

## Specialist Project Report

Phillip Penny

(c1457140)

### Photorealistic Mini Modelling

#### **Aims & Objectives**

It was clear from my project proposal that I have a lot of enthusiasm for this project, and I intended it to be an ongoing venture, as I did not wish to cut any corners to get it ready for a set deadline. So I decided to work hard but accurately, and present what I had completed at hand-in time. This would allow me to produce work to the standard I set myself at the start, which allows my project to progress correctly.

The final outcome of this work will be an interactive “garage”, the likes of which have been seen on many racing computer games including the Gran Turismo and Need for Speed series, where the user can modify their own car to their own specifications. The final piece will cater solely for mini owners to allow them to plan and cost up their personal projects with their own cars. I hope to work collaboratively with a leading classic mini parts supplier, allowing users to bolt on parts from a virtual shop, with the car’s performance and build cost updating as they do.

With this in mind, I need to produce a vast array of accurate parts, and I was interested in an artistic package’s ability to do this, whereas a more technical package would be used in industry to visualize concept cars. Obviously, it would be no good having a shop full of parts to fit on a flawed bodyshell, so I have been concentrating solely on getting this as accurate as possible, both inside and out, in all areas. I have an in-depth understanding of the mechanics of a mini, how it is made, the order panels are added etc, and while this has helped me to understand how to reproduce a ‘shell, it has also hindered me somewhat, as I have found myself being incredibly precious with my model. But this is no bad thing, as it will ultimately allow for the perfect base I require for the rest of the project.

So I submit for marking, just the bodyshell, which is around 80% complete. It has not yet been mirrored correctly, as the car is not perfectly symmetrical, so I have just mirrored it for presentation purposes. I have applied a simple “primer” paint which is how the eventual program will begin, with users able to specify what paint finish they want to be applied etc.

## Working Methods

I researched a lot of different ways of car modelling before I began, and I bought a Tamiya replica kit which contains extremely detailed parts, as well as some blueprints that I was able to scan in at high resolution and set up as image planes. This allowed for much higher quality reference images than I could ever get from the internet, but, unfortunately, as the mini's origins date back to 1959, they are only approximated technical drawings, and I was disappointed to find that they could not be relied upon to the extent that I was hoping. Modern vehicles have much more accurate blueprints, as they are designed on computers, facilities that were lacking back in the late '50's.

I set up my image planes for the top, side and front/back of the car, to be displayed in the respective viewports. I then began modelling with a simple polygon cube, with 5 subdivisions along the top. Each section was approximated for the bonnet, front windscreen, roof, rear windscreen, and boot. I only modelled one half of the car, with the intention to duplicate once it has been completed perfectly, in order to add the non symmetrical details, such as the boot floor, front panel, and inner wings.

From here, it has been a very laborious process of simply pulling point around, and adding more and more edge loops and vertices as appropriate.

It didn't take much time to come up with a one piece shell that looked as accurate as the one I am submitting today. However, when it came to separating the shell to allow for a totally separate boot, bonnet and doors, things became vastly more complicated. It felt like I was forever making minute adjustments to get things to line up again, once the individual parts had been detailed. The same problem came when modelling the interior. The bodyshell has an inner and an outer skin, which are seamlessly connected, but both are very different from one another. It has taken a huge amount of time adding in these details, and ensuring all the panels line up with one another.

I then had the task of correctly setting up the model for smoothing, ensuring there weren't any errors or bad joins. This gave me many headaches, as I was constantly checking vertices were correctly joined, making sure edges of the inner and outer shell weren't intersecting each other, and that there was adequate bevelling on the edges. This involves putting your head approximately 1" (one inch) from the screen, concentrating hard, and dragging a vertex 2mm. It doesn't matter what size monitor you have either, I have worked on a 19" flat panel monitor, and I *still* had to kiss the screen to get any kind of accuracy.

The bevel polygon command seemed to be hiding from me for a good few weeks, as I struggled with the split polygon tool to create additional detail around areas I wanted sharpness. I felt very silly when I spotted it in the menu, but since using it, it has allowed me to easily add in excellent details, such as the strengthening ridges in the floor pan and back seat.

## **Conclusions**

I am very satisfied with the state my bodyshell is in, there are only one or two minor niggles for me to fix, such as the angles in the wings, and the trained eye of my father pointed out that I need to bring the base of the rear seat forward, as make the inner wheel arch more prominent, but its details like these that will allow for a perfect model to add accessories to. Since it is being aimed at a unique audience, these minor details will be spotted immediately, so I will ensure they are sorted before I get tempted with building alloy wheels, interior seats etc.

The intention of this specialist project is for it to be marked on the accuracy of the model, so I have included some reference photographs for you to compare it with. I could have chosen to model as many objects as possible, and presented you with a vast array of components, but I would have ended up starting the thing all over again properly. I did model a set of wheels in under an hour, they are quite realistic because it is a very simple design, but I wasn't happy with starting this with the bodyshell still unfinished, so I decided not to do anymore accessories.

I have learnt a lot more about modelling from this project, up until now I have predominantly been doing organic work, so this was my first venture into solid modelling. It is a very different way of working, one that it took me a while to get my head round, but I feel competent in it now to be able to tackle a lot more areas. I have optimised my workflow a lot more, looking back; a lot of my time was wasted, simply down to inexperience. If I had to start this project over, I wouldn't do many things differently, except maybe placing less emphasis on the blueprints and more on my own understanding.

I expect to be able to fully achieve my goals if I carry on working in the way I have been on this project so far, showing attention to detail, and passion for all areas.

### **Top 5 commands used:**

- 1) Edit polygons > Merge Vertices
- 2) Polygons > Smooth
- 3) Edit polygons > Split polygons tool
- 4) Edit polygons > Bevel
- 5) Edit polygons > Extrude edge