**Juan Hiriart**

**MSc Creative Games**
**University of Salford**

**June 2008**

# LONGKO

## The Way of the Leader

**Major Project Proposal**

**Course Tutor: Mathias Fuchs**

# 1. Introduction

The present document describes a serious game project about the *Mapuche* from Southern Chile. These people, the largest native american group in Chile live in an extremely poor and difficult situation and the game aims to increase the level of understanding of their culture, problems and current conflicts.

Firstly the document will give a brief overview about the *Mapuche* and some promissory political frameworks intended to improve their situation. Then the document will describe in detail the game proposal and the development planning of its implementation.

Considering the available time and resources for this project, the intention is not to construct a full game, but to generate a playable prototype expressing the main features that a further full version of the game would include.

# 2. Background

## 2.1. The context of the project

### 2.1.1 The Mapuche people

The *Mapuche*, which in their language means "People of the Land" are the largest native american group in Chile. According to the Chilean census of 1992, they represent almost 10% of the overall population of the country (PNUD, 2003). Other Chilean native american groups are represented by the *Aimara* and *Atacameños* in the north, *Kawaskar* and *Yamana* in the southern channels and the *Rapa Nui* in Eastern island.

This group is very recognized as fiery warriors. They were the only indigenous group in South America who resisted the attacks of both the Inca and the Spanish, in their attempts to colonize the *Mapuche* lands. For centuries this ethnic group remained as an independent nation, and their lands were incorporated to the Chilean state territory only after 1881, when the Chilean government sent military troops to finally "occupy" the region. During this process an estimated of 10,000 indigenous were killed by the chilean military, and the survivors were forced to settle down in reserves (ET-PUC, 2003).

One of the most serious drawbacks for the *Mapuche* was made by the dictatorial government of Augusto Pinochet, after 1973. This regime wanted to construct an homogeneous nation and following this principle, *Mapuche* land, or *reducciones*, were not considered ahead as indigenous property (Parmelee, 1990). Pinochet's decrees allowed the dictatorial government to sell *Mapuche* land (at very low prices) either to chilean and foreigner farmers or to private forestry companies (Anon, 2002). Land decrees were also accompanied by concerted attacks to *Mapuche* culture and many *Mapuche* leaders were persecuted and in many cases "disappeared" (executed).

Fig. 1: Mapuche people from Afunalhue, a rural community from Southern Chile.

The replacement of big extensions of native forest with exotic tree plantations produced a serious environmental damage and heavily affected the surrounded *Mapuche* communities. These plantations require an incredible amount of water, and therefore dry up in a few years all *Mapuche* communities located nearby, making impossible their further agricultural usage (Sisa, [no date]). This situation, which at present remains unsolved, leaded some *Mapuche* people to take part in desperate violent actions against tree plantations and forestry companies.

Fig. 2: Current Mapuche farm.

The conflict between forestry companies and the *Mapuche* make evident the complete absence of governmental policies to protect indigenous lands, as well as the lack of a more complete concept of development and land use planning.

Today's *Mapuche* communities are places characterized by poverty, alcoholism, disease, illiteracy and the destruction of the environment. For the most part, the communities live without electricity or plumbing in wood and straw huts. As a consequence, many *Mapuche*

decide to move to large cities, leaving behind their ancestral lands and their communities. This trend is still present today.

### 2.1.3 Land use planning and the Watershed approach

In recent years, a different approach started to be incorporated into regional development plans. This approach, called *land use planning* ("*ordenamiento territorial*", in spanish), involves various disciplines and in general terms seeks to order and regulate the use of land both efficiently and ethically (Wikipedia).

Because of the many disciplines and knowledge domains involved, land use planning make extensive use of *geomatics*. This relatively new discipline takes spatially referenced data using technologies such as *global positioning systems* (GPS) and transfers all this information to common platforms which accurately represent its features and allow further analysis and applications of the information (Wikipedia). Some examples of areas in which *geomatics* is commonly used are land management and reform, urban planning, natural resource monitoring and development and disaster informatics (using geographic information systems for the preparation, mitigation, response and recovery phases of disasters and other emergencies).

In addition with *land use planning* concepts and methodologies, another framework was also incorporated: the so called *watershed approach*. This framework focuses public and private sector efforts to address the highest priority problems within hydrologically- defined areas, taking into consideration both ground and surface flow (US Environmental Protection Agency).

