

“Reality as an Illusion”

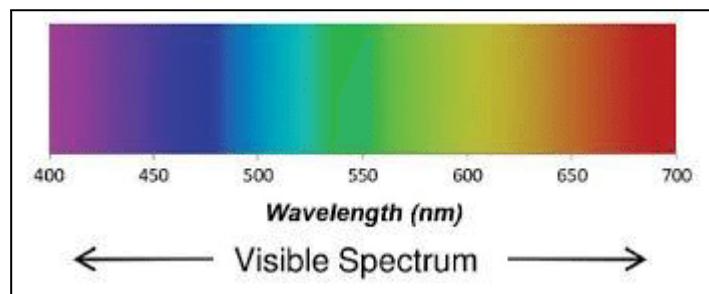
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Introduction

Color perception depends on how an object absorbs and reflects wavelengths. Human beings can only see a small part of the electromagnetic spectrum, from about 400 nm to 700 nm, but it's enough to allow us to see millions of colors. However, there are a lot of times that we take as reality only the things that we can see with our human vision. For example when we look at the Sun we see nothing more than a bright source in the sky. But, there are many ways to observe the Sun despite our own human vision. Little do people know that we perceive the world around us as we see, and forget to observe an object from a different perspective and view.



https://www.researchgate.net/figure/a-Visible-light-spectrum-extends-from-400nm-to-700-nm-Photo-Light-Sensitive-Resistors_fig2_315382763

Statement

Through this assignment, we are planning and designing an exhibition at the Observatory of Leiden University. The exhibition is based on the theory that the majority of the people take as de facto many things that surround us in our world. A typical example of this can be seen in the case of astronomy as mentioned above. For this reason, and in order to examine this, we came to the conclusion that we need an easy to understand approach. And what a better option to combine art and science, using artistic methods to create a scientific approach. Although the purpose of such a work is not to teach, we tend to believe that an installation can be created, that leads to further individual questioning.

Astronomy, as a Science, depends on observations. From ancient times, philosophers observed the world around them trying to find answers regarding the cosmos. In our days, scientists depend on data and on observations, most of them through telescopes. Hence, today, a lot of things we know about space depend on our observations only. Most celestial bodies are simply too far away for us to do experiments any other way. For example, it is

impossible to travel to the Andromeda Galaxy to do tests of any kind. All we can do is observe it.

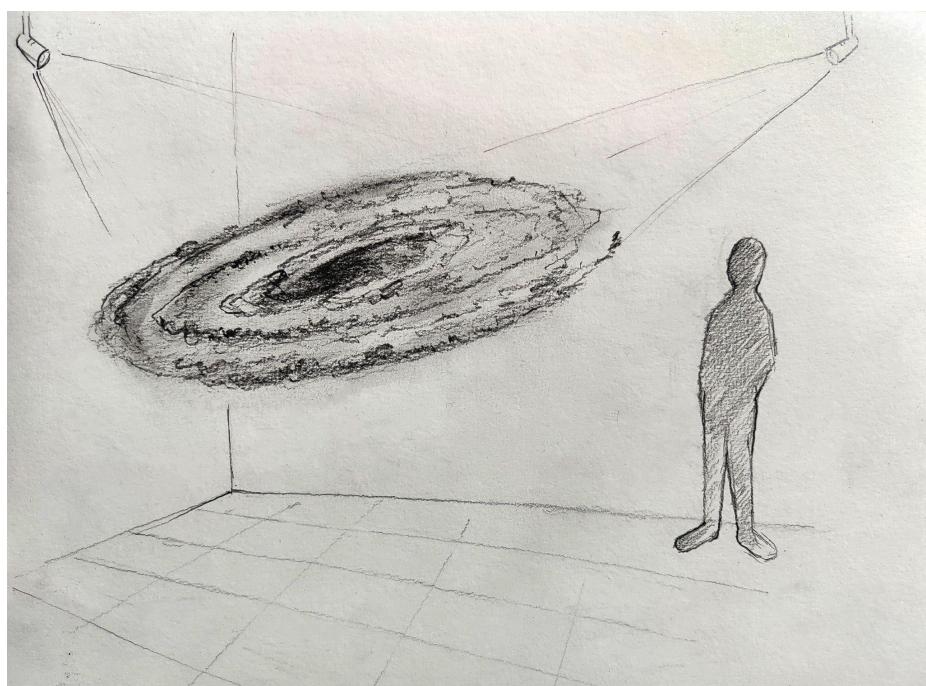
However, things we perceive with our eyes can deceive us. Things are not always what they seem to be. For instance, we now know that when we look at a star, it is possible that it does not even exist anymore, but we are able to see it due to the finite speed of light. The light from the Sun, the closest star to Earth, reaches our planet in 8 minutes. Hence we see the Sun as it was 8 minutes before, we tend to look at the past.

Approach/Methodology/ Main Body of Work

The idea is to create a sculpture in the shape of a galaxy and let the audience experience what it can look like in different colors based on the wavelengths. All of these versions are just as real, but will the audience realize that?

