

“What If One Day”

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By Defaced Hirst, 2013-2014

“Inciting mobile youth to sustainable consumption habits through an immersive VR experience”

Katerina Valachova, Class of 2022

Keywords

VR; Sustainability; Gen-Z; Immersive Experience; Sustainable consumption habits

Abstract

The current era has brought upon big changes in consumerist behavior. Driven more by desire than actual needs,

we consume at a faster rate than ever before. But at what price? The cost of our copious lifestyles is much higher than what meets the eye.

This project aims to inspire a group of people who both inherited this issue from previous generations and have capacity to change the future through a sustainable lifestyle of their own, educating the next generations as well as creating demands on vendors through harnessing their purchase power. Inspired by personal experience and desire for change, I aim to use the unique immersive persuasive features of VR to remind young mobile youth living in big cities, such as myself, of the responsibility we have and the better future we owe ourselves and our children.

The ultimate goal of this project is to remind people of a problem and make them take the first step towards a change, effectively taking control over their own future.

Introduction

Living in the era of consumerism, it has become easier than ever to cheaply buy products only to discard them moments later. Because we live on one planet, in one big well-connected ecosystem, the impact

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is not just on nature or the unlucky subgroups, but everyone, everywhere, both now and in the future. As we can clearly see from the increasingly frequent news, our prodigal and myopic lifestyle now is damaging this ecosystem by causing issues from global warming and pollution. In the long-run, our comfortable lifestyle is not sustainable. In order to take responsibility for our own actions which we have to realize do not end with us depositing our trash in the trash bin, we have to address our consumption habits at their origin and make as many changes as possible.

While many of the underlying reasons for this consumerism behavior are caused by the present-day consumption phenomena, such as besides the often discussed fast fashion apparel, fads (viral items that are considered a must-have in one season and in the next they have already become a thing of the past), or products that are designed for a minimal amount of uses, there are also emerging factors including the constantly increasing demands on people's mobility. Through both personal experience and many lengthy oftentimes heated discussions with people around me, I also learned as how increasingly many more activities, namely education, work, or simply the desire for

new experiences require people to often bounce between places, these groups of mobile people repurchase items ranging from personal belongings to new equipment and furniture. They move to one location purchasing new products upon move-in and discard them upon move-out. While moving, they in many instances leave behind items that have yet to reach the end of their useful life (these are either stored or discarded and less commonly passed on).

The point of relocation suggests itself as the perfect moment to address the consumption choices the mobile population makes, as the moment one buys new products, they can decide or help affect both "backward" and "forward" environmental aspects/components in the lifecycle of the product (Figure 1).

As the total environmental impact of products is the sum of both the inputs and outputs of each product's lifecycle (accounting for range of impacts like the exhaustion of resources, alteration of ecosystem balance, waste accumulation or toxicity)¹, the point of purchase is the perfect opportunity for the buyer to influence both

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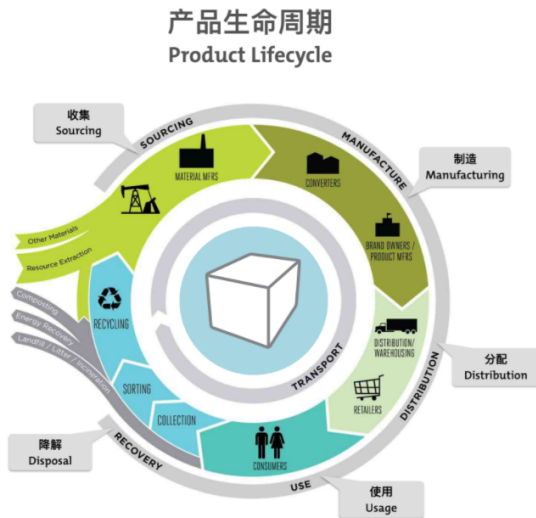


Figure 1: Product Life Cycle (by Gabriele Tempesta)

at the same time. By affecting the forward" component, meaning what the product's outputs will be over its useful life until the point of its disposal, one can make more educated choices on where and what products to buy, keeping in mind the possible "afterlife" of the product once it leaves the customer's hands (e.g. can it be repurposed, up/re/downcycled, or will it simply be trashed?). By doing so, they can effectively influence their personal environmental impact down the road. In regards to the "backward" component, the customer's buying power combined with conscious and well informed purchase habits can help influence the manufacturers'

decision on what materials to use and what products to make out of them.

