(RE)DESCRIBE

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[re]describe
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[re]describe is an immersive video installation that focuses on re-drawing physical spaces. This visualization, displayed on a 270 degree screen surrounding the audience, presents glimpses of the recognizable amidst an array of abstract images -sourced, generated and manipulated from physical spaces.

The 270 degree screen encloses the audience within a new, unknown and undefined space, a space that is continuously changing and evolving as guided by the projections. As a whole, the project explores the effects that the manipulation and visualization of virtual and physical spaces has on the audience's perception.

My personal interest in recording and manipulating static and moving images, together with my interest in technology have placed me on a path where rather than building the content from scratch, I am using data recorded using cameras that is then modified and manipulated using various software in order to create the visuals that I'm interested in.

This process started with a series of experiments: testing various software, hardware and techniques within the framework of the concept. The experiments allowed me to test the limitations of my tools and allowed me to understand the extent of what is achievable within the set parameters. Each experiment is documented and analyzed in terms of the ultimate goal of the project - perception of space. This process represents my practice based research.

The research conducted weaved between various fields and subjects including the phenomenon of projected visuals, art theory, 360 degree panoramas, performances and happenings, as well as works that combine engineering, technology and art. The project was inspired by the idea of dimensions and Edwin A. Abbott's satirical novella Flatland and was synthesized within a framework of simple geometry.

The following pages are a report of how this project came to life, explaining the various shapes and forms it has been through, the experiments and research that were conducted and the final form of the project as it will be presented in TENT Gallery in Rotterdam.

first iteration The intention has, from the beginning, been to create an audio-visual installation, with the content being an undefined element. The first iteration of this has been to use "dreams" as a source of inspiration with the goal to make the audience feel as if they are dreaming but not to visualize dreams in the way cinema does. The reason why this idea became relevant was because in describing dreams, similar keywords and characteristics were used as in describing my own video projection work. Additionally, both dreams and my work (*Watch this space*) dealt with space in a very particular way with a common ground on the perception of space, while time, repetition, stimulation or even overstimulation were ideas that could be ascribed to both dreams and video projections. However, the topic proved to be far too broad for my interest, and more importantly, the fact that dreaming is such a personal experience made it difficult to draw a common line through the content; thus making a communal experience of dreaming in a larger audience unachievable.

change In reaction to this realization a new, more hands-on approach was undertaken, focusing on the medium itself as the area of interest. This was also the beginning of my current working methodology, namely, creating the context for a series of experiments testing various hardware, software and techniques to understand the possibilities of the medium in the form I was proposing. My research also looked towards the medium itself, leading me to the likes of Experiments in Art and Technology (E.A.T.) and their series of performance events: 9 Evenings: Theatre and Engineering, the history of the 360 degree screen and visual art as a tool of immersion. 9 Evenings Reconsidered by Catherine Morris heavily influenced the documentation process and approach towards my experiments as I became interested in the template of inputs, modifier and output that was present in

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Inputs. / Modifiers. / Outputs. / Hardware

x webcams/
in/rared
cameras.

x television.
x radio.
x pre-recorded
video bank.

x scanner.
(live scanning?)

x generative
video.

→ change pitch
to video?

x feedback

x (time) delay.

x reverb.

x compressor

x blur.

* touch. : audience ca

9 evenings
black box:
digital <> analog { decoders
encoders.
power amp.
power relays

▶ tone control unit
speaker Distribution
Proportional Control sy
FM receiver/transmitter.

OTHER NOTES.
x documentation with in/rared.
cameras. shoot in the dark.

read.01 // 9 Evenings Reconsidered // Catherine Morris // 2006

inputs (what is being talked about)
9 Evenings Reconsidered takes a look at the series of performance events called 9 Evenings: Theatre and Engineering that took place at the 69th Regiment Armory in New York City from October 13 to October 23, 1966. The events featured ten artist/engineer collaborations. The book discuses the series of events through a series of articles and essays discussing the projects themselves, the impact of the series of events on modern/avant-garde art, the process of collaboration between the artists and engineers.

output (what is extracted)
One of the things discussed in the book were the diagrams and the process of collaboration between the artists and engineers. The diagrams became the mode of communication between the two, allowing them the clarify each other's ideas and communicate in a clear practical way what they were proposing. To be noted is also the fact that what these artists were proposing was still outside of the box, and as a whole, the performances really pushed the boundaries to what could be done, and what could be conceived, sometimes so far, that the audience reaction was critical, where as looking back, the outcomes were very inspirational and completely changing the approach to performance art.

commentary
The diagrams featured a very precise and simple setup: inputs, modifiers and outputs. In the case of the performances, this setup was more relevant in terms of the technicality involved, but I took this setup up and applied it to my experiments, changing the notion of input and output to what is being projected (inputed) and how it is being projected since I was dealing with video installation. Besides this, the book shed some light on the forerunners of technology influenced art and performance and influenced the mode of thinking towards my work.

the diagrams of the performances showcased in the book. The first series of experiments, coupled with some of the information found in my theoretical research allowed me to look at the content from a different perspective, and I was therefore able to find a new direction that I wanted to focus on.

second iteration The first realization that initiated this redirection towards multi-dimensionality and simple geometry was the fact that only four points are needed to create a volume - representing the third dimension. This meant that I was looking at the minimal aspect of what defines a dimension: at least two points for a line, three for a plane and four for a volume. The satirical novella Flatland by Edwin A. Abbott was another big influence towards this new direction, and helped concretize the concept with the goal to create a multi-dimensional experience where the audience is taken on a journey through each dimension. The point being to help the audience visualize each dimension as if they were living in it, thus referencing Flatland directly. To achieve this I constructed a scenario where at certain stages the audience should be convinced by the projections that what they see is real, in order to afterwards break down the conventions through the transition to the next stage. One specific example of this proposal is taking a series of flat lines that when the angle of view is changed, their actual position is space proves to be different than what was perceived before. The proposal was to create a transition from a point, to line to plane and volume and thus emphasize the differences between each dimension, how it affects our perception and the new qualities that each dimension brings.

