HOW TO GROW A HUMAN as part of the ecosystem

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INTRO

Is it possible to raise awareness of human dependence on natural resources on the Marineterrein as a urban location very central placed in the city of Amsterdam?

In my research I would like to give more importance to the soil of the Marineterrein, since the soil provides fertility to flowers and carries a great part of ecosystem human rely on.

Yet, how many of us do really care about the soil, how many of us are really aware of rejuvenating soil health since 74% of Dutch habitants live in cities?¹



Image 1.from a pdf "De Groeikaart van Amsterdam1 " Depicting Amsterdam in year 1625 with a starting Marine

Walking though the Marineterrein with the focus on ecology, most of the time I feel being confronted with an artificial impression. No wonder, since it's an artificial island over 400-year-old² (see Image 1). Maybe that's the reason why from the ecological perspective it feels very alienating.

Because of this alienation I will learn more about the ecology of among others the Netherlands though Babette's Porcelijn explanation in her book De Verborgen Impact³.

"There are 4 parts of the ecosystem with a natural limit: -fertile land for growing food, and plant resources. -sweet water -minerals -energy resources" stated by Babette Porcelijn



Looking at these Earth's natural limits the first two are about feeding human and so its existence.

For my research I want to focus mainly on the first limit to provide human existence, whereas the second two provide quality. I find it important that people in cities are living in healthy environments. Because of this I want to find out in my research what the health of the soil is at Marineterrein.

I wasn't told at any of my previous education about the ecological state of the 21st century and since the rapidly changing environment it naturally raises my curiosity.



Image 2.De Verborgen Impact and it's research on the average footprint of a Dutch citizen.

⁴Porcelijn, Babette. (2020). "De Verborgen Impact." Volt Amsterdam. p.141 "A Dutch citizen would need already 3,6 Earths to fulfill human demands." (Porcelijn, 2020)⁴

These numbers taken from De Verborgen Impact⁴ by Babette Porcelijn really inspired my research. The book summarizes facts about human activity in a very accessible way, presenting complex information in easily digestible graphs that give a clear understanding of our behavior (see Image 2). Is there any way out? Can we bring a difference? I'm afraid not, but with hope and positive mindset perhaps yes.

Next I will look through the knowledged glasses and look critically on the Marineterrein, the collected soil samples I will send to the lab for research finding out the detailed composition of the soil. Next I will seek people that contribute to soil rejuvenating on the Marineterrein to conduct interviews with them.

I believe that through taking steps towards improving the Marineterrein natural environment, the place itself might become more sustainable and provide future life.

INTO THE SOIL

Me and my classmate Ariana did a small research on the way the businesses operate on the location of our research in Marineterrein, Amsterdam. The location hosts a community of approximately 50 startups⁵, of which approximately five are oriented towards sustainable solutions.



Image 3. Project Smart Roof 2.0 on the Marineterrein

To give a small impression, those initiatives had been busy on projects such as having green roofs on the buildings providing diversity⁶ (see Image 3) or making the artificial plastic grass of football fields in a more sustainable way⁶ (see Image 4).

⁵ Marineterrein website (2020) "Projects" [online] Avaliable: https://www.marineterrein.nl/project/

⁶ Joris Voeten, Glen Bosman, et al. (2018) "Project Smart Roof 2.0" [online] Avaliable: https://www.marineterrein. nl/project/smart-roof-2-0/



Image 4. Artifical grass start-up.

When I was walking on the Marineterrein those projects triggered in me my curiosity and seeing the huge difference between the healthy grass and... the just dry mud.

Based on the interviews conducted by my classmates Chen and Georgina, Marineterrein is considered by most visitors as a green retreat, which is reasonable since it is one of the greener areas compared to its direct surrounding.⁷ Despite its green imago, Marineterrein, as I found out, has in fact almost no fertile soil⁸.