Motivation

SPROUTING FROM MY BACKGROUND

Growing up in a small village in what one could call a very "nature-friendly" environment has from an early age shaped my understanding on what it means to live in accordance with nature. Most things we grew by ourselves, whatever food was left would be given to animals to finish or composted only to be used in our garden again as a fertilizer. My parents also very rigorously repurposed or recycled whatever they could. From primary school - where my mom took me dumpster diving for the first time just to teach me how important the recycling of materials is - all the way to high school when me and my friend discovered the zero-waste movement, I have always been thinking why do people consume things so recklessly. In the last two years of high school, my friend and I deep-dived into experiments on how to eliminate one-use-only products from our lives, starting with some basic basic steps such as always bringing our own keep-cups for coffee, own bags reusable when going to

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the market or grocery store, and cooking by ourselves. We also tried to minimize spontaneous purchases and plan out our every trip to the store. This soon proved not to be enough, as we were literally swamped with plastic from ingredients and products which we continued to buy, albeit being carried back home in a nice cotton tote bag. Once we started to pay attention to how many products we truly consume that are wrapped in plastic, we were shocked. But how does one buy lentils if there is only a pre-packed option available in the store? How does one buy such basic products like shampoo, conditioner, and a toothbrush without inevitably sentencing them to becoming trash a few months later?

The answer to this, as I learned, lies in the deeply set habits and thinking patterns we follow. In order to look for a solution and change, I had to step out of my comfort zone and continuously push myself to think out of the box. It is not that I have no option but to buy lentils in plastic wrap, I just have to switch the store where I shop. Maybe I don't need bottled shampoo in the first place and there are toothbrushes made out of materials other than plastic. Of course, there is not always a ready-made solution. But you get my point, one just has to open their eyes wide and think.

CULTURAL SHOCK IN SHANGHAI

My zero-waste life has changed drastically after I came to Shanghai in 2018. The sheer amount of waste that is forced onto us every day whether we want it or not has become a constant source of frustration. Be it the packages ordered online, overwrapped in cardboard with layers of tape for good measure, the take-out food that is prettily but heavily packed in a complex constellation of boxes, and even shopping assistants eagerly bagging every single piece of fruit and vegetables in its own plastic bag all pose a constant stream of trash. And despite China undergoing a huge trash policies makeover in those four years I spent here, the truth stays that most of what is thrown out does not get recycled and gets directly incinerated².

Problem Definition

Talking to people, it is frustrating to see how little awareness there is about the trash we produce, what happens to it and what implications it has not only on us, the environment but also on our future prospects. People rarely seem fully aware of the impact their consumption habits have on the rest of the world and going through

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the motions of trash sorting resembles a sort of ritual, relieving them of any further responsibility towards it. As if by tossing the item away, they have fulfilled their citizen duty, trusting the government to deal with the rest. The problem is the extent to which people are unaware of how little of the sorted out trash truly ends up being recycled while the rest finds its way through numerous means back to its owner, be it by for example the presence of microplastics in food, or water polluted with hormones and heavy metals.

Despite the common belief, recycling is not a solution to the pollution problem.

To this day, countries all around the world have different trash sorting policies. Most of all the trash we believe is sorted out ends up at landfills, gets incinerated, or is sent to less economically developed countries as scraps have yet to find decent economic value. It has been just 3 years since China stopped importing waste from the rest of the world, stating the expenses the government spends on healthcare for trash sorters have been deemed much larger than the value of the recycled materials³.