### 2.1.4 The Tolten Watershed Project

The *Toltén* is one of the main watersheds in the *Araucania* region, and the heartland of the most part of *Mapuche* communities in the country.

The Catholic University of Chile, in partnership with other institutions and universities, is currently conducting an extensive research project about this watershed. The main goal of the project is to construct a model of the territory which allows public and private sectors to develop the region both efficiently and sustainable, studying the interrelated system con-

Fig.3: Aerial view from Villarrica city, located in the Tolten Watershed.

formed by human settlements, social-economic processes and natural systems dynamics (PUC, 2007).

During its first stage, the project will generate a general database of the *Toltén* watershed, with an emphasis in the *Villarrica* sub-watershed, which includes the zones of *Pucon*, *Villarrica*, *Cunco* and *Curarrehue* (PUC, 2007).

A crucial goal of the project is the development of learning resources to socialize relevant information to governmental agencies, private investors and general public. These efforts range from the implementation of a web-base information system to the construction of centers provided with different kind of interactive learning resources (PUC, 2007).

The current game project was presented to the Catholic University and partnerships to be used as an experimental prototype in the *Toltén* Watershed Project. During meetings and lobby conversations about this application, some possible areas of development were mentioned: Navigation, GIS understanding, Disaster prevention and management, environmental education and Community Development.

## 2.2 Technology Overview

This section briefly overviews the applications that will be used in the project. The chosen game engine for the project is Unity. 3d content will be developed using Blender and complimentary applications for tree modeling (NGPlant) and normal map production (Crazybump). 2d content, such as textures and GUIs will be developed in Photoshop.

### Unity Game Engine

Unity is a Mac OSX  integrated authoring tool for creating 3D games and interactive content. This application reduces notably the complexity of creating games due to its asset oriented approach (Unity Web Page).

Unity assets are created externally, using a broad range of applications. Unity supports all major file formats. 3D models, bones and animations can be imported from almost all 3d packages. Anytime the asset is saved, it is imported again and all import settings are remembered, so it is only necessary to save them once (Unity Web Page).

Regarding deployment, this software supports a wide range of platforms. It can build standalone applications for both Mac and Windows (pro license only), and for the internet, through a unity web player plug-in. This plug-in is relatively small (about 3MB), auto-installed without a browser restart and works in Internet explorer, Firefox, Safari, and most Mozilla-based browsers. In addition, Unity can build Mac Dashboard widgets and more recently, the Apple iPhone and the Wii console (Unity Web Page).

Unity currently supports three scripting languages: Javascript, C#, and a dialect of Python called Boo (Unity Web Page).

**Blender**

Blender is a free open source application for 3d content creation, available for all major operating systems under GNU General Public License (Blender Web Page). It has a small installation size and can be used to a wide range of 3d creation tasks, such as modeling, UV unwrapping, texturing, rigging, skinning, animating, rendering, particle simulations and to create user interaction (it has an in-built 3d and physics engine, as well).

This application has a well known reputation of being a program difficult to learn. Most of the commands and functions can be accessed through hot-keys, which demand a considerable memory effort from the user. Although complicated at the beginning, the Blender interface approach rewards the user with notably efficiency and development speed once the most important keys are memorized.

**Photoshop**

Photoshop is a graphic editor developed and published by Adobe Systems, which is currently the market leader for commercial bitmap and image manipulation.

**NGPlant**

This application notably eases the task of modeling realistic 3d representations of plants and trees. Models can be exported as .OBJ, a format that can be opened by almost all 3d applications (NGPlant Web Page).

This application is based in the Gen3 project, a parameter driven tree model generator developed for Blender.

**Crazybump**

This application creates displacements, normal and occlusion maps from 2d images. It is completely free and very quickly became a must-have for indie game developers (Crazybump Web Page).

