

by Rachel Tadeu

Game

Carnegie Mellon's National High School Game Academy

Entering Carnegie Mellon University's (CMU) Entertainment Technology Center, I didn't know where to look first. A huge Millennium Falcon hung suspended above banks of computers. Along one wall was a timeline of technical and video entertainment with images of antique computers and game arcades. The area beyond the elevators looked like a ship's main bridge, with buttons that students pressed to change the lighting from green to purple. Even after I had been there six weeks, that initial feeling of awe never wore off.

In that time, I would undergo an intense learning experience alongside 50 students and teachers, all as passionate about games as I was. I love to play video games and experience different worlds through them. I was interested in a career in the game industry, and I hoped CMU's High School Game Academy would give me a glimpse of it. And while I thought I wanted to create art for games, by the time the summer program ended, I would find a new passion.

The Art of the Game

Students focused on either art or programming, but artists also examined programming, and programmers explored art. As an aspiring artist, I focused on art. I attended lectures on choosing color schemes; creating characters, objects, and textures; and animating 3D models. To create a 3D model, we used a software program called 3D Studio Max, manipulating a simple cube to achieve a desired shape. We edited the object on the screen by grabbing and moving vertices, edges, and faces. At the end of all this stretching and shaping, our simple cube had become a "mesh"—a 3D object made up of vertices and polygons—that might be

anything from a box or a chair to a shark or a person.

We used a process called texturing to add color and surfaces to our models, achieved by creating a 2D map that is essentially wrapped around the 3D model. I was excited

to bring texture to my lifeless models, but all the pulling and stretching I'd done to my cubes had distorted their internal structure. The 2D map wouldn't adhere to my distorted 3D model. It was frustrating to figure out how to make it all work, but when I was finally able to design a burlap bag of treasure, I was thrilled.

We then learned to assemble multiple objects in order to create a cohesive environment. Given a computer file containing a prefabricated cave—basically a few rooms connected by a hallway—we used 3D Studio Max to transform it, creating a story with objects we built and placed in it. To tell a story of an egotistical king, I added a grand

entrance and a storage room filled with gold, scrolls, and barrels. The largest room housed a giant throne with a red carpet leading to it and a large mirror in front of it.

Lights, Camera, Perspective!

In design lectures, we examined game genres, such as action/adventure and first-person shooter. We learned how music and sound contribute to the mood and experience of a game, and studied how light is used. For example, red light that casts a lot of shadows creates a sinister mood, while yellows and whites are more welcoming. Using 3D Studio Max, we experimented with light sources,





Maker

colors, and brightness levels, controlled how far the light spread, and made it flicker (or not).

Now that we could create scenes, we learned to capture them with a virtual camera. With 3D Studio Max, you press a button to place the camera strategically within your setting, lending perspective and mood to the environment. Depending on the effect you're after, you turn the camera, adjust the lens, or zoom in. The camera might pan across a landscape, move in for a close-up, or capture the scene from over a character's shoulder. You can also plant the camera in a character's head for a first-person perspective. Games often have multiple cameras so players can toggle through them to choose the perspective they like best.

The Language of Programming

Simply put, programming is using another language to communicate to the computer what you want it to do. I learned to program an environment for the objects I'd designed, first using Python and then a game engine, a software program that streamlines the process of creating a game.

To make a game from scratch, you have to write code for everything: creatures and characters, rocks, grass, trees, water, and their effects and animations, as well as background

scenery and man-made items like tables, rugs, and houses. The game engine I used, Neverwinter Nights 2, had effects, objects, scenery, and animations already created and coded, so I had only to create the environment and then place the objects and characters in the environment to build a game. While I had thought I wanted to create art from scratch, I soon realized that what I loved most was creating environments and designing rooms and levels.

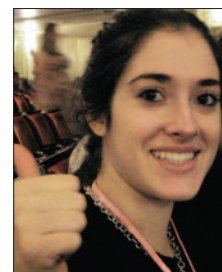
Level design is the art of creating the locales and stages that define game play. In a board game, if you were to change the layout of the board, you would also change the game. In video games, level design is critical to the function of the game; when a level is changed, the game changes with it.

Putting It All Together

For the last two weeks of the program, we worked in teams to create a game. On my team, I was one of nine students whose job it was to make a game using only Neverwinter Nights 2. We created a time-warping game in which the player lives in a town that is under attack. Sent by a wizard into the future, the player has to find the wizard again to return to the past, where he or she can either save the town or pillage it. My team worked well together, but when it came

time to transfer our project to the teacher's inbox, the game wouldn't open. I learned to save often and in multiple places—on the computer, on a pen drive, and in multiple files—so if one file got corrupted, I had backups.

Toward the end of the program, a few of us decided to stay in touch to continue making games. Our first goal was to create a simple game to get the feel of working over long distances as a team. In this game—which is still a work in progress—the player is a character trapped in a dark alley and has to find a way out in order to win. In addition to that game, I'm creating a game for independent study at school. My written proposal has been accepted, and now I'll have the challenge of meeting the deadlines to design, create, and program the entire game—just like a game designer. Thanks to the training I received last summer, I feel confident that I can do it. **i**



Rachel Tadeu is a senior at The Bullis School in Potomac, MD. In addition to gaming, Rachel enjoys creating art and is building the set for her school play.