Furthermore, raw materials are comparatively cheap to the recycled ones. This creates a vicious circle, as it is precisely the cheap materials that enable mass production, where mass production equals mass extraction, mass pollution, mass exploitation, and finally mass dumping as well¹. Meanwhile, despite enormous amounts of money being poured into trash sorting research and solutions, the world has yet to figure out how to make trash sorting into a profitable business. Unfortunately, without persuasive profits, it is also much harder to persuade companies to join on their own volition the "sustainability ship" and redesign their products to be more environmentally friendly in a way that accounts for both the above mentioned life cycle inputs and outputs.

This is where consumers come to play. It is important to show individuals that global environmental issues are not just "other people's problems" and if we want to live in a more sustainable world, we should not underestimate the power we hold as buyers. Individuals' actions do have the power to inspire and motivate others while driving the customer demand *will* affect the consumption ecosystem that includes the producers and people around

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us (such as those who do not or cannot afford to rethink and change their consumption habits, e.g. the poor). The aim of this project thus is the change of behavior of individuals who can in exchange affect the society around them (for illustration see Figure 2).



Figure 2: The levels of environmental impact - design for behavior change - by Gabriele Tempesta

Research and Prior Art

The research based on topic-related studies shows that as the Chinese economy is growing rapidly, causing over-consumption and in consequence the

environmental issues such worsening of climate breakdown or increased air pollution tied with it⁴, the public interests in sustainability have increased as well. China's attitude towards sustainability also seems positive. However, environmental problems haven't attracted enough attention from the Chinese consumers, especially Generation Z Consumers⁵ and the consumers' behavioral intentions are not consistent with their attitudes⁶. This gap between the consumers' intentions and actions is called the intention-behavior gap and correctly understanding the underlying factors of this gap can very well be considered the key to understanding the implications on the approach and motivating the consumers to overcome their behavior inhibitors.

In order to better understand the intention-behavior gap of my target audience that already has a positive attitude towards sustainable consumption, but for whatever reason is not living according to these personal values, I have formulated the next research question that further informs the trajectory of my project.

Question: *What are the barriers and drivers of the intention-behavior gap?*

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Target Audience

This project is and should be for everyone, but narrowed down, I particularly concentrate on young people with mobile lifestyles, since young people represent the future of the consumers' buying power and their wishes can thus affect the manufacturers' decisions, addressing the issue at its core; and they can also educate the generations that are to come.

Prototype Development

INTERVIEW

Drived by the discovery of the possible intention-behavior gap through the prior research, an interview was drafted with the aim to further support the hypothesis of existence of the intention-behavior gap in sustainable consumption and aim to uncover some of the potential drivers. 10 respondents from the target audience living across the NYU network were asked about their shopping habits and preferences, relationship with sustainability and their opinion on its importance to both themselves and the people around them (see Appendix for the full set of questions). All of the respondents felt that sustainable practices are crucial for

the well-being and future of our planet, but at the same time, admitted to their daily practices not aligning with their ideal sustainable lifestyle. When asked about what are the reasons that render them unable to practice more sustainable routines, the respondents offered a variety of personal reasons. Among being “simply lazy” or facing financial challenges due to the status of a student (and in extension the financial dependence on their family members) that ultimately affects one's purchase decisions, one of the bigger barriers turned out to be the social aspect. Some respondents felt uncomfortable sharing their views on sustainable consumption with the people around them, as they felt sustainability has a bad name and is attributed to eccentric people. Others felt they cannot very well live a better sustainable life at present as their environment does not allow for it (the people they depend on it with are currently not with them, e.g. mom who cooks every day). At the same time, all of the respondents expressed their wish to improve their lifestyle sometime later in their life.

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1ST VR PROTOTYPE

As the targeted audience group faces various challenges in terms of motivation to lead a more sustainable lifestyle, I decided to design the next prototype in a way that should help the target audience address and reorganize their priorities, making the environmental problem more pressing. At the same time, incorporate a platform for social interaction to help respondents confront their social discomfort.

Additional prior art review in search of a suitable prototype medium showed that according to the findings of Sun Joo Ahn made in Stanford's Virtual Human Interaction Lab, “virtual reality can change how people behave.”⁷ As it has the ability to deliver a very persuasive embodied experience (Ahn used a combination of VR with haptic feeling of cutting down trees with an electric saw to educate people on the cost of using brand new white toilet paper), it has the power (contrary to other traditional media like videos or written text) to make people actually change their habits in a matter of minutes, explains Ahn. This potentially makes VR the perfect medium for dealing with the behavior-intention gap problem.