The next step in developing the project was creating a storyboard and animatic to help visualize the concept and especially the

exp.01 // strobo effect

initial intention
The initial intention of this test was to observe the effects of a projected luminous object against a stroboscopic background (flickering between white and black). Secondarily, from visualization tests conducted in Cinema4D, I became interested in observing the relationship between the shadow and object noticing that the stroboscopic background can affect the way we perceive the shadow, more specifically, it appeared to move with a latency compared to the object creating it.

inputs [projected materials]
A series of videos of a pyramid and it's shadow were created. In each video the relationship between the pyramid and its shadow is different, varying from a static shadow to a synchronized and desynchronized shadow. Additionally, different textures were used for the pyramid to test its "luminosity" when projected in contrast to the stroboscopic background, these textures included, highly luminous, matte and reflective.

modifiers
The speed/frame-rate of the videos was the only modifier applied. Additionally, simple mapping techniques were used in order to display multiple videos on the same screen while placing them in specific parts of the screen.

output [screen(s)]
For this test, a flat, two dimensional surface was primarily used. Part of the test was conducted using an additional two-dimensional screen that was positioned in front of the original surface to add physical depth. This secondary screen was also tested as a moving screen.

backend
VDMX - a VJing software - was used to project, map and apply any other changes to the video. The input videos sdfd generated using Cinema4D and AfterEffects.

conclusions
While the test proved the initial intuition ineffective, new things were discovered. The reason why the effect was ineffective was because the difference between the shadow and the object needs to be more drastically applied (the shadow needs to go evidently out of sync). Furthermore, this effect does start to have an impact when the video is programmed to emphasize the change, ie: a movie with the shadow moving in sync, followed by a movie where the shadow stops, seamlessly joined. The transition has the most effect. This could also extend with the use of stroboscopic to flicker between different video files, in sync with the stroboscopic background, ie: the stroboscopic effect should be used as a transitional effect, as it overpowers the content, and it is hard to see the change.
One of the new discoveries is related to perspective, and more precisely, forced perspective. When the pyramids were arranged in a forced perspective, walking around the screen created parallax, meaning that the brain creates the space that is actually absent.
Going back to the forced depth, where an additional screen was placed in front of the original screen, what is interesting is that when you walk around the space, the forced perspective moves the object in the foreground screen either in front or behind the foreground object in the original screen. Moving the screen emphasizes this effect further.
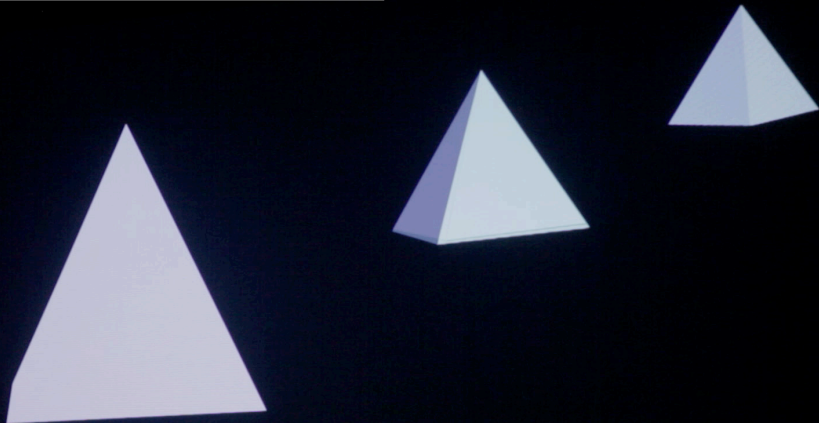
possibilities for the transition stages. Using simple geometry led me to look at Wassily Kandinsky's Point and Line to Plane. The book offered some insight into the topic, helping me understand the meaning of these elements as well as what could be achieved with them as they are placed on a canvas. Additionally, the reading allowed me to recall theories about composition that I have studied in the past. However, I was facing a writer's block regarding the underlying story of the elements moving on the screen and the storyboard made me realize that I'm not interested in working with simple geometry on the screen and since I was working with a screen much larger and a lot more spatial, this visualization made it more difficult to fill the whole screen. Contrasting this, my experiments were leading me in a different direction, even though they were completed under the same goal and parameters of multi-dimensionality.

describing space vs. defining space

In comparing my experiments and my concept I realized that there was a contrast in between what each do. The point, line, plane and volume from the concept were "objects" that defined space (especially the volume), while the same point, line, plane and volume from the experiments were used to describe space, re-drawing a space that already existed. Within this process, the image became most abstract as the position and point-of-view of a virtual camera was changing, starting to form what could have been read as new virtual spaces.

