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Working in the Third Dimension

by Wendy Wenner

During the Winter 1997 semester, as part of a series of Forum articles on excellence in teaching, I visited a class in computer 3-D modeling team-taught by Deanna Morse in Communications and Elona Van Gent in Art and Design. The eighteen students in the class, half art and design majors and half film/video majors, were selected by the instructors for this team-teaching project. The goal of the course was to experiment with collaboration across the disciplines of art and film/video and to give students and faculty a chance to work with new 3-D modeling software.

The two professors had been experimenting with 3-D modeling in their own work for several years. Deanna Morse, who came to GVSU in 1979 to be on the faculty of William James College, teaches film and video, animation, film theories, media production, and shooting and editing. She describes herself as “one of the early adopters of computer technology in teaching animation.” She detailed her early experiences in 1986, when she took a 3-D animation course at Sheridan College with a state of the art system for 3-D animation: “It was very cumbersome. The computer had no mouse, menu or trackball. To input the data, we drew models on graph paper and counted the x, y, z coordinates which we then typed into the computer. We wrote lines of code which told the computer how to create shapes, add color and lights, and generate movement. A few years later, menu driven systems were developed, which allowed the user to choose from an array of modeling and animation options, similar to what we use today.” Morse introduced 3-D animation in her animation II...
class in 1989. In both her animation classes, she teaches basic principles and offers an overview of different approaches and techniques: 2-D, 3-D animation, drawn animation, cut-outs. The computer is one of the tools students consider as they select the best tool to realize their ideas.

Elona Van Gent came to GVSU in 1993 to teach sculpture and three-dimensional design. She began using 3-D modeling to plan her own sculptures nine years ago and found the technique "stunning." Before the development of this technology she had to draw her sculptures one view at a time two-dimensionally, and if one view changes they all had to be changed. She explained that "Drawing something is not the same as building it," and the 3-D technology lets her think three-dimensionally about the sculpture and build it conceptually as she designs it. One of Van Gent's sculptures, *Invitation to the Voyage*, on display in the atrium in the Student Services Building, was designed using 3-D modeling techniques.

Their collaborative project began when students in art classes, working on three-dimensional design projects, sculpture projects, and packaging design, asked if they could do more with 3-D modeling. They wanted to find a way to see their 3-D projects before they made them. Students in film and video were also interested in working with 3-D modeling because it has become so "hot" commercially in animation. Morse explained why they tried the course last winter: "We wanted to leap into it because some new software programs came out and neither of us had time individually to get up to speed. We thought if we co-taught the class we could work together with the students to learn the programs." They each learned and taught different sections of the course: Morse concentrated on animation and movement, and Van Gent concentrated on modeling the 3-D forms. They agreed they could not have done it alone.

The goal of the course was to have students make something from beginning to end, and Morse and Van Gent spent a lot of time talking about approaches to topics and assignments as they worked together.
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through the course. They described they way they worked together as a microcosm of the whole class. They agreed that the gift for them was working together from different perspectives—as teachers and co-learners—through the problematic issues of the course. Dialogue became the key to the success of the course, and communicating across disciplines became the highlight of the project for both the students and faculty. Van Gent explained that "in computer classes like this, the subject area, the software programs, are so huge that the instructor is usually not an expert in all aspects of the software; though we had to be expert in at least some of the areas.” It is difficult to predict what problems students will have because problems arise from what each student is trying to do. Each project is different and requires different kinds of problem solving. The students had to be patient, and they had to learn a great deal in a very short time. As is true with most hands-on courses, they were learning what to do in the process of executing what they needed to do—sometimes it is hard to be sure which foot to put in front of the other. From Morse’s standpoint, this course was not very different from the other classes she teaches. As she puts it, “All of the software I teach is what they call ‘deep,’ meaning you can spend a lifetime and not master it. There’s never any way to know every aspect of any of these programs—they’re just too complicated. We knew that—it’s one reason we split up the areas of the program that we ‘mastered.’”

They designed the course around a series of problem solving exercises. Either Van Gent or Morse gave a brief demonstration on the computer of the next step they wanted students to take. Then they let the students dive in. According to Van Gent, “one of the challenges of the course was not to turn it into a tech course but to keep considering where the work the students were doing fit with what people are doing elsewhere in animation and 3-D modeling for sculpture.”

