## MARCO BECCARINI – Reflections on Project 2

For project 2 we were asked to design our dream cubicle and a common main area in the office scene that we were provided. Using the VRTK plugin in Unity, with a VIVE headset and Steam VR correctly installed, and also if the right version of Unity is installed, anyone could play the scene and walk around the office. The player would be able to interact with some of the objects placed, could hear sounds, and in general could feel really immersed in the office scene.

Before using it for the first time, designing my dream cubicle in Unity was fun but at the same time I wasn't really able to feel the size of the environment around me, and in fact I was having a hard time figuring out the correct scale that each object should have had. Moreover, using Unity my view was limited to two dimensions which made everything look less realistic. It felt a lot like playing a computer game, but did not feel at all like what could potentially be my future cubicle. However, after the first week was completed I decided to record a demo video and so I tried for the first time my application using the VIVE headset in the classroom.

What I experienced after playing the scene was definitely not expected. I had already set up some objects the user could interact with and some ambient sounds to make the scene more realistic, and in fact I really felt like I was standing inside a cubicle since the environment was so realistic! The 3D sounds that got louder when you walked towards them or viceversa, the grabbable objects, the sounds triggered by me interacting with certain objects, they all made my brain feel I was in a different place for real. It felt so real that, when the headset tracking started to have some problems and the entire scene started tilting sideways my head started spinning and I had to take the headset off before tripping over something.

In general, getting to see my own cubicle using VR made me realize many problems that I had not noticed while designing it on Unity, which I fixed afterwards. So I am sure that using these kind of technologies are effective to plan spaces for people, whether it is an apartment, a cubicle, a shared space or even just a device - it could help the designer realize better what needs to be improved and what can be changed. Not only on a functional point of view, but especially on a visually appealing point of view.

An architect could use Virtual Reality to better understand the surroundings of its project to make better decisions in terms of what materials to use, which shapes to prefer in his project, how many windows to place/ which kind of glass to use, what kind of lighting is needed and so on.

A designer could design a common space having a much clearer idea of the space that can be used for chairs/art pieces/ furniture, but managing to maintain enough space for the people who are going to share that room. Art galleries, for example, could be much easier to design so that people can have the best experience in there. In general this is true for any kind of museum.

Having regular "checks" of how a project looks in Virtual Reality, I believe, could lower the risk of having small inaccuracies that build up without the designer/architect/ engineer noticing until it's too late to fix them. Even just having a small error in the placement of a certain wall or joint could turn into a huge problem if noticed after the project is almost finished.

Therefore, I believe that Virtual Reality could be extremely efficient in designing a space ahead of time, and also I believe that if Virtual Reality will continue to improve along with all the improvements of technology in terms of GPUs, processors and rendering, many spaces that are now "physical" could instead be replaced by virtual spaces without noticing too much difference from people. In a near future, museums could be visited on your living room couch by paying the entrance ticket online and connecting your headset. Classes, courses, some sports could be attended just through your headset. I believe therefore that not only Virtual Reality is useful in terms of designing a space ahead of time, but it might be the only way to visit certain places in the future.

In conclusion, I believe that people working in the field of architecture, design or engineering should be trained on how to use these technologies because in some cases they might lead to much better results.