## 2.3 Games for Social Change

A small research about serious games was conducted. The objective was to find and study games with similar goals with the project.  The following are some examples of the studied games:

- **Dafur is Dying:** this flash game is based on the real situation that 2.5 million of people are living after being displaced by the crisis in Sudan. It can be defined as a narrative-based simulation about the many problems that Darfurian refugees need to face in order to survive (Dafur is Dying Web page).
- **3D World Farmer:** this game aims to simulate the real world mechanisms that cause and sustain poverty in 3rd World Countries. In the game, the player has to manage an African farm, which is continuously assaulted by the kind of problems that happen in the real world (3d World Farmer Web Page).
- **Eyewitness:** this FPS game is based in the 1937 Nanjing massacre, in which during 6 weeks over 300,000 chinese civilians were killed by the Japanese troops. It has many of the gameplay elements of a classical FPS, but instead of using weapons, the player also uses a camera to record and show the world what happened there (Eyewitness Web Page).
- **A force more powerful:** a strategy game in which the player struggles to defeat dictatorial regimes using non-violent means. Game play involves managing materials and human resources, choosing goals and planning strategies to defeat the regime (A Force More Powerful Web Page).

# 3. The Game

## 3.1 Game idea

The project can be defined as a turn based strategy game. Unlike real time strategy games, in this prototype the player will be allowed to take time to consider the scenario before performing any action. In addition, some social simulation elements will be incorporated. The player will have to interact with community inhabitants (actors) to acquire knowledge and experience in order to progress.

The player will be immersed in the environment of an actual *Mapuche* community. In this location the player will have to struggle to develop the community, taking decisions and performing actions to improve their current situation. In order to do so, the player will have to explore the community and accomplish different missions, manage limited resources, and take decisions based on knowledge and experience acquired through the game play.

## 3.2 Goals and Challenges

The following goals were defined to lead the project:

- To increase the level of awareness about the rural *Mapuche* situation and their main current problems.
- To increase the level of understanding about the *Mapuche* culture, history, language and the way they conceptualize their land and natural resources.
- To help people understand *Mapuche* communities as a complex system conformed by many interrelated variables.

## 3.3 Target Audience

Although the game can be played by a broad range of people, it will be designed to suit the characteristics and needs of the following audience:

- ***Mapuche* community inhabitants:** Chilean education in past decades forced many *Mapuche* to abandon their language and their culture. This game can be a valuable resource to people from this group who want to recover their traditional knowledge.

- **Secondary schools:** in spite of the importance of intercultural understanding for the chilean society, there is a considerable lack of resources about the current *Mapuche* in the Chilean school curricula. As a matter of fact, many text books still used in Chilean schools are full of mistakes and misunderstandings about this culture.
- **People who work with *Mapuche*:** many development agencies and non governmental agencies (ONGs) are currently working with *Mapuche* communities, but the lack of understanding about them lead many projects and efforts to fail.
- **People interested in *Mapuche* culture:** people from Chile and from other countries who want to acquire or enhance their knowledge about this ethnic group.

## 3.4 Narrative - plot

The player will play the role of Aron, a young *Mapuche* who was forced to abandon his community and to move to a big city when he was a little child.

After many years he finally decides to come back to his community and settle down there. Unfortunately the place is in an extremely poor situation. Their inhabitants need to face many problems, such as poverty, alcoholism, lack of resources and water despoliation.

Aron feels that he is able to make big improvements in the community, but first he needs to recover his forgotten heritage and to become a true leader.

## 3.5 Gameplay

The game map will have many of the components that depict a rural *Mapuche* community. Different type of buildings need to be modeled in order to implement a believable map. Some examples of buildings are Rukas, which are traditional *Mapuche* houses, wooden houses, churches, schools and social centers. Another part of the game world is the forest, which is extremely meaningful for the *Mapuche*. According to this, it is highly important to implement the forest with realistic representations of actual plants and trees from Southern Chile.

In this location the main player's goal is to improve the community situation. To do so the player will need to increase his/her knowledge about the *Mapuche* people, as well as to gradually increase his/her level of leadership. The more experience and leadership the player has, the more capable he/she is to perform relevant changes into the community.

The game will be populated by actors representing the community inhabitants. These actors will interact with the player's avatar mainly through predefined dialogues, gestures and facial expressions.

There will be two camera modes with different ways to move the player around into the game environment: first person mode, and third person mode. It will be possible to switch between both camera modes at any moment during the gameplay. While in first person mode, the camera will be located in the eyes position of the player, and it will be possible to move around using the mouse and keyboard. In third person mode, the camera will be located in a higher position, allowing the player to see the landscape from above. Using this mode the player will increase his/her understanding of the community environment and its components. To move the player's avatar while using this mode, the player will click in the position in the map that he/she wants to move and the player's avatar will move to that position.