I observed the class demonstration of the mid-term project. Each
student was to create an “Anijam”—a whole film that shows change in a three-dimensional object over time. The animated movie *Toy Story*, the first full length film made solely with 3-D computer modeling and animation, is a good example of what the students were trying to do on a much, much smaller scale. They were actually trying to learn the technology that was used to create *Toy Story*. Each student started and ended his or her animated film with a closed three-dimensional box. The students used animation to open the box, to create something coming out of the box and going back in, and to close the box again. It sounds easy, but it isn't. Since three-dimensional movements, of course, have to take place in a three-dimensional space, students had to plan and design movement in both time and space, along three axes. If the figure had several moving parts, students had to plan and design movement in both time and space, along two planes not just one. If the figure had several moving parts, movements had to be carefully coordinated. In one film, a fanciful creature with robot arms reached out of the box and then folded back in. In another, bubbles of different sizes floated out of the box and changed shape and size. In the most sophisticated film, an object came out and then an image of the filmmaker poked his head out of the box, looked around and ducked back in. Each film was very different and some seemed extremely complicated. Van Gent and Morse were pleased by the students’ projects and by their perseverance. No matter how hard the project was, the students didn't back down. When something didn't work right they just kept working on it until they got it.

The second project of the semester required students to refine their modeling and animation skills by working on a project in their major area. Design students used graphics to make multiple views of a poster, animation students worked on animation of 3-D characters, and sculpting students made 3-D images of pieces they hoped to work on back in the sculpting studio.

Although both professors felt good about the experience as a whole, part of the problems and difficulties and frustrations that the students encountered made it hard for them to work together between classes. They spent a lot of time working on their projects. In addition, the projects that were made, though very good, didn't always meet the professors' expectations. Students were still learning the technology and the techniques, and it was hard for them to work together as a team. The department had planned to have the students work on projects in their major areas, but this proved to be difficult because they were all working on different things. The professors felt that the students needed to work together more and that they should have talked about their projects before they started.

While the professors felt that the experience was a success, they also realized that there were some problems that they needed to address. They talked to the students about the need for better communication and coordination. They also discussed the need for more communication and coordination between the two departments.

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whole, there were some problems with the class. The most difficult part of the project was dealing with the wide range of student abilities and experience with computers and animation. Students thought that the computer would make modeling easier, but it actually made it harder. The professors hoped that there would be good dialogue between students as they worked through the assignments, but the students were so fascinated with the work they were doing that they spent most of their time facing the screen and not as much time working with each other as Morse and Van Gent had hoped. In addition, the software didn’t live up to the claims the company made, and both students and professors struggled with technical difficulties.

Student feedback indicated that the class was really difficult for the students. Students told Morse this year that they assumed that the computer would make things easier for them, and they were astonished how difficult the process of 3-D animation was. They were drawn to it because they thought it would be “easy.” They were surprised how “little” they had to show from the class, because the learning curve was so steep that it took them a long time before they could actually “produce” models and animation.

When we talked about the advantages of co-teaching across departments, Morse said “The most valuable part of the working together was Elona’s input in all parts of the course, seeing how she approaches all kinds of issues from the fine arts background. She talks about concepts and movement in different ways than we do in film and video.” Van Gent noticed that biggest difference between their approaches was in the way they each conceived the end project. Van Gent looked for ways the project could achieve better aesthetic quality. Morse was interested in how the students were able to communicate an idea in a time-based media. She focused on how an idea unfolds over time and on the communication intent, as opposed to the aesthetic qualities that Van Gent looks for. The collaboration of the two viewpoints brought together a fine arts perspective with an
animator’s perspective. In her reflections on the course Van Gent told me that she “was most taken by the way that narrative and character development (as opposed to objects, form, and space) play such a key role in a time based medium. Communicating interesting ideas in a conceptually rich and visually refined manner is a goal for both art and film/video students. That, along with the fact that the technology serves both areas, is why we collaborated and brought students from the two areas together.”

Elona Van Gent is teaching the course again in the Winter 1998 semester, focusing more exclusively on 3-D modeling. Some of the students are animating their designs, but not all. They are using a different software package and it is going very well. Fewer technical glitches are allowing more time and energy to go into the development of strong ideas and effective visual presentation. Van Gent thinks this class is more effective as a team taught modeling/animation course. Deanna Morse continues to introduce 3-D as one of the tools in Animation II. She and Van Gent are still talking about ways they can build curriculum cross-departments and provide opportunities for their students who wish to study in this area. And, to the pleasure of both professors, students continue to ask when Van Gent and Morse will offer the class again.