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## Virtual Reality Modelling

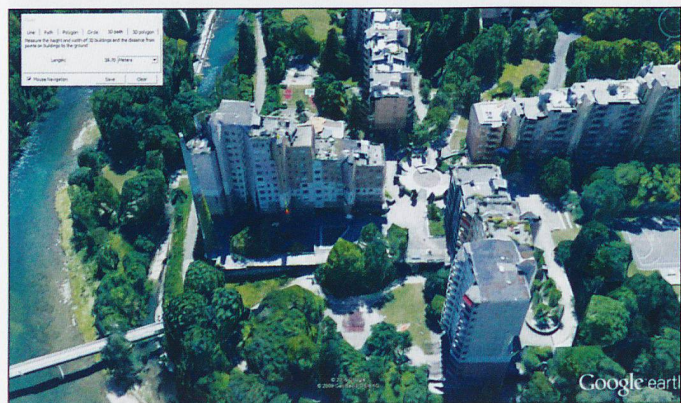
**Gary Peacock describes how he modelled the Wettingen Apartments in virtual reality**

### Research and Planning

After reading the article "A Funi for the Future" in the March 2017 *Swiss Express*, I decided that my next project would be to make a model of the apartments for use in my modelling project; however a bit of research was needed before the work could really begin. The images in the article gave a distant view of white multi-storey apartment blocks, but internet searches for both Wettingen and Webermühle resulted in several good quality pictures which I saved for future use. Further research was then undertaken using Google Earth. There are several ways in which information can be obtained here. People have uploaded photographs, which can be viewed and used, and "Street View" can often give images of your area of interest. "Street View" is not limited to the pictures taken by the camera car; a look at Zürich HB will show that the camera has been onto the platforms, including the underground ones. (They have even been into the tunnel and control rooms for the Large Hadron Collider near

TOP: Internet images of the apartments.

BOTTOM: The view in Google Earth Pro showing the height being measured.

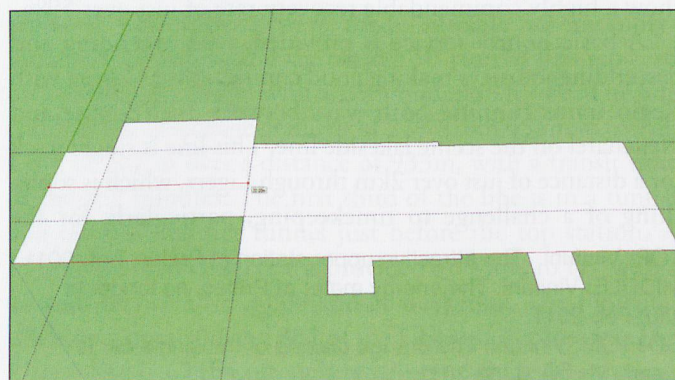


Genève!) Unfortunately the 'Wetti' apartments had not attracted any useful tourist photographs, and "Street View" also proved to be of little use as much of the apartment block complex was obscured by roadside trees. My next step was to look at Google Earth Pro (despite its name, the Pro version has been free since 2015 - I think you may have to obtain a free license key). In both the Google Earth versions you can view the landscape in 3D, but it is difficult to do anything from this. However, some buildings have been modelled in 'Sketchup' (more on this program later) and finding these makes the task much easier. However, once again I was disappointed. It was now time to take some measurements, and here the Pro version is more useful. With Google Earth you can use the rule to measure the distance between two points on the ground. But if you use Google Earth Pro you can also measure heights. The image shows the height of the block to be 28.70m. You may also notice from the image that buildings are in 3D.

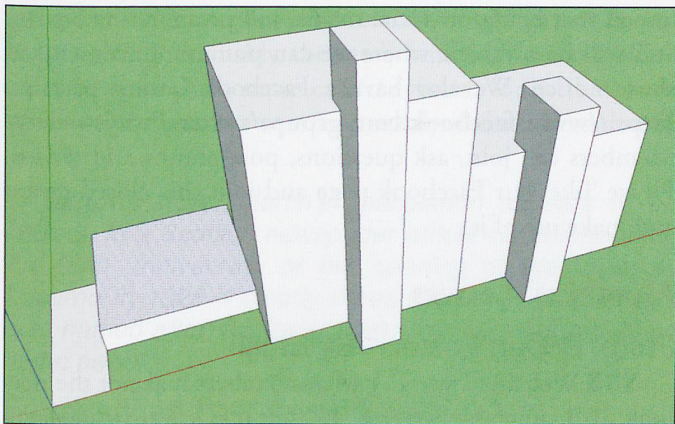
### Making the Structure

Armed with some measurements for the apartment block, most modellers will reach for pencil, rule and good quality card to set about drawing the structure. However I am not going to make my model out of card, instead I will make it using the computer. No, I will not be making the model on a 3D printer, my model railway is totally on screen. My hobby is called 'TrainSimming'. I am in the process of building the line from Zürich towards Basel, but although this is my plan, at present I am 4 months into the project and have only got as far as Zürich Altstetten! I 'make' the structure of my buildings using 'Sketchup', again it is free - a 3D graphics program by Trimble, although it was originally developed by Google. First the floor is laid out using the rectangle tool or the pencil (the dotted lines are guides placed using the measuring tool). Once the floor is finished the different sections of the building are pulled up to height using the extrude tool. Although there are a lot of additional balconies and windows that could be added to the structure it is important to keep to a minimum the number of faces. As the train passes through the landscape the computer has to keep track of every face of the building, and change its appearance as its position on screen changes. Too much detail can slow down the rate at which the screen refreshes causing the picture to become jumpy. The apartment blocks are not very close to the track so they should appear fine when finished.