When they hear about science, many people imagine scientific papers, equations and hard to understand things. However, combining sciences and humanities (the science of astronomy and the art of sculpture in our case) gives people the opportunity to explore and to understand meanings that are normally hard to be approached.

For the purpose of the exhibition we chose to recreate in an installation a spiral galaxy, giving the illusion of motion. As for the material, melted plastic bottles or any other transparent material would be ideal. We do believe that a transparent material could be better than a surface that reflects the light. The size of the sculpture can be seen below with a human figure in comparison. Two or more light projectors will help us to complete the installation by changing the colors in the galaxy, creating many versions of our object.



Sketch drawn by Christina

Another idea would be to use filter glasses that allow people to experience the differences in the spectrum in real time. Imagine many people in the room seeing the same object, yet, each and everyone observes something different on it, or sees the galaxy completely different.

For the complete experience, it could be ideal to collaborate with the staff of the observatory, or with students from the department of Astronomy. To be more exact, there is the idea to observe celestial bodies through small telescopes in real time from the Observatory's yard. For instance, if the weather permits it, we could observe the Sun (during daytime), or a star cluster, the moon, a planet like Jupiter (during night) etc.

Despite using light projectors there is also the idea of using hidden LEDs in the sculpture-galaxy itself that could change colors. This idea is based on the fact that galaxies are bright because they contain stars and stellar populations. Stars emit light through the nuclear fusion process that occurs in their core.

The stars that appear in front of the galaxies are stars that exist in our own galaxy, the Milky Way. However, in large galaxies that are near to us we can see star clusters that exist in the other galaxy. An example of this can be seen in our neighbor galaxy, Andromeda. Another example when we can see stars in another galaxy is in the case of a supernova explosion, like the one that was observed on May 19, 2023 in the M101 galaxy.

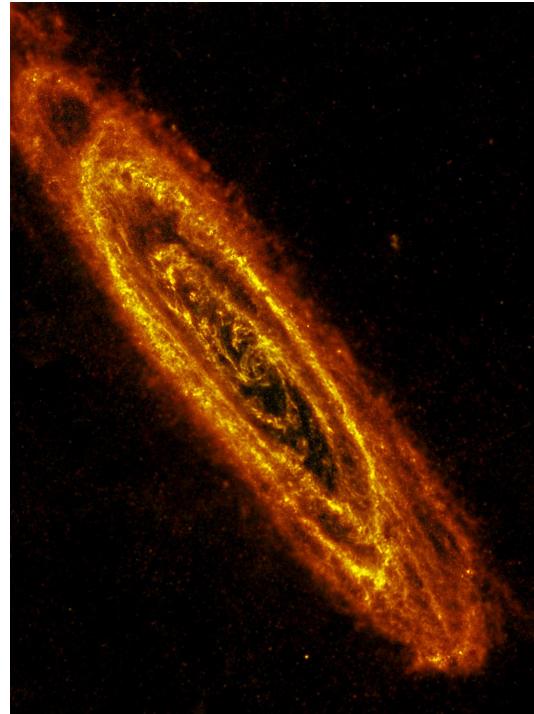


Andromeda and star cluster NGC 206, picture taken by Christina

Within the dusty arms of the Andromeda galaxy lies a large stellar cluster, called NGC 206 (New General Catalog). The bright blue stars of this cluster indicate its youth (less than 10 million years old). This image is the result of 4 hours total integration time through a Newtonian telescope and a CCD camera.



https://www.esa.int/ESA_Multimedia/Images/2011/01/Andromeda_Galaxy_seen_in_visible_light



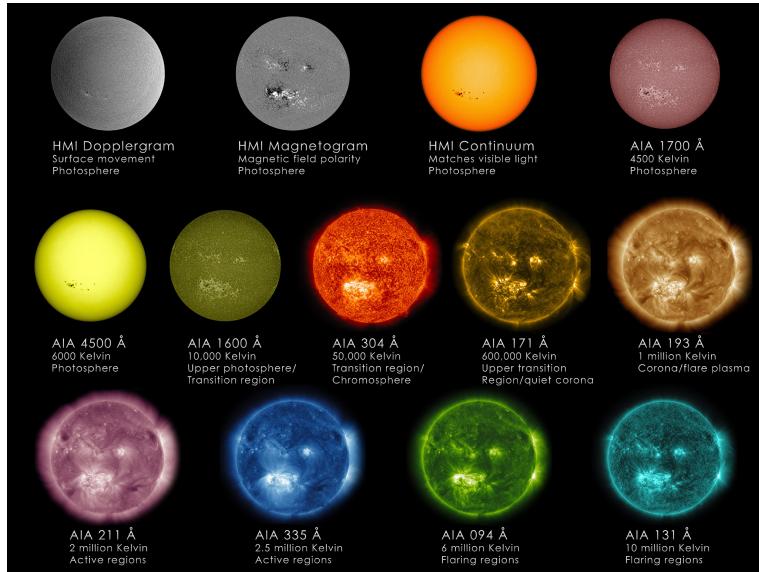
https://www.esa.int/ESA_Multimedia/Images/2011/01/Andromeda_Galaxy_seen_in_infrared

Both of the above versions of the Andromeda galaxy are real, the one on the left is the way we see the galaxy: with human vision. The other one is what it looks like using an infrared telescope.