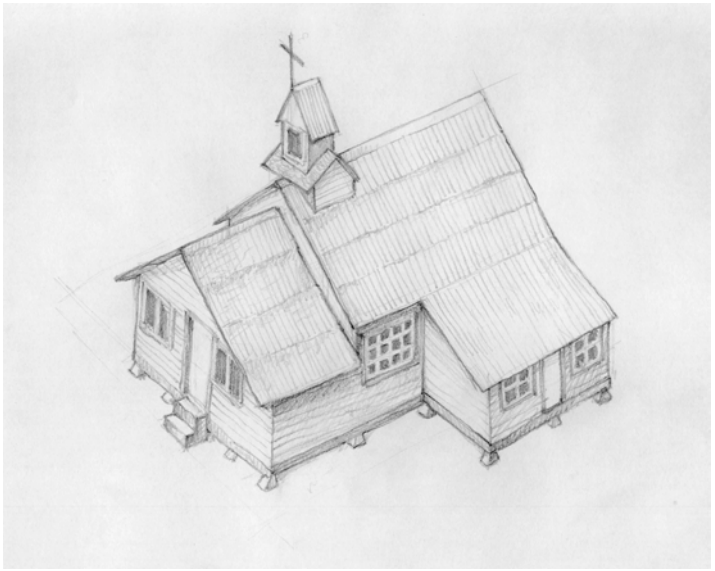
The main way in which the player will improve the community situation will be through the implementation of "projects", which only will be possible to insert through community families, represented by houses in the game. There will be different type of projects to chose from. Some examples of project types are agriculture, livestock, technology and construction. The player will be capable to implement any number of projects, depending on the available resources (capital, work capacity, etc.) and his/her level of leadership and experience.

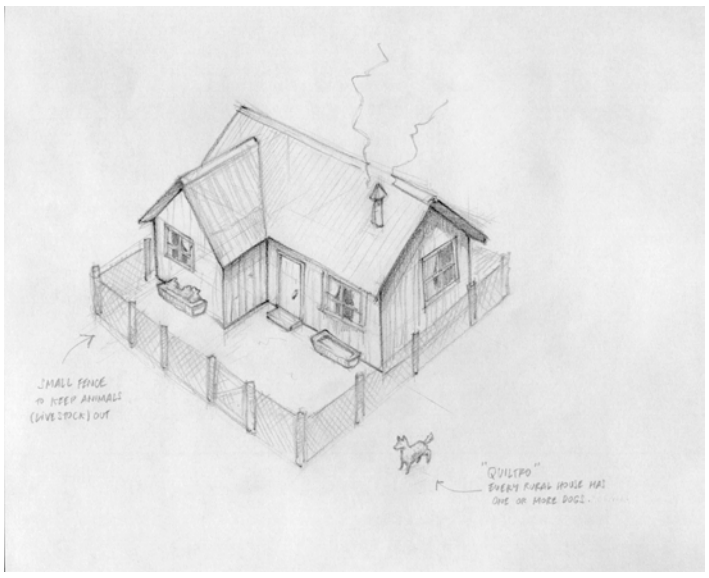
The player's implemented projects will impinge directly into the game inner variables. These will be actualized according to a game economic model. This model will be implemented using three different matrices: basic needs, capitalization and project.

- **The Basic Needs Matrix:** This is the first set of operations that are triggered when the player presses the time unit button. It performs a logical comparison between the resources produced by the family (food, energy, construction, capital) and the minimum resources that the family needs to keep its integrity. If the family's resources are not enough, then the number of family members decreases in one or more units, until balances both magnitudes. In this way the game simulates the forced migration of community inhabitants.

- **The Capitalization Matrix:** If the family resources are bigger than what they need to accomplish their basic needs, the leftover will be converted into capital, which represents the family money saving.
- **Project Matrix:** Unlike the basic needs and capitalization matrices, which are called with every time unit, this matrix is triggered only if the player defines a specific project to be implemented by the family. A comparison is performed between the family's available resources and the project specific requirements.

## 3.6 Concept art






# 4. Plan

## 4.1 Plan overview

The methodology to finish the game's prototype was defined taking into account two important facts. First, that one single person will cover all tasks to produce the game and second, the need of a logical strategy to accomplish all tasks in the time available.

The game development will follow two stages: in the first stage, the plan is to generate a mock-up of the game with the major part of its final functionalities, but without the final 3d and 2d content, which will be replaced by simple meshes and animations. In the second stage basic models will be replaced by final models, textures and animations. In addition, other game elements such as sound and GUIs will be added at this stage.

