imagining future everydays

Welcome to Imagining Future Everydays, an afternoon of experiences from TU/e Industrial Design's Researching the Future Everyday Master's elective. You are about to see some glimpses of possible futures from design students who have spent the last seven weeks exploring ways of imagining change.

When we imagine "the future" we are not acting in isolation: we are doing our imagining in a broad sociological and cultural context which influences what we believe to be possible or desirable. As designers, we are also often in a position to make "our" visions of futures come into being, in conjunction with technological innovation, but also against a backdrop of a world facing significant crises and transitions, in climate, health, inequality, social justice, and biodiversity loss. How can we negotiate these vast questions responsibly?

This course combines a speculative and critical design approach, drawing on work in experiential futures, with insights from other disciplines, in the arts, humanities, and social sciences (and in fiction) addressing aspects of how people imagine everyday life in different futures. This enables using design methods to explore alternative, transformative perspectives on futures, with a foundation of knowledge and insights beyond design itself.

The three broad theme briefs set for the projects each engages with research being undertaken by the teaching staff. Not everything we have covered over our time together has been directly applicable to the projects, but we hope that it has increased the students' repertoire of ways of thinking about the world, ultimately informing their practice. This year we have been lucky to be joined by Joycelyn Longdon (University of Cambridge), Eva Oosterlaken (Futurall), Josie Chambers (Utrecht University), and Juli Sikorska (Urban Heat Studio) as guests, as well as having talks and workshops from the course team—Femke Coops, Emilia Viaene, Lenneke Kuijer, and Dan Lockton.

Mainstream design education and practice often carry taken-for-granted ideas about relations between design and changes in everyday life, usually centred on a model of "the user" which neglects wider societal and cultural dimensions, and questions of responsibility. Interaction designers have much to learn from other disciplines, in terms of insights on the impact of design on everyday life, and theoretical perspectives on these relations; equally, designers, by materialising imagination and making it experiential and engageable-with, and using design methods to enable others to imagine and express their own imaginations, have something distinct to offer the field of futures. By combining knowledge from other domains with designerly approaches to 'futures', the course (hopefully) guided and equipped students with knowledge, skills and attitudes required to address our current and future societal and global challenges in new ways.

We're proud of what they have created. We hope you will enjoy these glimpses of possible futures—but also that they will make you think.

Dan Lockton, Lenneke Kuijer, Emilia Viaene, and Femke Coops — June 2024

Theme 1:
The Cabinet of Rarities 2050

Theme leaders: Dan Lockton and Femke Coops

> When a loved-one dies, we need time and space to grieve and let go, while the everyday carries us along and urges us to pick up the threads, reshape life, build new relationships, and explore new avenues. But when our world collapses due to societal challenges, and we have to say farewell to practices, structures, and—in the end—certain ways of living, there hardly seems to be any consideration for grieving or letting go. Can we really embrace new futures regarding sustainability transitions, a small greener footprint, reduced consumption, etc., without any room for a process of mourning and releasing?
>
> Coops et al (2024)

There'll be a last time that you ever use the electronic device you're reading these words on. Do you notice when you stop doing things in a certain way, or stop using an object entirely? If you look back a few years, what everyday things did you do in a different way? What changed? What can you imagine changing in the years ahead? How does this make you feel? How do others feel?

In this project, we are asking you on the one hand to imagine being in 2050. You are 26 years older than you are now. The world is very different to now in some ways, and similar in others (you can use some of the tools and methods introduced in the course to speculate/extrapolate to create these scenarios). There is climate change, with huge social, cultural, economic, and political effects, and technological change too. In 2050, some of the objects and everyday practices that are common in 2024 have disappeared from our lives, or transformed. That process has not necessarily been easy or uncontroversial. But it has happened, with practical and emotional consequences, and it is something that designers have contributed to.

Imagine visiting a museum in 2050 and encountering a cabinet of rarities—a kind of wunderkammer which features objects (or practices) that don't have a place in the future any more. It could be focused on a particular aspect of life (food, transport, clothes, etc) or a broader angle or perspective across many areas of life (e.g. entertainment, or education), or something more personal entirely. The cabinet includes both objects (or things that represent the practices around those objects—e.g. car keys) and annotations explaining or giving an insight into the stories of how they went away, or transformed, and what the emotional aspects of that process were like. Did people grieve for them? Did people celebrate? Did people just not notice their passing?