"Soil fertility refers to the ability of soil to sustain agricultural plant growth, i.e. to provide plant habitat and result in sustained and consistent yields of high quality."⁸

⁷ Gemeente Amsterdam, (2017) "Tussenrapportage voor de stad" [online] Avaliable: https://nieuwemeer.info/gab/ pdf/00102017_tussenrapportage_ruimte_voor_de_stad_presentatie.pdf

⁸ Wikipedia (2021) "Fertile Soil" [online] Avaliable: https://en.wikipedia.org/wiki/Soil_fertility

On a field research we collected five soil samples around the area (see Image 5) and sent them to a farming association called Boerenbond in Oud-Alblas for Ph testing.

According the laboratory from Boerenbond all of the samples pointed at an acidic Ph value of around 5,5 and had very low nutritional degree. Our advice to that was putting more chalk



Image 5. Map of locations of taken soil samples

in the soil to neutralize the Ph. This is one of the aspect of providing better climate for the plants.

In addition to research on the soil, we (me with Ariana-colleague/ classmate) also collected samples of 12 plants that grow in the area of the Marineterrain (see Image 6).



Image 6. Soil sample collection on Marineterrain

Studying the different plant species that grow wildly on the area can tell a lot about the soil's health.

On our research we found out though a plant-identifier⁹ and Wikipedia¹⁰ that all of the most prevalent plants in Marineterrein, were plants that can survive in dry and relatively infertile soil conditions.¹⁰

Turns out the visitor's enthusiasm for greenery is only due the contrast compared to the surrounding city, but the soil at the location cannot carry more then common weeds.

In need of getting connected with the caring spirit for nature on the location, we conducted an interview with a local who has a small garden two minutes walk from the terrain.

Suzanne, a vigorous woman originally coming from the Amazonia shared our assumption that many people in cities don't know how the ecology works, behave in manners that are environmentally unfriendly, and are not aware of the complexity and behavior of the ecosystem.

By smelling the compost soil (see Image 7), she could tell us that the compost provided by the municipality of Amsterdam is bad and not nutritious for the plants. What makes matters even worse, the soil contained pieces of plastic and glass as we (me and Ari) witnessed ourselves.

⁹ Pl@ntNet(2014-2021) "plant indenfitying tool" [online] Avaliable: https://identify.plantnet.org/ ¹⁰ Wikipedia (2021) "various sources" [online] Avaliable: https://en.wikipedia.org/

Concluding from the interview, it seems that cities are not considerate enough about the environment and that they also don't educate their inhabitants of ecological ways of living. As a demonstration of this, another gardener present at the location was surprised to learn how bad the compost soil actually is.



Image 7. Soil by the gardrens

Going back to the actual Marineterrain, having the lack of permanent gardeners, me with Ariana were looking for composts. Our second interview was with a chef, Jerry. Jerry showed us a worm tower (see image 8), where he contributes with bio waste from the kitchen he runs at Pension Homeland.



Image 8.Worm tower on the Marineterrein

Jerry is acknowledged with composting from his own practices since he runs composts at other restaurants as well. He considered the compost at Marineterrein as being too small and would need to be three times as big to be able to provide enough space for the green waste he has from the cooking at the hotel.

Besides the compost size, maintenance is required to have a successful composting, and Jerry has no time for that, mentioning that work would need gardeners.



Image 9. An image from the book "The Formation of Vegetable Mould Through the Action of Worms"

Working with composts is not a common knowledge, albeit they form the essential basis for understanding how the ecosystem works. Already in 1881, Charles Darwin acknowledged the importance of worms in his book The Formation of Vegetable Mould Through the Action of Worms¹¹ (see image 9).

¹¹ Darwin, Charles. The Formation of Vegetable Mould Through the Action of Worms. 1881. Benediction Classics: Oxford, England. Rainworms, despite their modest appearance, are one of the most graceful animals providing life on the planet by generating fertile soil. They are also plants' best friend, providing them the right nutrients by transforming organic waste into a digestible form for the plants (see image 10) also called worm castings. Where worms thrive, there do plants, bees, birds and other living organisms as well.



Image 10. Worm composting process.