## 4.2 Task breakdown

Project's tasks can be divided in the following groups:

- **Content development:** Definition of all the information which will be displayed in the game either through conversations with actors or through GUI displays.
- **Scripting:** all the interaction in the game will be scripted using javascript, which is one of the languages supported by Unity game engine.
- **Modeling, texturing and rigging:** many models need to be developed in order to create a believable map. In order to have a enough visual references to build these models, a large library with textures and visual references were developed for this project.
- **Animation:** character movements, gestures and facial expressions will be developed in Blender.
- **Level design:** this involves the generation of the whole game map, which includes terrain, lights, atmosphere, particle effects and decorations.
- **Sound:** Sound will be added to the level mainly using sound libraries available in the web.

- **GUI design:** Graphic User Interfaces are considered a very important part of this project. This elements will be developed in Photoshop CS3.

## 4.3 Gantt Chart

| | JUN | | | | JUL | | | | AGO | | | | SEP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **Stage 1** | | | | | | | | | | | | | | | | |
| Content development | | | | | | | | | | | | | | | | |
| Scripting | | | | | | | | | | | | | | | | |
| **Stage 2** | | | | | | | | | | | | | | | | |
| Modeling / texturing | | | | | | | | | | | | | | | | |
| Animation | | | | | | | | | | | | | | | | |
| Level design | | | | | | | | | | | | | | | | |
| Sound | | | | | | | | | | | | | | | | |
| GUI design | | | | | | | | | | | | | | | | |
| Scripting 2 | | | | | | | | | | | | | | | | |

# 5. References


A FORCE MORE POWERFUL GAME [online] Available from: http://www.afmpgame.com/ [Accessed June 2008]

Anon., 2002, *Pinochet´s legacy still haunts Mapuche* [online]. Available from: http://www.hrdc.net/sahrdc/hrfquarterly/Jan_march_2002/chile.htm [Accessed October 2007]

BLENDER WEB PAGE [online] Available from: http://www.blender.org [Accessed June 2008]

CRAZYBUMP WEB PAGE [online] Available from: http://www.crazybump.com/ [Accessed June 2008]

DAFUR IS DYING GAME [online] Available from: http://www.darfurisdying.com/ [Accessed June 2008]

EQUIPO DE TRABAJO DE LA PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE, SEDE REGIONAL VILLARRICA, 2003. *La comunidad Mapuche de Putue cuenta su historia*. Villarrica: PUC Villarrica.

EYEWITNESS GAME [online] Available from: http://www.mic.polyu.edu.hk/nanjing/index.asp [Accessed June 2008]

NGPLANT- OPEN SOURCE PLAN MODELING PACKAGE [online] Available from: http://ngplant.sourceforge.net/ [Accessed June 2008]

PARMELEE, E., 1990. *Decreto Ley 2568: Sus efectos e implicancias* [online]. Temuco, Chile. Available from: http://www.mapuche.info/mapuint/parm1.htm [Accessed October 2007]

PROGRAMA DE LAS NACIONES UNIDAS PARA EL DESARROLLO, 2003. *Desarrollo Humano en Chile. Nosotros los chilenos: un desafío cultural*. Santiago de Chile: PNUD.

PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE, SEDE VILLARRICA, 2007. Sistema de Información Territorial Cuenca del Toltén. Convenio de Cooperación PUC-SERCOTEC.

SISA, J.,. *Eucalipto*. [online]. Santiago de Chile. Available from: http://www.ecoaldea.com/plmd/eucalipto.htm [Accessed October 2007]

UNITY WEB PAGE [online] Available from: http://unity3d.com/ [Accessed June 2008]

US ENVIRONMENTAL PROTECTION AGENCY, [no date]. What is a Whatershed Approach? [online]. Available from: http://www.epa.gov/owow/watershed/framework/ch2.html [Accessed Jun 2008]

WIKIPEDIA, [no date]. *Land Use Planing* [online]. Available from: http://en.wikipedia.org/wiki/Land_use_planning [Accessed June 2008]

WIKIPEDIA, [no date]. *Geomatics* [online]. Available from: http://en.wikipedia.org/wiki/Geomatics [Accessed June 2008]

3D WORLD FARMER GAME [online] Available from: http://www.3rdworldfarmer.com/index_content.html [Accessed June 2008)