We want you to design and create (the contents of) such a cabinet of rarities for 2050. It could take a variety of forms (see below) and you could make use of your own experiences, blended with (informed) speculation and fabulation (fiction).

But before this, the first part of this project, where you are 'back in the present' (or the near future), is about the process by which such a cabinet is designed and created. How would you, in the near future, go about phasing out (or imagining/planning how you would) or transforming aspects of how you do something in everyday life? How would different people around you (friends or family, perhaps from different generations) experience this? We want you to design a process or guide for people to arrive at being able to create their own cabinet of rarities—how to decide what to include (based on the criteria for the future scenario/s you imagine), how to support people 'letting go', how to record their feelings and priorities, and how to present and

share the objects. Could this be a new form of service design, an experience that helps people come to terms with changing how they live? Is it a DIY tutorial video? A collective nostalgia (or solastalgia? (Albrecht et al, 2007)) ritual? It's up to you.

Background: Designing away

Movements such as Marie Kondo's KonMari method, Swedish Death Cleaning, and various approaches to minimalism in living have mainly focused on decluttering, and mainly in rather privileged contexts, but there are also other ways in which people 'let go' of certain objects or practices—or even the idea of them. You may have become vegetarian or vegan, or turned your phone to greyscale to reduce addiction, or, having grown up imagining yourself owning a car, not done so. Nevertheless, this kind of change or transition is not always easy. There are practical, systemic challenges, but also emotional and personal ones: it can spark joy but also grief. As Coops et al (2024) put it, "we tend to underestimate that we do not only develop attachment bonds with living beings surrounding us, but we also develop relationships, attachments, as so- called material possession or material culture, with the established practices and—in the end—physical environments and systems we live in and with... When letting go of certain objects, practices, or places, we might experience this as losing a part of ourselves".

While some studies of the KonMari method (e.g. Chamberlin & Callmer, 2021) suggest that it can have wider effects in changing people's consumption behaviour, many design researchers have argued that much more systemic-level changes are needed. Design itself needs to play an active role; Tonkinwise (2014) argues that "not-designing is also a kind of designing; it can be proactive, a deliberate strategy to undesign, to make existing designs disappear. The opposite of the vita activa of making, of designing things into existence, is not merely the privatively passive vita contemplativa, but rather the very active act of unmaking aspects of our locked-in world; the designing of things out of existence." You might ask yourself: will this spark joy for future generations?

Or, it could be that this process also shows us more clearly which existing design in fact does not need to go away, because it is well-suited to the futures ahead—as Fry (2005) noted, "constructive acts of 'clearing', allow... us to identify what really matters to us so we may be sustained spiritually, symbolically, intellectually as well as physically" but also so that "'already existing sustainable design' can reveal itself. What is being identified here is the plethora of often common and overlooked made objects and built forms that have historically demonstrated an ability, in the right hands, to sustain." Perhaps some objects can be adapted, repurposed for new needs in a different future.

Finally, quoting again from Coops et al (2024), in design and transitions research we rarely think about letting go—we rarely "see it as a way, and necessary step, to make space for and shape the new. Letting go and saying goodbye is, however, necessary to make space for imagining and building up (radical) new practices, structures, and cultures".

Some examples we found inspirational:

- Carbon Ruins by the Climaginaries project (see also Stripple et al, 2021)
- The Museum of the Linear Economy from the Urban Futures Studio, Utrecht University
- Julia Cambre's 'Morbid Methods' for products—obituaries, eulogies, and postmortems
- Cassie Robinson's talk 'Emerging Futures: Patterning the Third Horizon' from The Conference Malmö, 2023