Philosophical Influence

Looking at **Thomas Kuhn's** paradigm shifts in history, we see that humanity's ideas of the cosmos have changed a lot. People once thought that the Andromeda galaxy was a nebula because they were seeing a faint object in the night sky. However, technology (telescopes) helped us realize that it is not a nebula but a galaxy, a completely different object. As technology evolved, new infrared telescopes were built which gave us the opportunity to discover that there are other 'versions' of reality. The way that humans see an image is also real, because the human vision is part of nature. However, the image through an infrared telescope is also real, just from a different point of view.

We can take as an example the following collage of the Sun:



https://www.nasa.gov/mission_pages/sunearth/news/light-wavelengths.html

These different pictures of the Sun are all just as real as the one we can see when we look up to the sky.

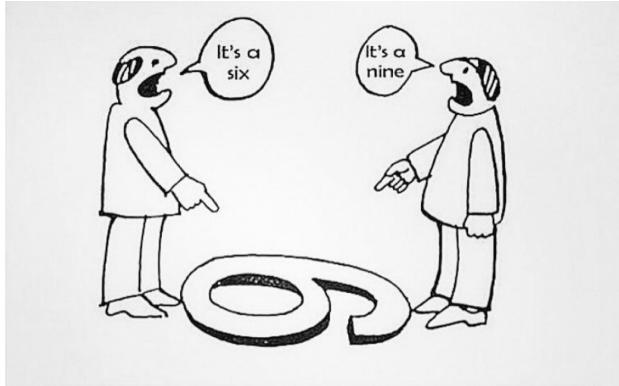
This fits **Immanuel Kant's** ideas of reality. Immanuel Kant states that there is a world of phenomena and a world of noumena. The world as we perceive it is the world of phenomena, but this is not how things really are in itself. How things are in itself, independent of how we perceive it, is the world of noumena. We see the reality, but our senses distort what the reality really is. This is also happening when we look at space. Even if we were able to perceive the celestial bodies using senses other than observation, we would still only be able to perceive the world of phenomena.

In our project, the plastic, physical object that does not change, represents the world of noumena: the thing in itself. The things we project on it using the projector or glasses are part of the world of phenomena: the reality based on how we perceive it as humans.

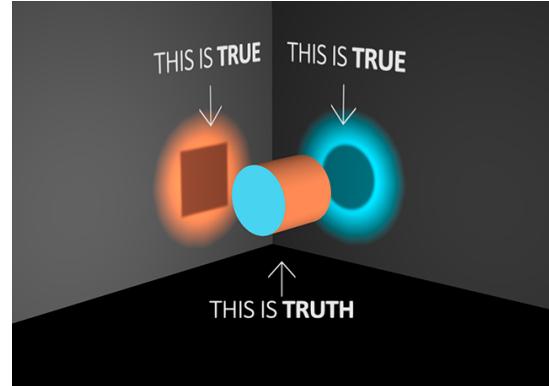
According to **Friedrich Nietzsche** every human being sees reality in a different way, based on their perspective. Our truth is so colored by our perspective, that sometimes humans see different realities when they are looking at the same thing. Will your background or your culture change the way you look at a galaxy? People see the constellations differently depending on the hemisphere they live in (North or South). For example, in Australia the Orion constellation can be seen upside down. However, for Australians it is not upside down, but normal. A similar phenomenon is in time zones. For some places right now it is daytime and for others it is night.

Thinking like objectivists, we are saying that we do not see the 'real' reality in itself, but we are implying that there is one and we see distorted versions of it. If only we were able to reach an Archimedean point where we could see the objective truth, maybe we could see the true reality: independent of our perspectives and our senses. What would the Andromeda galaxy look like in that case? Unfortunately, we cannot do such a thing for our exhibition. We can, however, make the audience aware of the multiple realities and the

difference between the noumena and phenomena. Furthermore, we can let the audience think about how our perspectives color our reality.



<https://medium.com/@connect2vg/the-rise-of-perspectivism-fed4e0935338>



https://www.viral3d.com/V3D/this_is_truth/v1/

Expectations/Conclusion

When the audience is visiting our exhibition, we ask them which version of our galaxy the real galaxy is. We expect visitors to feel like the human-vision-version of the galaxy projection looks more familiar to them, leading them to think that is the 'real' one. We hope they will learn that, the fact that there are multiple realities of a thing, that doesn't make one reality less valid. All realities of the thing are real. The reality you are seeing just depends on your perspective and on what kind of senses you have. The concept might be difficult to grasp but we expect that our installation will make it easier to understand, especially since it is a physical object.

Division of tasks

We mostly worked on the assignment at the same time in Google Docs, over video calls. Christina wrote most of the space-related things, Annelies wrote most of the philosophy-related things and together we formed the ideas, the approach and the conclusion.

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Planitarium of Thessaloniki