Kuku-Thaypan Fire Project

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Introduction

The Australian Indigenous community has been taking care of the Australian outback for over forty-thousand years. Few people have attempted to learn their fire practices. Slowly the indigenous culture is slipping away. To curb this trend we have created a game that teaches indigenous culture.

Background

In northern Australia, the forestry service has been using fire to regulate the habitats of different animals. However, the hot natural and set fires are scarring the land. The Kuku-Thaypan, a 40,000 year old indigenous culture, has long used cool, controlled fires to help maintain balance in the environment. Traditional Knowledge Revival Pathways is a website started to help preserve traditional indigenous knowledge and teach stewardship of the environment.

Cultural User Interfaces is a project to culturally sensitive interfaces. We seek to help preserve the Kuku-Thaypan knowledge with culturally sensitive and authentic games.

Figure 1: KKTP Game Screen

Research

To do this project required several steps: gathering information from the Kuku-Thaypan people, learning about how games are built in XNA Game Studio Express and C#, and also learning basic game architectures and techniques.

Since our Australian collaborators were not available for a few weeks, we started by reading about their culture and making a prototype game. Originally, our focus was on the fire practices, so we designed an approach for quickly making different landscapes for the game. For each location in the game, we loaded a texture based on the color at that position in the picture file. However, there were no smooth boundaries between our textures and this didn't look very good in our game.

While working on this, we gathered scenarios from our indigenous collaborator, Victor Steffensen. We learned that fire practices are holistically integrated with survival "on country." The scenarios included setting up camp, gathering water and berries, fishing, hunting, avoiding crocs, and setting fires when needed.

We then developed a game design document and built a tile-based engine. We also learned some new techniques for collision detection and image loading. The most important knowledge we want players to learn in our game is: 1) our survival is intertwined with that of the environment, and 2) there are beneficial ways to use fire to manage the land. For example, setting grass that is part green and part brown will burn low and cool, and new grass will grow back soon, while fires set on brown grass will burn high and hot and scar the land, taking longer to regrow.

Figure 3: Original game map

Impact

The most important aspect of this project has been establishing a new collaboration with the Kuku-Thaypan people and professors in Australia, where we share knowledge and plan to build games that: 1) are authentic and approved by indigenous cultures, 2) respect cultural sensitivities, and 3) help raise awareness about different cultures and ways of knowing. Our game also has an impact through:

- Preservation of valuable traditional indigenous knowledge
- Teaching players how to survive in the Australian outback
- Teaching the web of relationships between the indigenous people and the environment they take stewardship of
- Teaching how fire can be beneficial
- Teaching that everything you do can have an impact on the environment

When we compared our game to Oregon Trail, a game of survival in the old west, our collaborator said, our game is like that, but our game is about the survival of the planet.
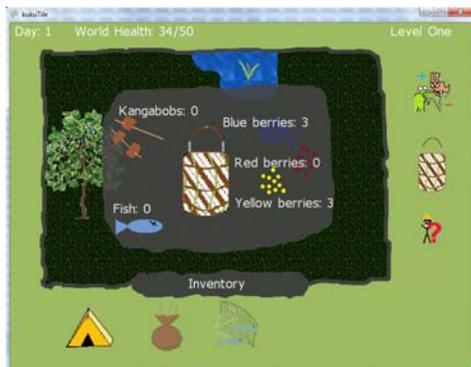

Figure 3: Player Food Inventory

Conclusions

Designing the game around the scenarios given to us from the indigenous people included several challenges. For example, setting camp up not too close yet not too far from the river required us to determine distance from the river, and decide what distance was appropriate. We also had to choose a graphical style that would not offend or upset the indigenous people. For example, the Kuku-Thaypan feel it is harmful to show images of people who have passed away, so giving the characters a cartoonish look made it so that they could not resemble anyone, living or dead.

Game engine creation using XNA Gamestudio was fast and efficient. Use of a tile map instead of a color map that generates textures was more efficient because it made the code shorter. Using a single file that we can cut textures from was more efficient because it allowed us to load fewer files into the game. Use of the tile engine in collision detection was more efficient, since we did not have to figure out the exact points for collisions, but instead used a system of ones and zeroes in order to determine where the boundaries were.

We learned some important facts about fire in land stewardship. Controlled cool fire is beneficial to the environment. Controlled cool fire can only be achieved in the Australian outback with half green half brown grass being burned. The brown grass alone burns too hot and can scar the land. The green grass alone does not burn.

Future Work

We have developed scenarios and plans for four game levels. Our next step is to complete the implementation of these levels and test them with players for: 1) fun, 2) replayability, 3) learning and respect for indigenous culture. We also plan to work further with the Kuku-Thaypan to ensure that the game is true to their intentions. We also plan to further research the best methods to allow players to customize games according to their cultural sensitivities and preferences.