[Un] Balance

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Project by: *Elyne Legarnisson & Amanda Simo*

[Un] Balance *is a prototype based on the exploration of movements and emotions through spatial experiences altering the balance of the body.* To approach this idea, Elyne Legarnisson and Amanda Simo have been researching about the reasons of human movement, movement analysis techniques and its categories. They both believe that understanding the qualities of movement could lead them into a project in which people could move in the way they wanted to.

*"We **perceive** in order to move, but we also **move** in order to perceive." Gibson (1979, p. 223)*
According to this author, the perception plays a particular role in the understanding of how movement changes human motion. In this sense, they have decided to research about motion perception, particularly, feature detectors. Feature detectors are specialized nerve cells in the visual cortex that are in the brain and respond to specific characteristics of a visual stimuli.
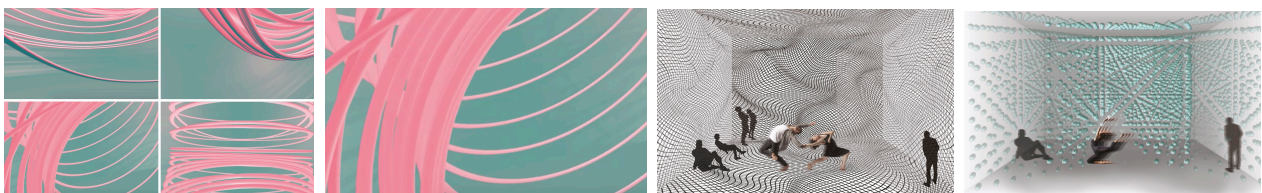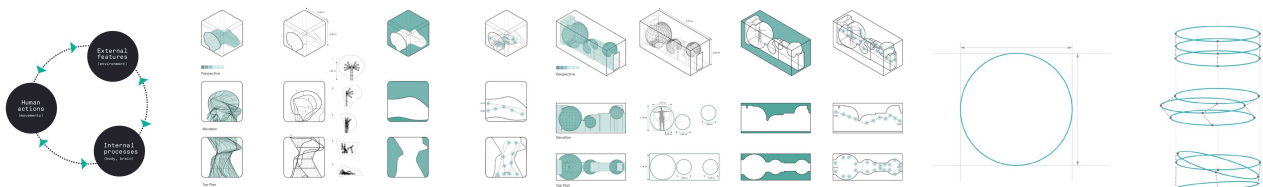

*Image 1. **First experiments: Static and Dynamic spaces.** In this stage of the process we were creating spaces using human proportions and qualities to determine the qualities of the spaces and how they generate particular influence in the human movement. As designers we wanted these spaces to modify the human movement but also the human movement to modify the space. This process is a feedback loop of the **environment**, the **body** and the **brain**.*

COMPONENTS OF
FEATURE DETECTION

1	Color	········	***Cones*** are sensitive to the lights using RGB values. (Red, 60% ; Green 30%; Blue 10%)
2	Shape	········	***Parvocellular*** cells defines the details of an object, has spatial resolution but very low time resolution.
3	Motion	········	***Magnocellular*** cells do have great time resolution but really good bad spatial resolution.
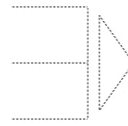
PARALLEL PROCESSING
Cones, Parvocellular and Magnocelullar cells work at the same time.

*Image 2. **Feature detection** is the way our brain uses to process the information that is received visually.*