From Sun Joo Ahn's VR tree-cutting experience

The goal of the second prototype was to create a simple immersive experience that makes people 1) see and first-hand experience what trash does to the sea ecosystem; 2) force the spectator to contribute to this problem by for example throwing more plastic into the ocean. The general concept was to connect the VR experience with a simple physical installation that could relay additional sensory stimuli (dried-out soil, dead plants, piles of plastic, etc.) the VR is lacking. Following the example of Ahn's cutting trees with a saw in order to produce toilet paper, I was hoping to make this

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experience so uncomfortable and personal that it would be hard to forget.

I first listed out the potential ideas, such as the impact of plastic waste in the ocean on marine life, or the melting glaciers (where the audience in VR has to hold a torch and help it to melt faster), and finally settled on the ocean pollution. I cut a short video on the impact of water pollution by National Geographic⁸ to create negative emotions in the audience and placed it in a VR headset.



Photo of 1st VR prototype experience

The audience was then given a plastic bottle and was asked to toss it in the direction of the ocean, followed by a splash sound. The user testers were then asked to describe their feelings and thoughts.

The conducted research together with the two initial prototypes provided the following key insights, which lay ground for my final project idea.

KEY INSIGHTS

1. Respondents selected from my target audience are in general well aware of the consumerism problem;
2. These respondents have good feelings towards sustainability and sustainable consumption;
3. Despite this, respondents oftentimes indicated they are afraid to talk about sustainability with others due to its bad connotation;
4. Respondents feel a sense of guilt and generally agree they should be taking more proactive steps towards sustainable consumption;
5. Most respondents blamed their current financial/ living situation as the reason why they do not feel comfortable leading a more sustainable lifestyle;



6. Respondents tend to look for excuses in the form of outside factors for why they are not doing what they think is right (these factors can be split in 2 kinds: social - e.g. "other people won't let me", "I need my mom to cook for me"; and economic - "I am a student and cannot afford...");
7. Young people who move often tend to purchase products that are of low quality and price;
8. It is common for them to buy products knowing they will throw them out half a year later;
9. VR is a powerful technology capable of changing people's behavior.
10. Immersive VR experience proved to be a useful tool when instigating a feeling of repulsion towards actions we deem as bad (e.g. cutting down more trees to have a brand-new white toilet paper)

Project Introduction

The results of the abovementioned survey on young people's consumption habits showed that the respondents generally saw themselves as price sensitive and ready to buy products that can be discarded after a short period of time that

would generally correspond with the duration of their stay in a given location. At the same time, all of the respondents viewed sustainability as something absolutely necessary for a better future, but due to various personal reasons, such as lack of time or convenience, they stated their lifestyle is not very sustainable. Majority of the respondents also shared their hope to change this aspect of their lifestyle in the future, when they have their own income.

These results lead me to the hypothesis the problem does not lie in people's ignorance towards the global sustainability issues, but rather in being sheltered from seeing the direct impact the products we buy have. Given our busy lives, it is easy to be unaware of the full lifecycle every object around us goes through. And if we become more aware of the pressing situation our consumption causes, we are likely to reevaluate our priorities and incorporate more sustainable practices in our everyday life.

Understanding the current environmental issues and people's behavior, it seems imperative that adopting more sustainable practices in our life is a vital key to even having a chance of a livable environment in the foreseeable future.