focus

The idea of describing a space, visualizing a space in one, two and three dimensions was a natural fit. A realization that enhanced this idea, and grounded the (once again) new direction was that the visualizations I was working on were theoretically representative of the dimension that they were drawn in, even though they looked as if they were three dimensional. The reason

exp.03 // Kinect hack

initial intention
Use the three-dimensional point cloud generated by the Xbox Kinect as a data source in order to create abstract imagery.

inputs
The live feed captured by the camera(s) of the Xbox Kinect.

modifiers
Through Processing, the feed from the Kinect is analyzed and a three-dimensional point cloud is displayed on the screen. I have modified the original Processing code in order to connect the points in the cloud with lines. After this was achieved, I have modified the code further to randomly connect dots with lines.

output [screen(s)]
Single screen video feed. (because through processing you usually get a live feed that is displayed on the computer screen I have modified the code to save an image sequence that was later converted into a video file).

backend
Xbox Kinect + Processing
After Effects

conclusions
I am very happy with the results of this test for various reasons: the aesthetic of the video generated through this method is a continuation of other videos I have generated as part of other tests for this project. More specifically, this aesthetic can be described as the white/grey lines that outline the content on a black background. This background allows for everything to connect easily, and I am therefore able to create a continuous background in a 360 degree environment. Additionally this test represents a tool/method/filter that allows me to continue using a device with a lens to generate my imagery. Since the content has quickly started to go into a direction where I was not able to use videos generated by a video camera, this method allows me to keep filming (and think specifically of cinematography) in order to generate content for the project.

Finally, I want to continue making modifications to the code. A few of the things I have lined up are: connecting dots with lines based on the proximity of the dots to each other. Creating polygons and volumes using the dots in the cloud. Understanding the possibilities and how each change to the code affects the image will allow me to think about what specifically to film. The code modifies the image, but the initial image that is filmed is also very important.

why this happens is because humans are catered and accustomed to seeing things three dimensional - and this is exemplified in our recognition of space even when it is represented on a two dimensional plane (for example in a photograph). Therefore, the images that I have created in my experiments using lines, are theoretically speaking uni-dimensional images, but they are perceived as three dimensional, either because we read some signs that give our brain information about depth (for example, various lines coming together) or the fact that there are times when the image is something that is recognizable - such as an object, figure or space.

final form   To return to the initial proposition, my goal is create an audio-visual immersive installation, where the content is about taking existing spaces - scanning them and creating a data-base of information that is then interpreted, and visualized in points, lines, planes and volumes. This process of re-drawing when projected on the 270 degree screen creates a new space, that is continuously being modified, suggesting the perception of new spaces when the images are abstract and offering glimpses of "reality" when the images are recognizable/readable - thus creating a tension between what is recognizable and unrecognizable, between what is real and what is constructed, between what is a documentation and what is modified.

inspiration   As stated earlier the whole conceptual framework was inspired by
(dimension)   the idea of dimensionality and what defines a dimension. It all started from the number of points that define an element and the individual characteristics of each element. The point itself has no dimension; it is self-contained. The line has one dimension, it describes a single axis and once another point that is no longer on the same axis is defined, a two-dimensional plane is created.

exp.04 // Plexus

initial intention
The initial intention for this test was to get familiar with the plug-in itself, and visualize the idea of making abstract images where a cloud of lines is displayed, connecting dots based on their proximity.

inputs
The input for this particular plugin is a pre-determined shape layer that is analyzed for vertices/points. The rest is created using a generative method where the program draws lines based on particular predetermined settings.

modifiers
The are no particular modifiers here. The result is created through a generative process. Settings that can be set in the plugin include rotation, depth of field (focus), position, multiplication of the initial image. The shape that is created can also be animated over time.

output
The output is a single screen video feed (file).

backend
After Effects
Plexus (After Effects plug-in)

conclusions
The results are aesthetically continuos with the rest of the tests/videos I've done, especially with those from the Kinect. I see two potential outcomes for using this plug-in, creating a bank of video files that represent landscapes and more volumetric images where the sense of depth and space is central.
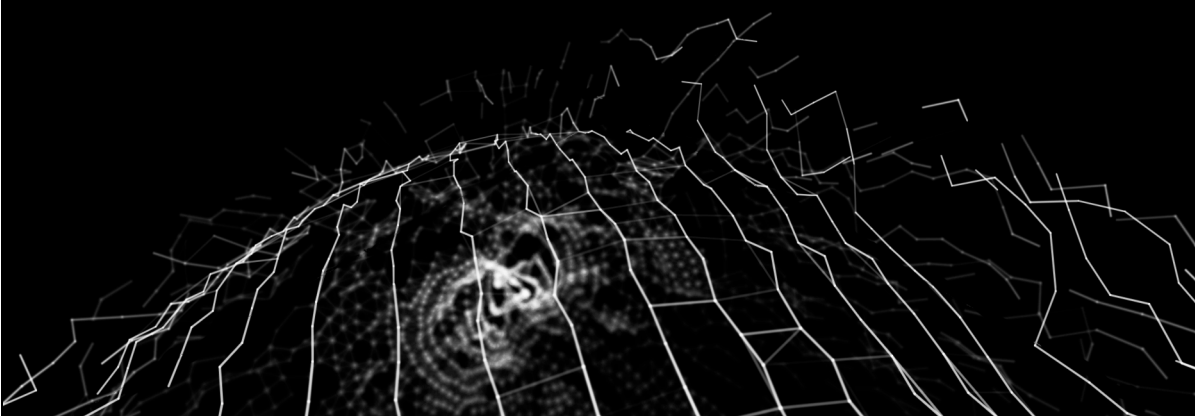
Once again, if another point that is not on the same plane is defined, then a three-dimensional object is created. A new context (dimension) is created once a new characteristic is added that is completely different and unique from the characteristics that describe the space until then.