The base of the apartment block laid out using Sketchup.






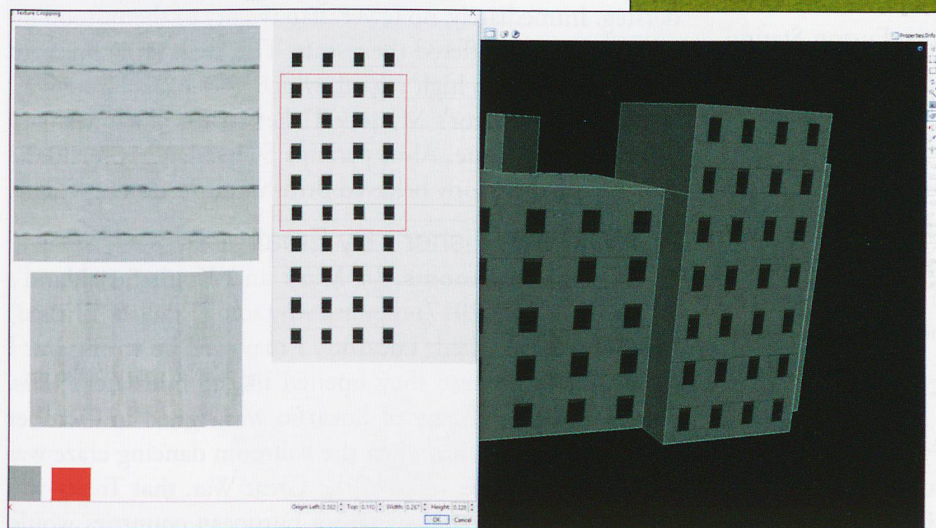
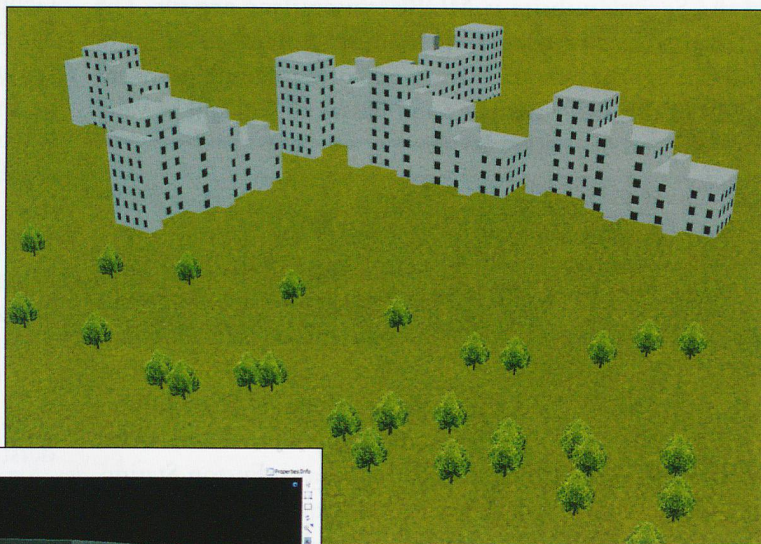


The block being pulled up to height using the extrude tool.

When your card model is finished it is time to paint it or cover it with brick paper. My computer model also needs to have textures applied, but first I have to create a .bmp image with the textures for the building. There are many free programs suitable for this such as 'Paint.net' or 'GIMP'. The images from the Internet will give me an idea for this, but I really need a straight-on view of the faces of the building, so again I search the internet for images of buildings that will not require too much modification to make them appear similar to the actual building. It is possible to apply the textures using 'Sketchup', but I have found this to be a fiddly process. Instead of using 'Sketchup' I export the model to another program, '3DCrafter'. This export is not quite as simple as it sounds, but I find applying the textures in '3DCrafter' is very easy. Every face on the structure must have a texture applied to it, so to ensure this happens I select a small section of my image file and apply this using the paint tin tool, this is rather like dipping a card model in a pot of paint, the whole structure is covered. After this each face is textured individually, by selecting the required section of the image and applying it to the face using the paint brush tool, one click and each face is covered. When all faces are complete the model is exported to the train simulation program, (here I need the "Plus" version of '3DCrafter' which currently costs \$35).

## Placing the Model in a Route

My Zürich route does not extend as far as Wettingen so I have created a new route in this area. Initially this is totally flat at sea level, but it is quite easy to import terrain height data from the Internet and apply this to the route. I have introduced a double track alignment approximately in the position of Wettingen station and placed the apartment building in position across the river. As there are several apartment blocks I may in the future decide to create modifications to the original, but for now "copy and paste" will suffice. I will also add the model to my Zürich route; a bit of modellers licence will see several blocks fit there quite nicely. 



**TOP:** The apartment block placed in position close to Wettingen station.

**ABOVE:** Several copies of the apartment block placed in position, with a few trees along the line of the river.

**LEFT:** On the left is the .bmp image with a section outlined to be applied to the structure (right) in 3DCrafter program.

*All images: Gary Peacock*