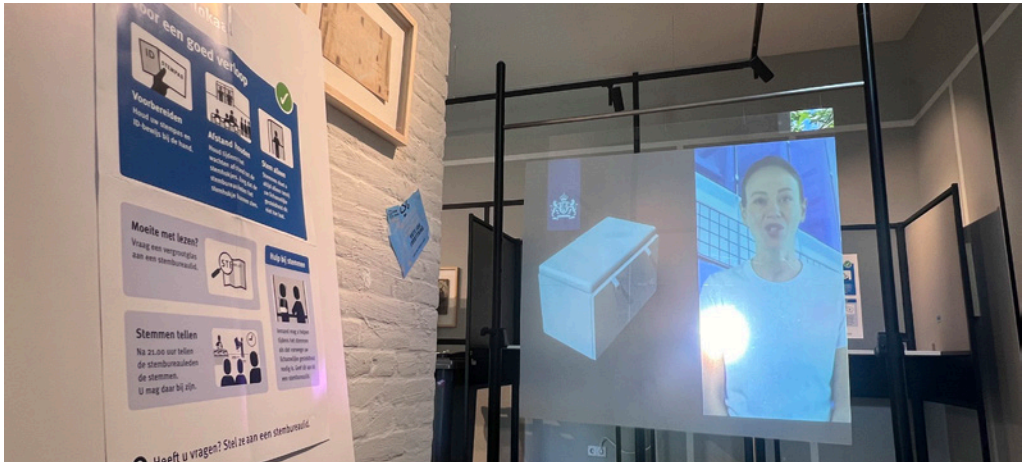
2050 RESTRICTED MARKET

What if we would have to vote for which products will be produced?

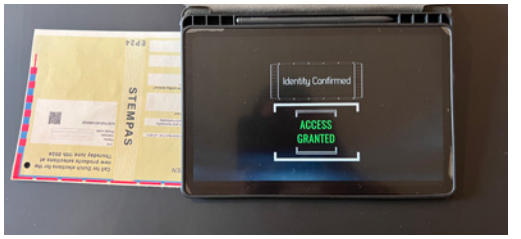
Will you be a follower or a rebel?

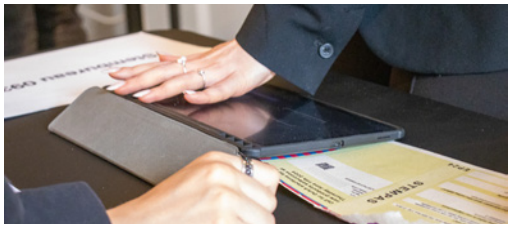
Isabel Kuipers
Robin Hoymann
Merel van Lieshout
Pauline Vaandrager

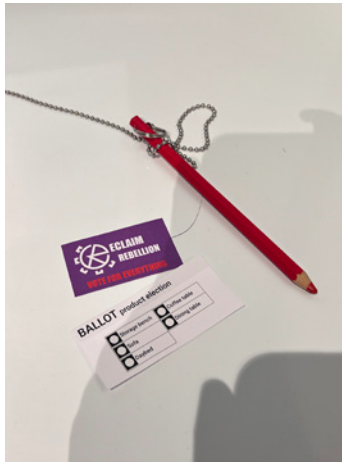

Uw gedrag in het stem
Zo stemt u
Let op!
Heeft u vragen? Stel ze aan een stembureaulid.

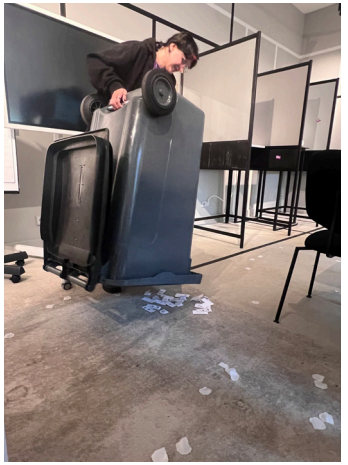

Moeite met lezen?
Stemmen tellen

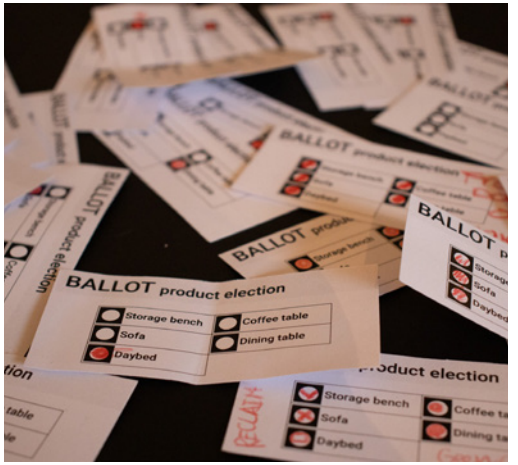

Product
voting


STEMPAS
Identity Confirmed
ACCESS
GRANTED




EGLAIM
REBELLION
BALLOT product election




BALLOT product election
Storage bench
Coffee table
Sofa
Dining table
Daybed

Check out our blog posts!