fourth dimension   Through a process of logic the same concept can be applied to determine dimensions that go beyond the third. If you take a line (uni-dimensional), duplicate it and move it laterally the same distance as the line itself and draw the missing sides, you create a square (a plane, bi-dimensional). If you take the plane and move it upwards and connect it with the square underneath, a cube is created. If we break down each of these elements to points, then we can observe a pattern: a line has two points, a plane four, a cube eight points. For every dimension, the number of points is doubled. Applying the pattern further, a four dimensional hypercube would have 16 points, a fifth dimensional hypercube would have 32 points and so on. This is the mathematical representation of the dimension beyond the 3rd, time however, is a more tangible concept and I have discovered two interpretations of time as the fourth dimension. One is that time is a variable, than can be applied to any dimension - if a line "moves" it becomes part of time - and this means that time is not a dimensional quality as it is not a single, different characteristic than the one before.

fourth dimension   The second interpretation is that time is in fact a dimension.
(time)   The example that I have come across states: If there are two people having a conversation, their location can be pin-pointed using the latitude, longitude and latitude (representing three dimensional space). The fourth characteristic, time, specifies the time when these two people were in that particular place,

exp.05 // Plexus vs. Kinect

initial intention
The initial intention of this test was to use the Plexus After Effects plug-in in order to generate images that give the impression of space. To do this I wanted to use .obj files (three dimensional objects, point clouds, etc) as inputs for the plug-in. I then later found a way to use the Kinect to store the three-dimensional data it creates as an OBJ file, and therefore looked into inputing these through the plug-in as well.

inputs
.obj files (generated in C4D)
.obj files and .obj sequence (generated with the XBox Kinect)

modifiers
The are no particular modifiers here. The result is created through a generative process. Settings that can be set in the plugin include rotation, depth of field (focus), position, multiplication of the initial image and the settings that determine how the image is generated.

output
The output is a single screen video feed (file).

backend
After Effects, Processing, Plexus (AE plug-in), Cinema 4D, XBox Kinect, MeshLab

conclusions
The second series of experiments under both the Kinect and the Plexus AE plug-in proved to be quite useful for a number of reasons. First, conceptually I have realized the idea that what both the Kinect and Plexus achieve is to describe space. Technically, I have started thinking about how to project the results, more specifically, the rotating sphere and realized that I need to prepare the footage to project the sphere on all the screens (surrounding the audience). This means that theoretically, the audience will be inside the sphere, and the effect that I would like to achieve is to have the whole room spinning.

.obj sequence - effective, but if used with information form the Kinect there must be a lot more frames saved. Additionally, animating the points form one place to another is much more effective, as demonstrated in the object sequence generated with Cinema 4D.

If I could somehow animate the same points with in the Processing/Kinect file, rather than just displaying their new position, this could enhance the effect.

Finally, I'm very happy with the results of using these to describe space, enhance the idea that there is space in the picture. As soon as I started using something that is more three dimensional, this really becomes evident, with the depth of field function enhancing this even more. (when the depth of field is taken to a more extreme level the focused image (points/lines) appears out of a cloud)

The Plexus effect on an .obj files really enhances its surface, although at times could also show it's materiality (the way it builds up on the inside) but of course this is depending on the object file itself (and its size).

Changing the settings of the Plexus to only display lines between different images (rather than inside one image) creates what seems to be a three dimensional object, comprised of lines.
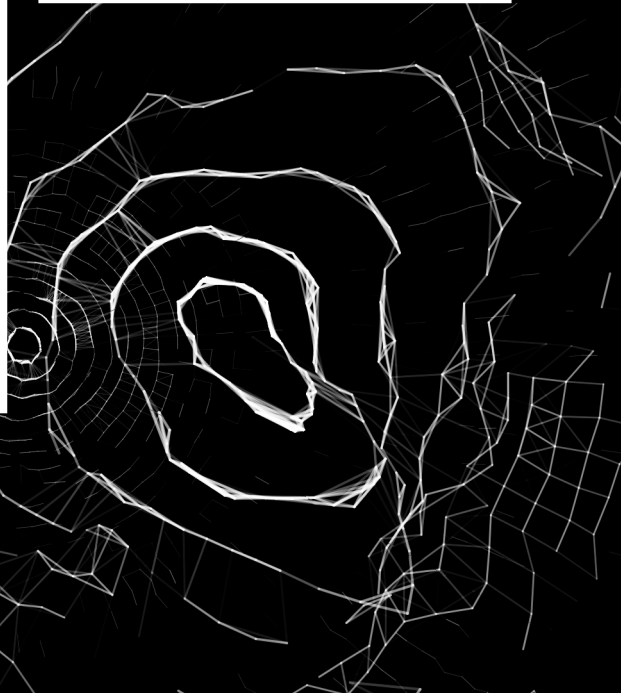
meaning that if one looks at that location at any other time, the two initial people would not be there. In this interpretation, time becomes a dimensional characteristic that is completely independent of the ones before.

fourth dimension (visualization)

Theoretically, it is impossible to visualize the fourth dimension, and this is because our means of visualization are limited to three dimensions. Furthermore, it is also impossible for human beings to perceive something that is outside their limits of understanding - the fourth dimension, in this case, represents a different mind set. It is similar to what is happening in Flatland (Abbott), when the the square (a bi-dimensional creature) is trying to comprehend the third dimension. On the other hand, if it becomes somehow possible to visualize the forth dimension, then it becomes difficult to explain in such a way that other people can visualize it or comprehend it. It is something that has to be experienced to be understood.