The disgust of human by excrement is logical since the matter is depleted from nutrients useful to the human body. Nevertheless, it can be food for the worms and microorganisms. Wim Delvoye is a Belgian artist that made an art piece Cloaca Original (see image 11 and 12) in 2000 and was exhibited in Düsseldorf which is a poop making machine.¹¹

Art piece Cloaca is a machine turning food into poop, according Wim Delvoye the art piece Cloaca is often being recognized by the viewers as an art piece for poop itself, but he sees his art piece very differently, mainly in the sense that Cloaca refers also to the Industrial age of mechanistic production.¹²

This piece becomes a metaphor to human post-Fordism¹³ where people turn into machines directed by a system loosing their own feeling. And since machines don't have much feelings, those people also loose empathy and feelings towards their natural environment.



Image 11. "Cloaca Original" by Wim Delvoye.

¹² Wim Delvoye (2000) "Cloaca" [Online] Avaliable: https://wimdelvoye.be/work/cloaca/cloaca-original-1/

¹³ Wikipedia (2021) "Post-Fordism" [Online] Avaliable: https://en.wikipedia.org/wiki/Post-Fordism



Image 12. "Cloaca Original" by Wim Delvoye.

Since we already live in such post-Fordic environment, perhaps we can awaken our own nature, and tell ourselves as designers the importance of the certain balance, and perhaps teach machines being more empathetic.

Cloaca is in a certain way also a composts that partially transforms food for human into food for plants. Perhaps this art piece could solve Jerry the chef his obstacles with composting on the Marineterrein.



Image 13.Human Power Plant sketch by Melle Smets

Melle Smets is a researcher, visual artist based in Rotterdam who is in his work interested in social intervention. Human Power plant¹⁴ is a project that started as a plan to create all electricity for a student housing in Utrecht with just human energy, to show how much physical energy is really needed for that production. It turned out the art piece showing this relation would have become too big to demonstrate in full size and became a example of the possible Human Power Plant.

"The Human Power Plant is a multi-disciplinary research project into the possibilities of human energy production in a modern society. How

¹⁴ Melle Smets (2017) "Human Power Plant" [Online} Avaliable: http://www.mellesmets.nl/Human-Power-Plant

would the world look like if all energy would be supplied by humans? Could we maintain a modern lifestyle with human power alone?"¹⁴



Image 14. Human Power Plant exhibition at Museum Boijmans in Rotterdam

Those machines run water pumps for showers generators running just a light bulb, air pumps fizzing water, turbines streaming water in the right direction.

All this carousel raising a question weather we could live a modern lifestyle with solely human power.

Related to the Marineterrein I find Melle Smets Human Power Plant interesting because he shows an example of a bigger idea that is behind the project, since it's impossible to fix the question entirely.

CONCLUSION

One cannot fully blame people on their behavior towards ecology, since we have grown up in a certain culture that has sometimes unsustainable attitudes towards the environment. At the same time, one also cannot be surprised of the environmental changes going on.

Start-up's on Marineterrain make small steps towards designing projects helping ecological sustainability, though the fact remains that the ecosystem on the location doesn't allow to grow plants of many varieties. Surprisingly this weed is soothing the visitors mind and fulfilling the urge for experiencing nature, albeit the visitors still would take the shortcuts though the grass.

Many visitors of the Marineterrein appreciate the green on the location, though don't have respect for the grass and with their uncanniness the grass gets stumbled into dry soil that in addition doesn't have the nutritional values for growth eliminates growth of more complex plants, that could provide richness to those flowers to bloom.

We already live in a modern society which is constantly innovating, albeit in most cases the innovations go on the cost of the environment. Post-Fordist society leads people being more reliant on technology but also dependent, and with its dependence loosing track with the ecosystem loosing understanding we need to keep balance.

The more we live in cities, the further we are away from understanding ecology, and becoming perhaps even unconsciously harmful to our environment.

Ecology is a complex system, that is not always possible to solve by a small intervention, therefor I cannot expect it from the visitors of the Marineterrein being thoughtful to the ecology of the location, though projects similar to Human Power Plant by Melle Smets could at least point at the matter raising awareness or maybe humbleness to the ecology of the local environment.

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FOOTNOTES

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