Opifex: An Interview with a Craftsman from the Future

Purebloom innovations – product ballot scandal

A suitcase full of Rarities

A Birthday Ritual

EINDHOVEN

Call for Dutch elections for the new products selections at Tuesday June 11th 2024

STEMPAS

15779

Name:

Address:

Postal code:

#J907M2H#21#8952#

When can you vote?

You can vote on Tuesday June 11th 2024 from 7.30 - 21.00 h.

Where can you vote?

With this voting pass, you can vote in your municipality.
You can choose a polling station in your municipality.

Polling station in your neighbourhood

Restaurant Kazerne
Paradijslaan 8

Where to find information about other polling stations?

www.eindhoven.nl/productverkiezingen

Contact details municpality

Het Inwonersplein,
Stadhuisplein 1 te Eindhoven
Telefoon: 14 040

Publiekscontacten/verkiezingen
Postbus 90150
5600 RB Eindhoven

EP24

EINDHOVEN

EP24

Nostalgia coffee shop

What if coffee as we know it went extinct?

Xander Fanchamps
Susan Draaijer
Diya Samit

Nostalgia coffee shop logo

The nostalgia coffee shop proposes a solution to these lost sensations. We offer a ritual to all of those who wish to relive but also let go of their memories regarding to coffee. You can see touch, smell and hear coffee related sensations of old while reliving memories of your own.

You will have the chance to create your own coffee aroma by following one of our own or creating your own recipe using ingredients of your choice. No matter what culture or coffee preferences you have, we welcome everyone and are happy to help you create your perfect coffee perfume to start making new memories and get a whiff of nostalgia while doing so.

So join us in our coffee shop and tell us about your coffee mind!

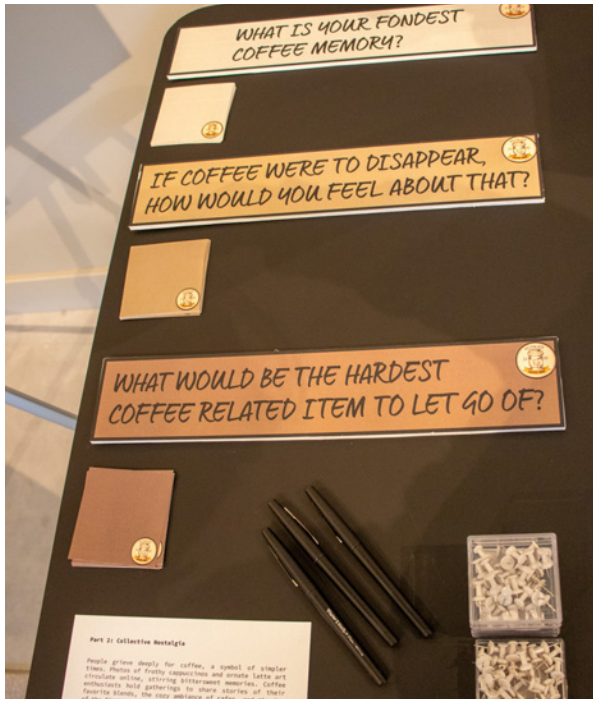
Perfume example

In 2050 there are some problems in regard to production and logistics of coffee. First of all, high caffeine levels within people and addictions are becoming more prominent and producing coffee has become more expensive due to limited resources in the world. The high intensity of producing and competition to get hold of the resources has been taken its toll on workers and the environment. Thus multiple governments around the world have decided to ban coffee due to all the negative consequences its existence has.

Big consequences because of this were that many people started protesting and rioting because of the disappearing of coffee. Many people felt like governments robbed them of their culture and way of life due to coffee disappearing. They could also never relive precious moments, memories or create more priceless coffee experiences. Other factors like companies that design and make coffee equipment also weren't very happy about this as they lost assignments and people lost their jobs. They decided to appeal to the government to come to a solution.