In the second iteration of the concept, the fourth dimension was an element that I was considering. Visualizing it would have made the project conceptually stronger concluding the journey through the dimensions by proposing a visualization of that which is outside of our "comfort zone." To do this, I proposed three ways in which the fourth dimension could be visualized:

1   The impossible structure, inspired by M.C. Escher's work, is a good visualization for something that is impossible in our terms of understanding. The downside of this option was the fixed perspective necessary for the illusion to work. This image, in comparison with the manipulated visualizations of space in previous dimensions, is static showing a rigid structure which is impossible to manipulate further.

read.02 // Flatland // Edwin A. Abbott // 1884

inputs (what is being talked about)
Flatland: A Romance of Many Dimensions is an 1884 satirical novella written as "a square" living in a fictional two-dimensional world who explains the social structure of Victorian culture. However the novella's more long-lasting contribution is its examination of dimensions, as the square "travels" to a uni-dimensional and three-dimensional world. Once the mind of the square is opened to new dimensions the square theorizes about the existence of a forth (and fifth, and sixth ...) spatial dimension and tries to convince his co-inhabitants of the bi-dimensional world that there are other dimension, unfortunately with no success.

output (what is extracted)
The way that the square experiences and explains the spacial dimensions was very clear and offered a lot of insight into the subject. The second relevant thing is his difficulty to explain to his co-inhabitants or the inhabitants of other words the visits about the theoretical existence of other dimensions not known to them enhances the idea that one is unable to perceive things outside of his boundaries of understanding unless he experiences them. The interesting thing is the square is also proof of this, when he visited lower dimensions in his dream he was able to reason with those inhabitants, but when he was visited by the three dimensional sphere he was a non-believer. Finally the mathematical approach to theorizing about the possibility of a fourth and fifth dimensions is accurate, and very clearly explained in the context of the book, making the information accessible to any reader.

commentary
The book heavily influenced my project, offering a new direction in the content of the installation. It offered a lot of insight into the topic and helped me visualize the notions of dimensions, and inspired the story-line approach towards traveling through the various dimensions and the idea of possibly displaying the fourth dimension, in my own attempt to convince, and make the audience experience it.

2 Reversing the time-space axis, a technique also knows as time-slicing, reverses the time-space continuum of a moving image thus compressing the whole timeline to a single frame. This proposed a new way of visualizing time and space, creating a new and unique image that is unnatural and once again, outside of the parameters of common notions of the understandable.

3 The imaginary object: recalls a technique of projection applied in mathematics when discussing dimensions. (This idea I would like to explain in further detail as it also sheds light onto understanding the framework of dimensions and the impossibility of visualizing the fourth dimension.) The projection works as such: if a three dimensional element is placed in a corner it's shadow created from a light perpendicular to the plane it's projecting onto creates rectangles for the vertical planes (0x and 0y) and a circle for the horizontal plane (0z). This shows that when a three dimensional object in visualized on a two dimensional plane, it looses that one characteristic that makes it three dimensional. However, as beings of living in the third dimension, we are able to add the information in order to reconstruct the original object mentally. This was specifically the thought behind the proposal for the imaginary object - a four dimensional object - projecting the shadows of this object onto the different planes of my screens in order to allow the audience to recreate the object mentally. Unfortunately, there is one flaw in the proposal, the above example shows a three dimensional object being re-described in two dimensions, and to apply the same process to the fourth dimensional object, then the projections should be three dimensional.

In the end, I decided to forego visualizing the fourth dimension, firstly, because it is impossible to do so, secondly because more

exp.07 // 4th dimension

initial intention
The intention was to test the possibilities of reversing the time-space continuum in a moving image. The proposal was part of an idea of how to visualize the fourth dimension, and the test was exploring the results of applying the time slicing technique to a video file in order to generate new abstract and impossible imagery to represent the fourth dimension.

inputs
Single channel video

modifiers
Through Processing the time-slicing technique was applied to the video file.

output
Single channel video / image

backend
Cinema 4D and After Effects were used to generate the input videos
Processing was used as a modifier

conclusions
Understanding the way the time-slicing technique was applied to the video in the code was a bit of a difficult process, but I was able to modify the original found code in order to get some of the results that I was looking for. Through this process I have also adapted the input videos to affect the final image in the hopes of creating an object that was unimaginable. The results were good, but somehow they still looked three-dimensional and not abstract enough. The output images and videos were combined with the input videos to emphasize the "building" process of the "fourth dimensional" objects. The next step would be to test the results of applying the same technique to a video that is prepared for a 360 degree screen. This test also shows that the process to create the output image is very painstaking and necessitates very long render times.
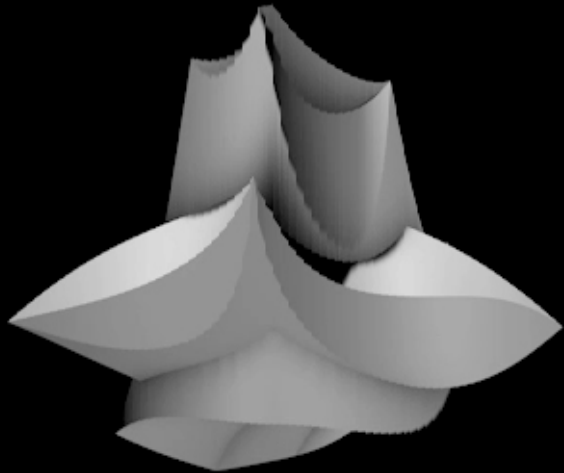
research was needed for a better understanding of the topic and lastly, because there was another direction that I was interested in pursuing (as explained earlier).

