persuasive media. Powerful evidence of that is in progress at the University of Southern California's John C. Hench Division of Animation and Digital Arts (DADA)—a division of the USC School of Cinematic Arts—where students are using advanced technologies to bring scientific and metaphysical concepts to life. Students in this international, multicultural program explore art in motion as it relates to traditional media, painting, sculpture, drawing, video, and installation art.



CATALINA ISLAND  
Prof. Eric Hanson  
Sepehr Dehpour  
Work in progress - Dec. 2, 2007

Using Adobe Creative Suite 4 Master Collection, students created a variety of scientific visualizations and animation projects to build persuasive communications of the research done on Santa Catalina Island off the coast of Southern California.

*“With Adobe solutions, our students can build phenomenal video and animation work that truly brings scientific concepts to life.”*

**Kathy Smith, chair, John C. Hench Division of Animation and Digital Arts, University of Southern California School of Cinematic Arts**

At the forefront of innovative cinematic education, DADA merges new technologies with traditional practice, bridging diverse fields of academic research to explore complex ideas and encourage study of the human form, organic media, and gesture. Using tools from the Adobe Creative Suite 4 Master Collection, DADA students are exploring topics such as kinetics, visual effects, and cinema to promote research into neuroscience, biology, and astronomy.

“We want to discover the compelling visualizations that emerge when USC brings scientists and artists together, and empowers cross disciplinary teams with industry leading digital tools from Adobe,” says Kathy Smith, chair of DADA. “Giving students access to Adobe Creative Suite 4 Master Collection with the latest integrated tools and services is critical to preparing them for success in their professional careers. Not only does Adobe technology bridge different groups with a tighter workflow, but students can create visually rich, engaging content for any media.”

#### **Artists visualize science**

DADA artists work in collaboration with scientists on the USC campus and at the Wrigley Institute for Environmental Studies on Santa Catalina Island off the coast of Southern California. Recently, DADA students participated in a summer residency on Catalina to explore the rich possibilities of applying animation, advanced visual effects, and 3D visualization techniques to build persuasive communications of the research done on the island.

Empowered by digital tools from the Adobe Creative Suite 4 Master Collection, the DADA students created a variety of amazing scientific visualizations and animation projects. For example, Jan Pfenninger, a DADA Masters of Fine Arts graduate in animation and digital arts who is now working at Sony Imageworks, produced an animated movie called *Carbon Cycle*. The project demonstrates the flow that carbon takes as it travels through the environment, from photosynthesis through decayed plant leaves on the ground releasing carbon back into the air.

After meeting with scientists, Pfenninger sketched storyboards on paper. Then he created all assets in Adobe Flash® CS4 Professional shot-by-shot, moving seamlessly between Flash CS4 Professional, Adobe Premiere® Pro CS4, and After Effects® CS4 software. “Working in a powerful, integrated video editing framework, the project took on the life of a real film,” says Pfenninger. “Adobe Premier Pro is a very solid editing program with all the functionality you need to produce video projects.”



Adobe Creative Suite 4 Master Collection enabled Jan Pfenninger to leverage mixed media techniques to produce an animation project called *Salome*, an adaptation of Oscar Wilde's tragedy. Using Adobe Premiere Pro CS4, Photoshop CS4, After Effects CS4, and Soundbooth CS4, Pfenninger was able to focus on the story and the art direction, rather than the technology.



### Animation arts

Jan Pfenninger details how the Adobe Creative Suite 4 Master Collection enabled him to produce another animation project for his Master's thesis at USC's School of Cinematic Arts—*Salome*, an adaptation of Oscar Wilde's tragedy—that leveraged mixed media techniques. "Adobe's integrated workflow helped me avoid technical issues in jumping in between each package. Since all the tools work in similar ways, it required little adaptation, with Adobe Premiere Pro CS4, Photoshop® CS4, After Effects CS4, and Soundbooth® CS4, integrating beautifully. I was able to focus on the story and the art direction, which made *Salome* a wonderful project to work on."