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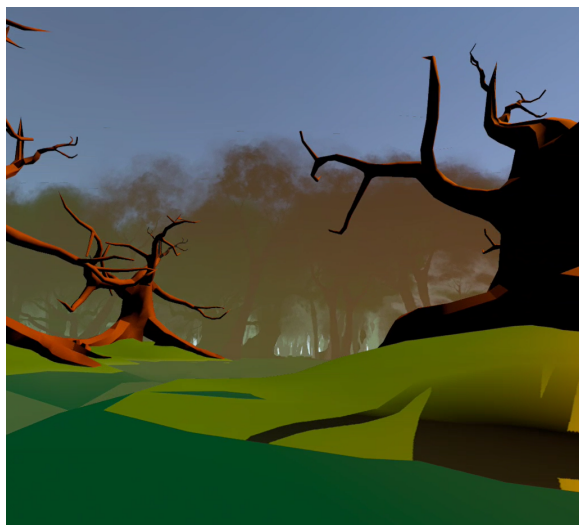
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With this in mind, I designed “What if One Day”, an interactive VR experience that brings through an immersive post-apocalyptic narrative attention to the importance of mindful consumption by portraying the scenario of what happens if we do not adapt our lifestyles.

The narrative takes place somewhere in the future, where the reckless consumption and unsustainable lifestyle of mankind has caused irreversible damage to the planet, which in turn became a wasteland. It describes a story of somebody, who uses self-aware AI simulation to travel to the past, where nature was still existent and was unaffected by human touch.



1st VR scene in the forest

The spectator chooses to visit the AI again right before the remaining people are to leave the destroyed planet Earth for good. As he is led around a beautiful forest full of life, suddenly, simulation shatters, as if a dream was breaking, and the spectator wakes up in the real world.

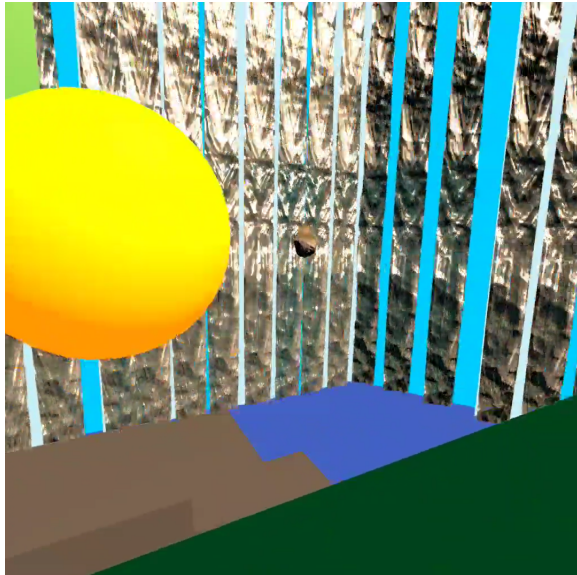
The spectator then learns the AI is seen by the others as defective for situating itself into the role of a “mother” and wanting to show surviving people what Earth was like before man’s intervention. It fails to be understood as its sentimental actions are failing to give any productive results.

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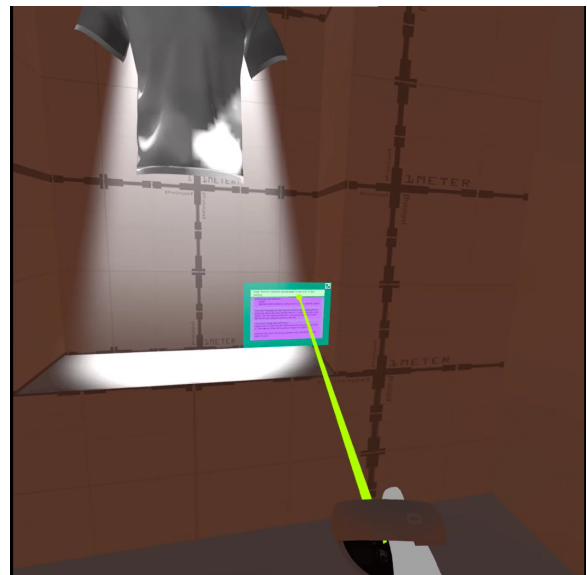