concept   The conceptual proposal of this project revolves around the idea of dimensionality, but synthesized to simple geometry: point, line, plane and volume. Each of these elements become drawing elements used to visualize physical spaces. This process of redrawing a space is achieved digitally though software and hardware recalling generative, random and active techniques applied under predefined parameters that limit, determine and alter the way the image is created.

projections   The projected images are generated through a process developed during the experiments. The first step is to record the image and three dimensional data using the XBox Kinect. During the recording of the image, the data is already processed to create new images and additionally, the data is simultaneously saved for later manipulation in other software such as Cinema 4D, After Effects and so on. Processing, an open source programming language, allows me to connect the Kinect to a computer enabling me to display the information, map it to the correct resolution and save the three dimensional data as .obj files. At the same time, I am manipulating the image, being able to move with a virtual camera, and using the data as coordinates for drawing lines and planes. These modifications are saved as an image sequence to be later used for the projections. Thus, the first tier of manipulation is done directly in Processing, and using the data saved as .obj files, I'm also to manipulate the "same image" in afterwards.

exp.02 // spherical mirror projection

initial intention
The initial intention was to see the effects of projecting into a spherical mirror, focusing on how the image is spread to cover a large area (over 180 degrees of view).

inputs
Video file

modifiers
None (other than the spherical mirror)

output
Large sized projection, the spherical mirror reflecting the image into a more than 180 degree projection.

backend
Spherical mirror / silver coated ball

conclusions
The problem with projecting using a spherical mirror is that the light is spread almost too much thus lighting a dark environment. Secondly, the contrast, intensity and visibility of the image is lowered, and projecting graphical videos results in an image that is difficult to distinguish. This is also the reason why the projected image in the test is a photographic moving image. That being said, if the actual camera (in the source material) is moving a lot, the effect of the whole room moving is quite strong. I see this technique being used to create an ambiance in the space, and although seeing the whole room moving is strong, I think a 360 degree synced projection out of multiple projectors could be stronger due to the higher quality of the image.

The images are produced through a generative process. The software works under certain predetermined parameters and guidelines and the act of drawing is done "automatically" by the software. This process has two effects: the chance or glitch of the drawing process and the tension that is created between the generated description and the original space.

possibilities   The possibilities for the content are various. First there is the direct description of the space and the act of modifying that space, moving into the abstract and creating something new by moving the point of view of the camera. Using the saved data, there is the potential of drawing the time difference in one space, or concretizing the negative space between two objects, spaces or anything else that the camera is aimed at. The second tier of manipulation represents the abstract fully, as what is being redrawn is changed no longer only being the space itself.

form   The installation itself takes the form of a 270 degree screen, hanging in space in the gallery. The audiences is brought into the installation space as their peripheral vision is completely filled with the projections, thus beginning the immersion process. When the audience walks into the screen, they are also consciously entering a new space. The boundaries of this space, as created by the projections, will be continuously changing manipulating the space the audience is in.

screen   The screen will be made up of an octagon with two sides missing. Initially I was aiming for a 360 degree screen, but various technical limitations meant that the screen could only by 270 degrees. The missing sides do have some positive effects, namely, making the space more accessible to the audience being more inviting and allowing the possibility to have a complete overview

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exp.06 // 2 and 4 screens

initial intention

Based on the results of the previous test, I wanted to create an image where I place a virtual camera inside the sphere processed through Plexus in order to accommodate for the 360 degree screen that I want to use for the installation. I wanted to have a proof of concept to see what the results of projecting on multiple screen is, how is the visualization affected, and what is the design process for a four screen video file. (the four is as a result of limiting the amount of virtual cameras to four, placed in the center of the sphere, each rotated at 90 degrees from each other).

inputs

Single screen video (generated as a stretched video at 2x1920 by 1080 and 4x1920 by 1080)

modifiers

Stretching the video across the canvas of multiple projectors.

output

Two screen video projection, projected into the corner of a room on walls that were perpendicular to each other.

backend

Software: MSAQTPlayer 1.1 - a software that stretches a video file across multiple screens
Hardware - Two projectors

conclusions

The four screen video file was displayed only on a monitor, but the visualization of the sphere was quite effective, showing promises of being able to actually turn/rotate and modify the whole space at the same time. Additionally, the visualization is filling a 360 degree screen seamlessly.

The two screen video file was tested physically using two projectors displaying the video on two adjacent walls perpendicular to each other. The effect of immersion was clearly evident and very strong once the projection was covering the peripheral vision of the viewer. At that point, as a viewer I was immersed in the video, and felt the space rotate around me.

The "screen" had to steep of an angle with in it (90 degrees) and while in the dark environment this seemed seamless, using a smaller change in the angle of the video will create a more effective imitation of the panorama.