These are the reasons why companies and other producers have resorted to create other forms of coffee and resources. They looked at sources like grain which was already used before by companies like Zonnatura. Burning grains brings a taste close to coffee without caffeine and without using arabica beans. to produce alternate forms of coffee with less caffeine. Subsequently different coffee machines were able to be developed and designed so more jobs were made available. Governments also started supporting ideas with these alternate coffee beans and sources. This way people could at least drink their beverages again and start to make new memories with this new form of coffee.

But these memories were never the same as the old ones with the original forms and sensations of coffee.


WHAT IS YOUR FONDEST COFFEE MEMORY?
IF COFFEE WERE TO DISAPPEAR, HOW WOULD YOU FEEL ABOUT THAT?
WHAT WOULD BE THE HARDEST COFFEE RELATED ITEM TO LET GO OF?


COFFEE MEMORY
COFFEE DISAPPEARING
LETTING GO


Perfume of:
Example


Perfume of:

Check out our blogposts!

https://rtfe.imaginari.es/2024/05/19/blogpost-researching-the-future-everyday/

https://rtfe.imaginari.es/2024/05/21/teva-tales-timeless-nostalgia/

Futures Of Forever

What promises

will shape

our weddings?

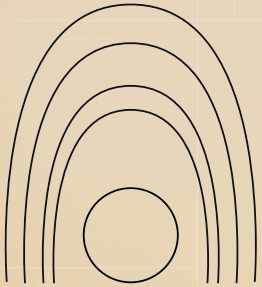
Sofia Amato
Ilka van Zeijl
Tom Slotboom

Weddings in 50 years

Marriage has historically reflected the social conception of relationships and their changes. Consequently, its nature is continuously evolving, as it should always be inclusive. The concept of family and couple is already changing, and in our vision, we imagine that in 50 years it will be a tradition much more adaptable to one's own family or household model. As a consequence, many cerimonial objects will change with it.

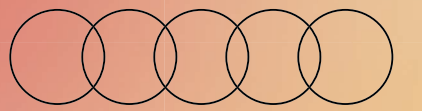
Something to protect

Traditionally the veil was worn as a way to the protect the bride from evil



Something to gather

The altar was used at the ceremony to gather the couple



Something to connect

Rings were used to officialize the relationship between two people

Contract

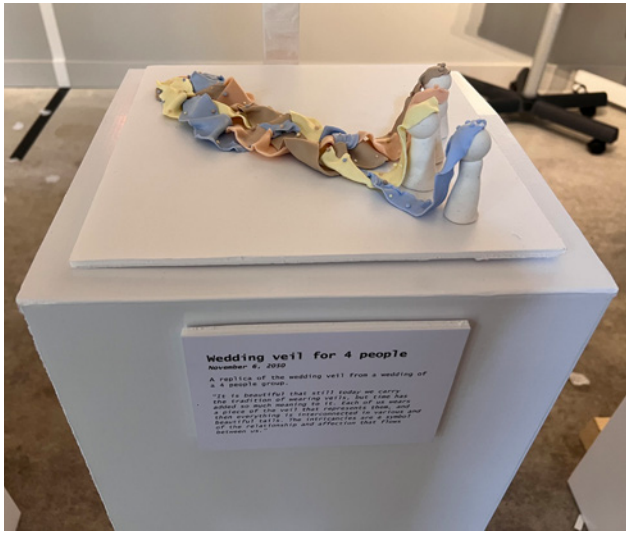
I, _____ _____, am here today to solemnly declare and commit to the vows and promises that form the foundation of my union. This contract symbolizes my shared journey and the enduring love and partnership I pledge to my future self/partner/s/family.

Place the polaroid photo of your sculpture here!

Date

Signature


PANDORA
PANDORA
Set of 6 wedding rings
September 20, 2016


Wedding veil for 4 people
November 8, 2018


Poly-Relational Union Ceremony
February 3, 2018

Our Perspective

Check out our blog posts!

Multi-partner families also need dating apps, duh!
Sofia Amato

A Love Letter to my Husband – 2053
Ilka van Zeijl

Wedding GUESTBOOK – Eindhoven Pavanda Cluster
Tom Slotboom

Theme 2: Disputing Automated Decisions in the Future Home

Theme leader: Emilia Viaene

By evoking, exploring and critically questioning future scenarios where automated decision making (ADM) plays a significant role in everyday domestic life, you will explore alternative design opportunities for automation in the 2039 home.