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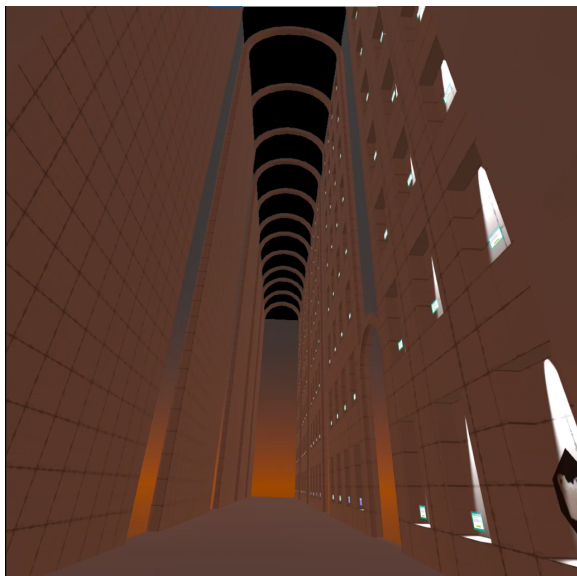


Waterfall with the AI guide before it shatters

During the visitor’s last moments on Earth, they get to visit the museum of Mankind, where objects from our everyday lives are exhibited, explaining how they contributed to the world’s demise. This place, more than an actual museum resembles a mausoleum, a place for safe-keeping a dead corps of the past that is home to mundane relics.



Exhibition case showing fast fashion apparel



Museum of Mankind

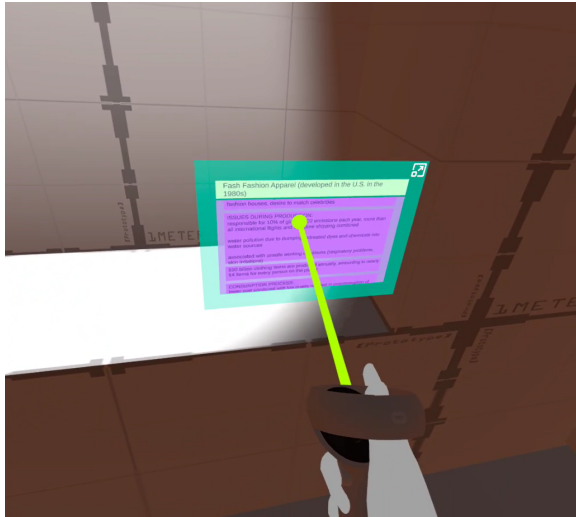
Finally, the AI which the spectator visited at the beginning also appears in the last empty display case, effectively closing the chapter of mankind on planet Earth.

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The tag describing the life cycle of exhibited piece

The people will depart, leaving behind what they see as a “relic of the old age”, without reflecting on how they caused the demise themselves, managing to successfully create geographical and time distance from their own destructive actions.

Evaluation and Value Created

Since my goal through this project is to reduce environmental impact by developing a personal sense of responsibility in young people, the success of the project is evaluated through a short survey which has been published alongside the project. The respondents were asked

the following combination of open-ended and multiple-choice questions:

1. What are your thoughts after seeing “What If One Day”?
2. After seeing “What If One Day”, would you say you are interested in making some changes in your life?
3. If your previous answer is yes, what would you like to change?
4. If there is a follow-up list of recommendations on how to change your consumption habits and a list of additional educational resources, what format would you appreciate?
 - a. A game
 - b. A phone APP
 - c. A handout booklet
 - d. Other (list out)
5. What other things/ classes/ projects does “What If One Day” remind you of? Why?

The questions were designed to demonstrate whether the respondents felt inspired by the VR experience, further collecting data, reflecting on which parts felt the most important and in what way, together with recommendations regarding potential continuation of the project. Due to the restrictions associated with the

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Covid-19 lockdown in Shanghai, I was able to conduct only 5 user tests in total. One of the respondents stated that the shift from a pretty scenery full of sounds of nature into the real dark and silent world made them strongly feel the seriousness of the message the VR experience is aiming to deliver. They also stated, in alignment with other testers' responses, that both the concept of the museum as well as the content of the description tags made them deeply reflect on how they perceive and consume objects around them. All respondents also expressed interest in additional resources mostly in the form of a game or a list of other useful websites.