Lastly, to comment on the content itself, while it looks good, the visualization of the Plexus is quite shallow in terms of conceptual effectiveness, but, in this test it was used as a proof of concept. I am looking to apply the same technique to .obj files created with the Kinect or other three dimensional objects. Finally, I think moving with all the cameras simultaneously might also create a very strong effect for the viewer.

of the installation running from outside.

Three projectors will be used to cover the surface, and placed above the installation each projecting on two opposite sides of the octagon. Since it is impossible to project onto a circular surface, and a square would have been to static and with the screens at an unsuitable angle from each other, the octagon was proposed to allow for a more suitable installation space, hinting at the circular panorama, while providing more suitable screens for the projections. The diameter of the octagon should be at least 4.10 meters, giving ample space for the audience to move inside, and enough distance from the screen so that the projections completely fill the peripheral vision.

Two other options were considered, both with full 360 degree screens. The first, an octagon standing on the floor with two corridors allowing for the audience to enter and exit the installation space. The second proposal consisted of a 1.5 meter high octagon screen suspended at a height of 1.4 meters from the floor, where the audience had to duck and pass underneath the screen in order to enter the installation space. Both of these options were passed on for various technical and practical reasons such as available space, available equipment and so on.

black light Placing a black light in the installation space is a planned experiment meant to test if the light enhances or not the white information that is projected on fabric. The black light is typically used in clubs, and white fabrics tend to glow in the dark. This would help enhance the projected light in case the environment is not dark enough. If it proves to work, I am interested in placing it above the installation looking for two outcomes. From outside, it will "illuminate" the enclosed space, giving visual reference

read.03 // Visual Art: From Immersion to Illusion // Oliver Grau // 2003

inputs (what is being talked about)

This book covers the history of immersion and illusion, especially in the context of a 360 degree screen. It starts by discussing the idea of immersion itself, and talking about the various forms, tools and techniques of immersion through history such as the panorama, rotunda, later multi-media and digital virtual reality and so on.

output (what is extracted)

Immersion can be an intellectually stimulating process; however, in the present as in the past, in most cases immersion is mentally absorbing and a process, a change, a passage from one mental state to another. It is characterized by diminishing critical distance to what is shown and increasing emotional involvement in what is happening. This was extracted as a definition what immersion is, and besides the theory behind the idea of immersion and illusion, the techniques are carefully explained, with various examples being given of where they have been applied, how and to what extent and effect.

commentary

This book was key in getting a history of the immersive space and the 360 degree screen in forms that are not based on media as it talked about panoramas and rotundas and their effects. Additionally, to think critically about the state of immersion and how to inflict it through various mind sets and techniques has influenced the thinking process towards the project in thinking of the outcomes and what kind of feeling I want to inflict on the audience.

of single standing space to the audience, and additionally, if in the audience there is someone wearing white fabric it will glow, somehow pulling the audience and the projected image together.

installation The whole installation has the purpose of challenging the audience's perception of space, inviting them into its own space and beginning a process of immersion by filling the audience's peripheral and continuously manipulating the boundaries and shape of the space. The content itself offers a re-description of the world surrounding us, recorded and redrawn thus creating a tension between the abstract and the recognizable, between the software generated image and direct visualization while challenging notions and theories of drawing.

read.04 // Art of Projection // Stan Douglas and Christopher Eamon // 2009

inputs (what is being talked about)
The book is comprised of a series of articles discussing the history of projections, starting with the most basic form of projection - shadows - and going further to the phantasmagoria, multi-screen installations, and avant-garde projects such as Exploding Plastic Inevitable.

output (what is extracted)
The essay Enclosed by images: The EAMESES' Multiscreen Architecture by Beatriz Colomina particularly describes the use of the Eameses' Multiscreen installation/performances and their effects. It starts by describing the show they built in Moscow, then goes into some details about their inspiration and connections that can be made between their work and other disciplines, like architecture, the circus and so on. A strong point is made with their link to, and belief in, architecture, and how both, architecture and (multi)media create space(s), how they are constructed and how spaces and their barriers are interchangeable. The essay concludes with a link back to the notion of attention, sensory overload, the effects of this, the techniques used by them and so on.

commentary
While the whole series of essays were a great introduction to various forms and the history of the projected image, I have found the most common threads between my work and the book in the essay on the Eameses' Multiscreen architecture. In the context that I am proposing a 360 degree screen, the discussion on sensory overload becomes quite relevant, and made me think of ways in which I can overwhelm the audience to the point where they are letting go to become fully immersed in the installation. additionally, the link between projections and architecture and the discussion of both creating spaces becomes very relevant in the context of my project and my interests in general.

read.05 // Point and Line to Plane // Wassily Kandinsky // 1947

inputs (what is being talked about)
In this book Kandinsky analyzes the geometrical elements that make up every painting, with the plane being the surface on which the artists draws. His analysis was objective, rather from the point of view of the effects that these elements and their composition have on the viewer.

output (what is extracted)
The extracted information is the theory that Kandinsky creates around the point, line and plane. The point being neither a geometric point not a mathematical abstraction. The line is an element generated by a point onto which a force is applied, creating various results based on what kind of force is applied. In the chapter about the plane, Kandinsky discusses composition, and the different effects of placing the elements in various positions, combinations and angles.

