

eResearch SA Summer Scholarship Report – Jason Haylock

Introduction

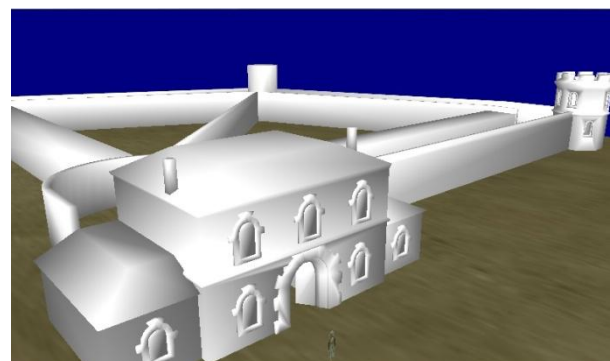
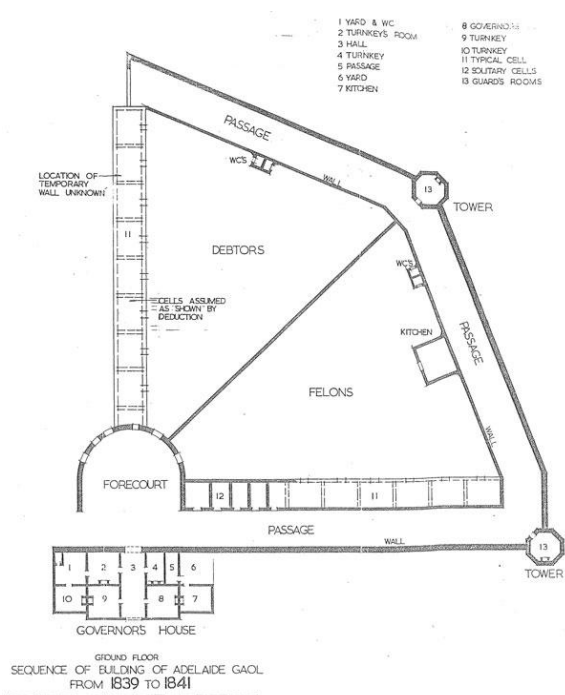
For my eResearch SA Summer Scholarship I worked with Theodor Wyeld, director of digital media studies at Flinders University, on his 'Escape from Adelaide Gaol' project. The project is a digital heritage visualisation, in the form of an educational game, of the Old Adelaide Gaol as it appeared throughout its history. Players would be able to walk around the gaol, see how it changed over the years, and re-enact escape attempts. It would also be used as a teaching tool for others to learn how to build similar educational games. For this scholarship the aim was to create a prototype of the game as a demonstrator.

The resources which I began the project with included a simple game scene with a controllable camera, and two high-polygon character models of a governor and gaoler that had been created by other students. There was also a set of architectural drawings of the gaol and its buildings as they appeared in 1841.

The game was built using 3DGameStudio, a game development system, with modelling and animation done in Maya.

The Gaol

The first step in recreating the gaol was to determine the scale to be used in the game. After settling on the scale of 1quant (the 3DGameStudio unit) equal to 10 centimetres, I imported the architectural drawings into Maya and used them as a guide in modelling the buildings and walls of the gaol. Particular attention was paid to the Governor's House (the large building at the entrance) and the two guard towers.



To get some realistic and authentic textures, I visited the old Adelaide gaol and took photos of the buildings and walls. The photos were used to create textures for the in-game models as well as reference for modelling areas and angles of the buildings that didn't appear in any of the architectural drawings.



After modelling and texturing the gaol to scale in Maya, the next step was to get it into the game. The different buildings and sections were exported from Maya and imported into the 3DGameStudio model editing program, MED. Here the textures needed to be reapplied then the model was saved and placed into the game using the game code. The game scene was setup entirely through coding in the 3DGameStudio programming language, Lite-C.

I also created five different tree variants using textures supplied by my project supervisor. I positioned copies of them around the gaol in Maya then used their position coordinates from Maya to position them in the game code. The ground was setup with a tiling texture and a skybox was setup for the sky.



The Characters

Two low-polygon characters were modelled based on the high-polygon characters that were provided for reference. These were the Governor and a gaoler character. Two animations were created for each, a walk-cycle and an idle, standing still animation. Both characters were originally textured using simple flat colours in MED.

After conducting more research into Lite-C, I modified a free script found online for basic player movement. A medieval guard model which is packaged with Lite-C was used to test the coding before being replaced with the completed Governor character model. The player model, the Governor character, could be moved about the game space using the keyboard and it would play a walk animation when moving and a standing animation when not. Issues involved in getting the

player model into the game and walking around included setting the bounding box for the player in the code as well as correctly positioning the model when exporting from Maya.

Code was also developed for a non-player character (NPC) that walks around the environment, turning around when hitting walls. The gaoler character model was modified to be used for this NPC. A texture was created for it based on the uniform that convicts wore around 1841. Another student helped develop code that created multiple convict NPCs walking around.



Conclusion

By the end of this project I had created a game environment featuring a recreation of the Old Adelaide Gaol as it appeared in 1841, including a detailed Governor's House and guard tower. The player can control the Governor and walk around the gaol environment and watch a group of convicts milling about inside. The extra two months added to this scholarship allowed the creation of a much more impressive and demonstrable final product.