After briefing all these concepts we decided to create a grid of points that has a line attach to its center. Using a simple geometry will allow us to modify the perception in a simpler way.
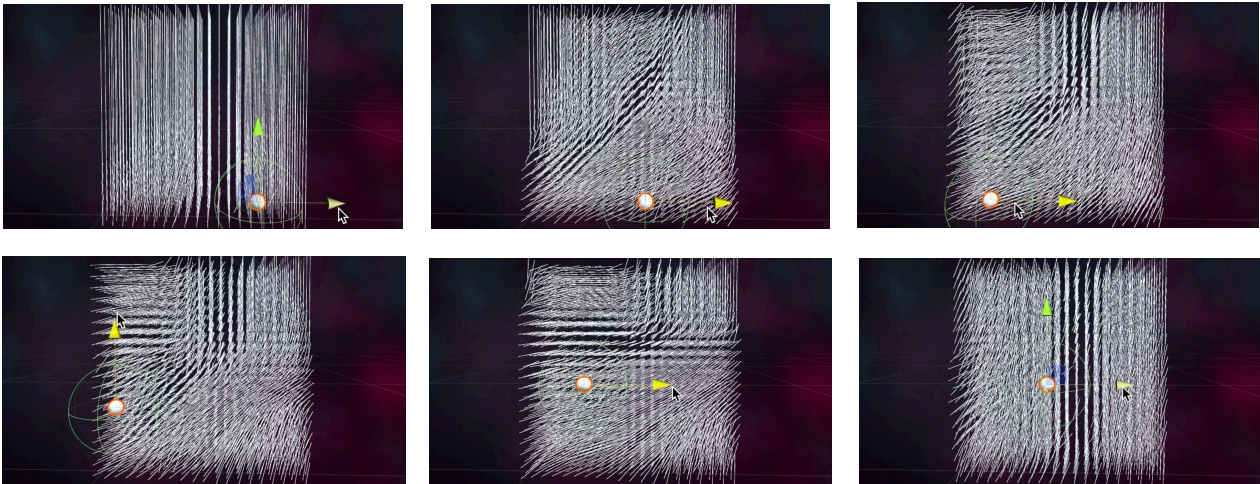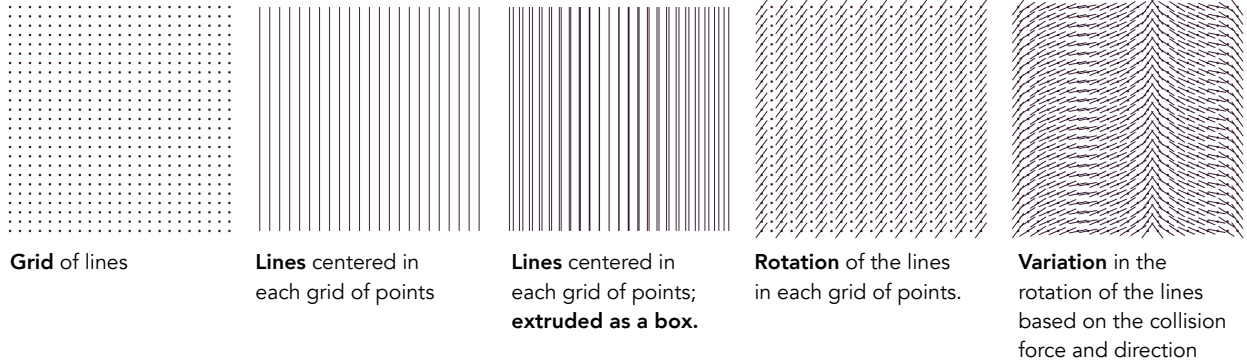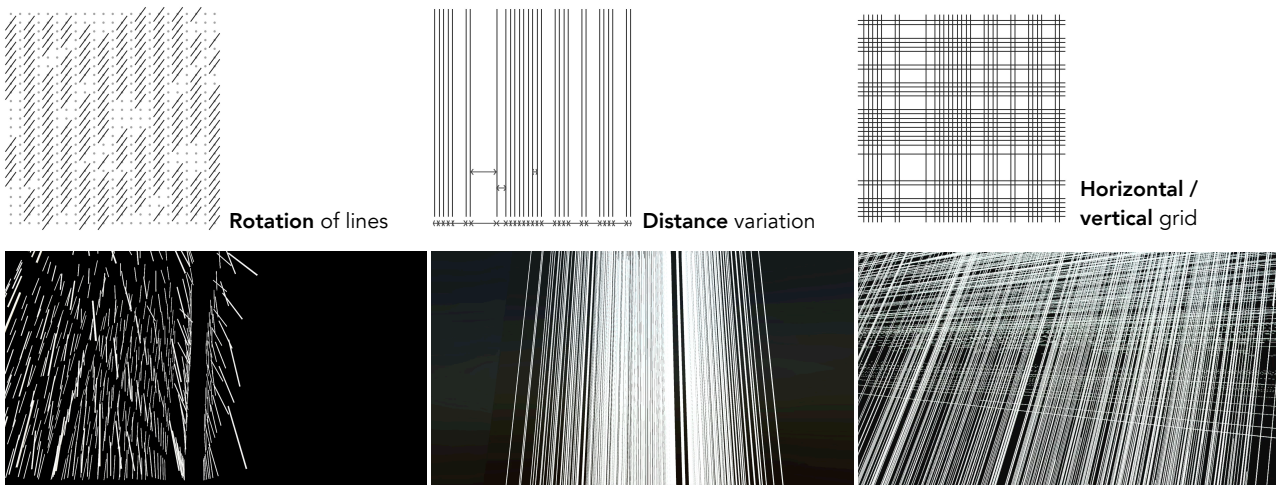

Grid of lines

Lines centered in each grid of points

Lines centered in each grid of points; **extruded as a box.**

Rotation of the lines in each grid of points.

Variation in the rotation of the lines based on the collision force and direction

Image 3. Development of the system in Unity3D.

Rotation of lines

Distance variation

Horizontal / vertical grid

The system we were developing pretends to extend, disrupt and transform the balance of the body in the virtual environment using an harness in a physical environment. We realized in the first experiments that in virtual reality experiences people tend to be shy with movements and probably is because they don't want to lose their balance or center of gravity.
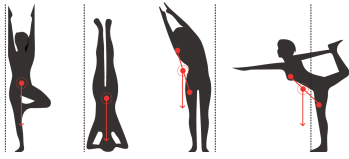
The center of gravity of the human body is located close to the second sacral vertebra. Depending on the position of the body, this center constantly changes. Using the harness in the VR experience will shift the center of gravity and within this the balance of the body. **Could we transform interactions between proprioception, visual and sound perception?**

As further explorations we will split in two different projects, one of us will take the way of mental health and movement (Elyne) and the other will develop a cybernetic system performer-environment-audience that will respond to these three level of interaction (Amanda).

In order to **improve** these projects, the following **feedback** was received during the **Projects Faire** on the 15th of March, 2018:

ASH KOOSHA:
-Suggested to research a bit more about blood distribution and how our nervous system works when we change our center of gravity.
-Also, about the physical orientation of the body and how we could unify the virtual and physical world using an haptic unified system.
-Use gravity as another sense.

FELIX FAIRE:
-Suggested to use Arduino/Kinect to detect the center of gravity of the body and then determine how the system will change according to this.

MARINA CASTAN:
-As Marina is a PHD student at the Royal College of Arts, she suggested to explore physical prototypes and explained us her interesting project in textile architecture based on the body movement. This gave us ideas about physical possibilities of the project.

CHRYSSA VARNA:
-Explained us about holograms and how could this system be integrated into a more tangible way in the physical world.

LUCA DELATORRE:
-Suggested us to use a weight sensor to check the balance and center of mass sensor.

IRINI PAPADIMITRIOU:
-Suggested us references such as André Boleslavsky, Nina Kov, Be another Lab and Frank Kolkman.