commentary
This book heavily contributed to how I'm thinking of using the elements that I create and how i display them on the screen. Additionally, the reading allowed me to recall theories about composition that I have studied in the past. On a more specific level, it influenced the way I look at the line, how it is formed and what kind of characteristic the line has based on its placement, inclination, repetition and so on. The main thing is composition, the way of combining elements, in my case the content of each screen and the visualization of each data source and the way they are displayed, the sequence in which they are displayed and the effects of these various combinations.

conclusion   The method through which the audience's perception is challenged is in the visualisations themselves, which represents a quest (unkowingly undertaken) towards a new cinematic languange that I have been developing throughout the course of this projcet and which I am intersted in developing and exploring further in the future. As such, [re]describe becomes a project that triggered a new direction in my artistic practice and interests in image-making: recording, manipulating and modifying images and data in order to design a new (moving) image, projected on a screen that break the boundaries of the rectangular screen of cinema.
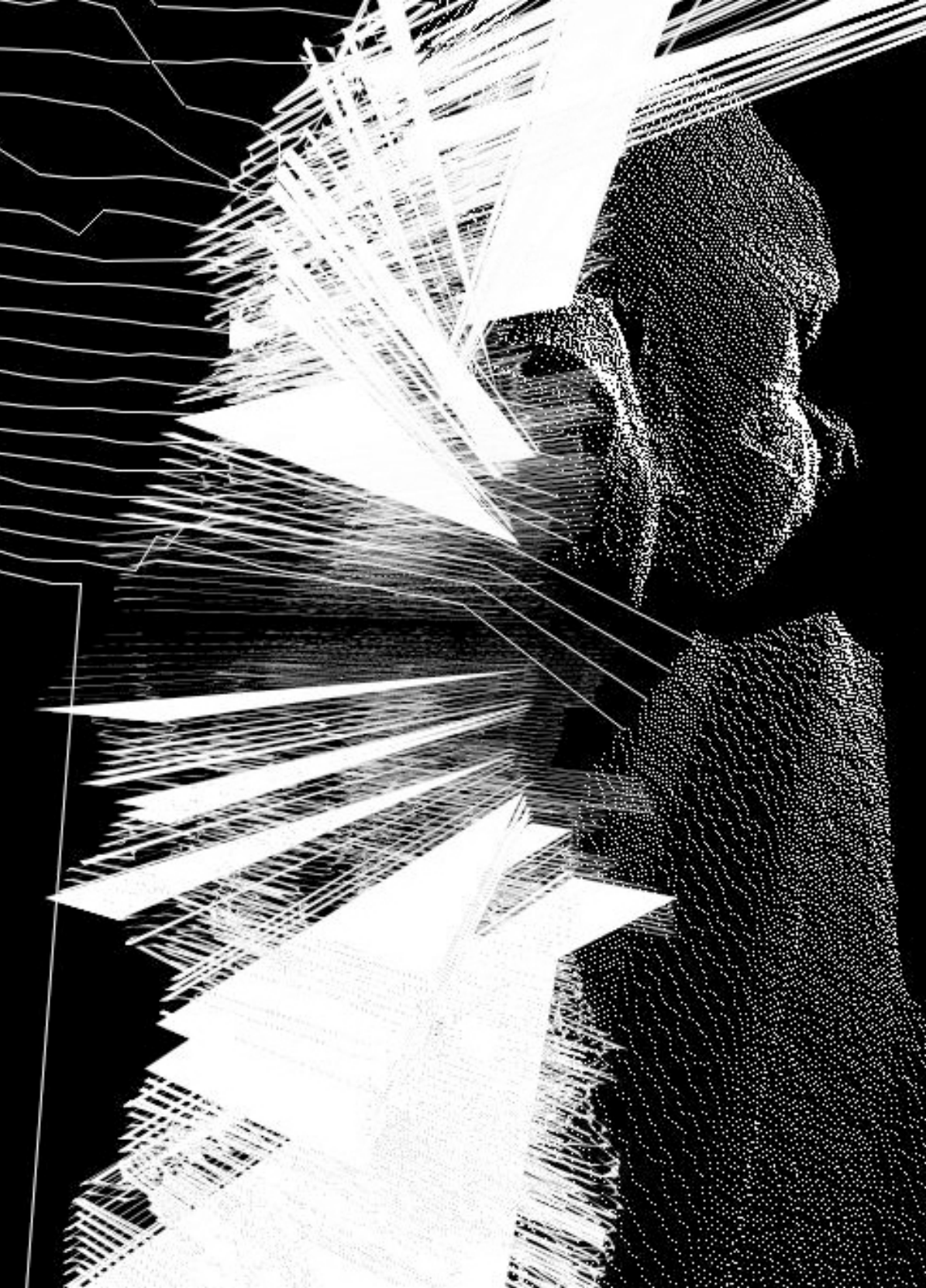
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bibliography   Abbott, Edwin A. Abbott (1885). *Flatland: A Romance of Many Dimensions*. London, UK: Seeley & Co.

Douglas, Stan and Eamon, Christopher (2009). *Art of Projection*. Ostfildern, Germany: Hatje Cantz Publishers. all.

Grau, Oliver (2003). *Visual Art: From Immersion to Illusion*. Massachusetts, US: MIT Press/Leonardo Books.

Kandinsky, Wassily (1947). *Point and Line to Plane*. Michigan, US: Solomon R. Guggenheim.

Morris, Catherine (2006). *9 Evenings Reconsidered: art, theatre, and engineering, 1966*. Massachusetts, US: MIT List Visual Arts Center.