Outcomes & Learnings

My project enabled me to test my hypothesis regarding the potential use of VR as an immersive medium to address the topics of overconsumption and the environmental issues it causes. After designing an interactive VR narrative and testing it on user testers from my target audience (among which majority has never used any VR device before), I believe virtual reality is a medium capable of making people aware of the issue and inciting desire in them to make a change. It is an innovative technology that allows users to

more deeply interact with the topic at hand and if properly used, I believe it could become an integral part of future sustainability awareness-raising campaigns both by private companies and for the government.

Conclusion

The 21st century is the era of life in excess to many. Easy and cheap access to what resembles an infinite number of products in combination with rushed lifestyles seems to have overwhelmed the everyday consumer, distracting them from thinking about the impact their purchase choices have on the world around us. Although consumption habits are not the only ones of our society's problems, it doesn't make them any less important.

I realize the scope of my project is beyond that of a standard Capstone project, which only allowed me to finish a fully playable prototype, but not finalized version. Driven by the sense of personal duty to address this important topic and by faith I have in the message behind my project idea, I would like to continue working on this VR experience even after the semester comes to an end. I would not only like to finalize the VR experience, but also expand on the interaction that comes

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after it. In combination with the feedback I received from the project's user testing and my own observation, I have already prepared a list of potential improvements, such as sound edit, improvement of the visuals, completion of the final scene, and editing the guide scripts among others, which can be addressed in the next step.

to say a huge thank you to all my friends and family, who have showered me with a tremendous amount of encouragement, and excitement about my ideas and were always ready to support me in any way possible.

Acknowledgements

Firstly, I would like to express my special thanks of gratitude to my Capstone instructors and mentors Prof. Christian Grewell, Prof. S. Alex Ruthmann, and Prof. Yanyue Yuan. Their unrelenting support is what allowed me to dive deep into my long term interest in both VR and sustainability, and combine them together into a project I find meaningful. Thanks to them I had the opportunity to challenge myself and bring to life an idea that let me grow as a person and shaped me as a future professional.

Another special thanks to Lily (Wenyi) Huang for being my guide through the precipices of creative scene design and story writing, and Antoine Oury for his incredible readiness at all times to discuss and challenge my thoughts and ideas, while supplementing me with meaningful resources and good songs. I would also like

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Attributions

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CODE

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SOUND

voice-changer.org
Zapslat.com
mixkit.co

TOOLS USED

Unity Engine
Oculus Quest 2
Procreate
Maya
Oculus Developer Tools

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Appendices

APPENDIX 1 - INTERVIEW QUESTIONS

Personal Info

- Age
- Gender
- Occupation
- Would you say you move often?
- How often do you move?
- Where are you now?
- When did you come to _____?
- Where did you move from?

Moving & Consumption Habits/ Preferences

Please answer the following questions with regards to your purchase habits and preferences:

- What do you care about when making purchases? (*specify types of products - no food*)
- What are your favorite materials you prefer when purchasing new products?
- What are the parameters according to which you purchase new products?

- Are you satisfied with how many personal items you could bring with you during the relocation process?
- Were there any challenges in terms of your relocation process?
- What things did you struggle with after you relocated?
- How has life changed after you moved?
- How and where did you buy things right after you moved? Why?
- What discoveries have you made after moving?
- How did they affect your life and purchase decisions now?
- Do you already have a plan for the things you cannot bring with you when you move again?

Relationship with Sustainability

- Please define what sustainability/sustainable consumption means to you
- What do you think of sustainability/sustainable consumption?
- Why do you think sustainable consumption is of importance (to you/ to others)?
- Are you satisfied with how sustainable your lifestyle is now?

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- What activities do you undertake to practice sustainability?
- What activities/ routines would you like to do but are not doing?
- What hinders you from doing them now?
- Do you think this situation will change in the future?
- What are the factors included in changing your lifestyle?
- Could you explain a typical day in your life right after you moved? Where did you eat, where did you go buy products, and is it the same as your typical day today?

2 Questions Towards the End

- What is the one thing in your life (you own/ do) that you think is the worst towards environmental sustainability?
- What is the most precious object made out of plastic you own?