Adobe Photoshop CS4 became a very important tool for the storyboarding and visual development of *Salome*. Not only was Pfenninger able to create the storyboards quickly, he readily achieved the right mood and atmosphere as well as easily facilitated visual communication with the actors, choreographer, and composer. As Adobe Photoshop CS4 files, storyboards were immediately ready to import into Adobe Premiere Pro CS4 and place into the animatic.

From there, Pfenninger used Adobe After Effects CS4 to create characters, which were easily imported into a 3D program. "With Adobe After Effects CS4, I was able to test out a variety of different media for backgrounds. I really wanted to combine analog and digital animation techniques to make something that

would bring a new perspective to the play and couldn't be categorized. After Effects CS4 is the best tool for working with mixed media because it is great for animation and compositing within the same timeline."

He adds that Adobe Premiere Pro CS4 is a critical organizational tool for edited animated videos. "Working in the native format of Adobe Premiere Pro CS4, I never had to render anything in the timeline, which is always an issue when you work with image sequences and animation. During production, I worked solely in standard definition for speed and responsiveness when in Adobe Premiere Pro CS4."

### High-impact, interactive learning

In keeping with the department's mission, Smith created a weekly forum—a series of mini-symposia that brings together students and scientists, artists and theorists, as well as representatives from industry, faculty, and alumni—to explore ideas as they relate to animation and digital art. The curriculum requires use of a variety of Adobe technologies in the Adobe Creative Suite Master 4 Collection.

Students are assigned to research teams according to a specific seminar topic. Each team is required to create a simple, one-page website using Adobe Acrobat® Pro, Dreamweaver® CS4, and Flash CS4 Professional, to not only produce the project, but to document the progress of their research. They are also instructed to maintain a weekly blog to record activities, including

### University of Southern California (USC) School of Cinematic Arts John C. Hench Division of Animation and Digital Arts

Los Angeles, California  
<http://anim.usc.edu/research.html>

#### Challenge

- Foster cross-disciplinary collaboration
- Nurture groundbreaking research supported by visual communication
- Encourage scientific/artistic interactions

#### Solution

Implemented cross-disciplinary curriculum and an international seminar series with Adobe Creative Suite 4 Master Collection as the foundation for scientific discovery.

#### Benefits

- Provided students with high-level, interactive learning tools
- Helped students visualize scientific research in innovative ways
- Built bridges across academic disciplines leveraging engaging technology

#### Toolkit

- Adobe Creative Suite 4 Master Collection. Components used include:
  - Adobe After Effects CS4
  - Adobe Dreamweaver CS4
  - Adobe Encore® CS4
  - Adobe Flash CS4 Professional
  - Adobe Illustrator® CS4
  - Adobe Premiere Pro CS4
  - Adobe Photoshop CS4 Extended



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the outcomes that were reached and any convergence of their work with other disciplines. The team members are assigned roles: website designer, blogger, animator, and moderator for documentation.

At the conclusion of the seminar series, the Hench-Dada website becomes a portal to showcase an array of engaging student projects. Topics run the gamut, from the role of animation in science, to physiology, to visual effects and perception. "Every one of the research sites was created using Adobe technology," says Smith. "Adobe provides us with all the tools we need to convey our material effectively." In addition to the web portal, students repurposed content and created DVDs using Adobe Encore to reach a wider audience.

#### **Moving into new frontiers of academic excellence**

Smith recognizes that Adobe tools are the common unifier for teaching and learning across a diversity of disciplines. "Adobe solutions integrate flawlessly with each other, which means students can concentrate on the creative challenges before them and not become bogged down in the technology," she notes. "With Adobe Creative Suite 4 Master Collection, students find that the creative development process is lightning-fast."

All the research from the DADA seminar series is available at [http://anim.usc.edu/research\\_07.html](http://anim.usc.edu/research_07.html). By embracing the latest Adobe Creative Suite tools, Hench-Dada students were able to bridge the disciplinary divide, collaborating with scientists to convey complex concepts to a diverse audience. "With Adobe solutions, our students can build phenomenal video and animation work that truly brings scientific concepts to life," says Smith.



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