Existing CAD programs can be frustrating tool to generate 3D models because they require precise information to be described. At the beginning of the research, the designer would like to keep a certain level of abstraction. Therefore, sketching still remains the most convenient tool for designers to describe their ideas. The purpose of several researches is to generate 3D models from sketches. Two different approaches exist. The first could be illustrated by “SketchVR” by Ellen-Do, co-designer of Design machine Group. It generates 3D models from 2D sketches drawn on a floor plan and then, having the program interprets the drawing to crate a 3D scene. The “SpacePen” program, by Thomas Jung-DMG takes another approach that consist in drawing directly on a 3D scene.

As I am implementing a program call “Spot” in “SpacePen”. I realized that the communication of my ideas is very important and it is probably the most difficult part of my research. Therefore, it is very interesting for me to see how researchers communicate their ideas. The text “HAROLD : A WORLD MADE OF DRAWINGS”, helps understanding the issues related to the second approach, that consist in drawing directly in a virtual world. It was exiting to see how the concept (that consist in drawing our own world and being able to navigate through it) is implemented.

In Harold, the user is immersed in a 3D virtual world he can edit and walk trough at the same time. To edit the scene, the program recognizes the user’s gestures. They are interpreted either as new sketched objects that are added to the universe or they launch several functions that enable to edit existing objects: as the program is launched, the virtual world is only composed by two elements. A large planar region simulates the ground and the scene is contained in a sphere that represents the sky. You can draw on any object in the scene, witch means you can draw on the sky or on the ground too. If you think the ground is too flat and you would like a more bumpy terrain, the “Terrain Mode” will create hills according to your strokes.

When sketching directly in a 3D environment, the problem is your sketch will look completely different when the point of view is changed. The “renaissance artists” used these optical phenomena while painting anamorphous (the perspective is transformed so that the drawing looks right from a particular point of view).

To sketch a scene composed by objects that look right from any point of view, Harold features a “billboard” function. The billboard is a virtual screen you can add in the scene
and that the user draws on. The sketched objects will be flat, but they can be rotated when
the viewer’s position is changed.
To reduce the perspective’s deformations, the camera movements are limited.
The navigation will have an influence on the scene geometry. Several types of objects
will be rotated to the viewer’s direction. Since you won’t be able to see they side, the
objects won’t look flat.

These were the main features of Harold. It looks to be an interesting way to sketch ideas.
The problem that this program does not resolve is it is still difficult to draw on a
computer’s monitor. Even if the user can use a pen tablet, his strokes will appear on the
screen while his gestures are made on another area. The research in hardware should be
associated to the researches in software. The researches labeled “Physical computing”
could probably give some answers.