The smart home sector has made great promises in the pursuit of comfort, convenience, and control for decades now (Rahm et al., 2023). Even industries' future visions of long days past had the same idea, for instance with the fifties' RCA Whirlpool Miracle Kitchen and the Westinghouse Total Electric House (Westinghouse, s.d.; RCA, s.d). Today, we are surrounded by similar technologies, sometimes more often than we realize. Think for instance of the popularity of robot vacuums, smart doorbells, smart home cameras, smart fridges, smart speakers, smart lighting, smart tv's, smartphones etc. Additionally, one thing those devices have in common, is their potential for data collection. The possibilities with this data project promises to turn the smart home into a learning smart home.

Through the integration of artificial intelligence (AI) and automated decision making (ADM) systems, the "datafied" smart home is often posited by industry and policymakers as able to solve societal problems such as managing the demand for energy and other resources (Dahlgren et al., 2021; Pink, 2023). Smart home devices seek to build a real-time contextual understanding of this user, their decision-making process, and their physical environment to allow the device to determine its best anticipatory action (Chatting, 2023). Examples of such anticipatory actions could be a fridge ordering new milk, a thermostat setting a warmer temperature in the morning, a light setting to a warmer color in the evening, etc. The implication of such automated decisions is that the system anticipates what the user wants before they themselves know it (Hughes, 2018).

However, the use of domestic data to develop such systems for the home is not without its challenges. One significant challenge stems from the dynamic nature of households' everyday lives. Continuous changes in household composition, routines, and preferences introduce variability that is difficult to anticipate. Additionally, domestic data gathered from sensors and other quantitative sources, is de-contextualized and thus loses nuance and interpretability when household members are not actively involved in the process. Moreover, as ADM systems accumulate data over time, they tend to perform better for common user types and contexts while struggling with less typical ones. As such, such systems pose the risk of disrupting how households' structure their everyday lives at home.

Research challenge

While the role for AI and ADM in the future home may appear inevitable, the path towards such future is uncertain. Many questions remain regarding how, where and when ADM will really become part of everyday futures. The key challenges in exploring these futures and the paths towards them, do not lie in predicting how ADM technologies will solve global problems, but in exploring possible future contexts and scenarios in which they will be embedded (Dahlgren, 2023).

In this project, you are challenged to explore and evoke alternative scenarios for automated decision making (ADM) in the home of the future (2039).

To read and watch:

Articles

» Pink, S., Strengers, Y., Dahlgren, K. and Korsmeyer, H. (2023) 'Design anthropological foresighting: Reframing automated futures', Futures, 154, p. 103275. Available at: https://doi.org/10.1016/J.FUTURES.2023.103275
» Chatting, D. (2023) Automated Indifference. interactions 30, 2 (March-April 2023), 22-26. https://doi.org/10.1145/3580299

Industry visions for the smart home

» Kellner, T. (2022) Amazon's new head of Alexa shares his vision for the future, including new shopping and entertainment features, About Amazon. Available at: https://www.aboutamazon.com/news/devices/amazons-new-head-of-alexa-rohit-prasad
» Hughes, L. (2018) Google: Context Is King for Smart Home Technology of the Future, IoT World Today. Available at: https://www.iotworldtoday.com/smart-cities/google-smart-home-technology-of-the-future-will-anticipate-user-wishes#close-modal

Videos/podcasts

» Westinghouse Total Electric House: https://www.youtube.com/watch?v=jyrTgtPTz3M
» RCA Whirlpool Miracle Kitchen: https://www.youtube.com/watch?v=Vui2CSEwOxQ
» Mother of Invention, by Nnedi Okorafor https://podcasts.apple.com/us/podcast/mother-of-invention-by-nnedi-okorafor-part-1/id1244649384?i=1000547493520

1-9901233384 11 AN23384 11 23-1909012 2333

9898-123 11-990123384 11
AEE 442 2123

DATA FOR TRADE

WHAT IF...
PERSONAL DATA IS COMMODIFIED

23-1909 2333
9898-123 11-990123
AEE 442 2123
990123384 11
237894321789
AU7312
384 11

Amber Wu
Zhou Fang
Chenwei Liang

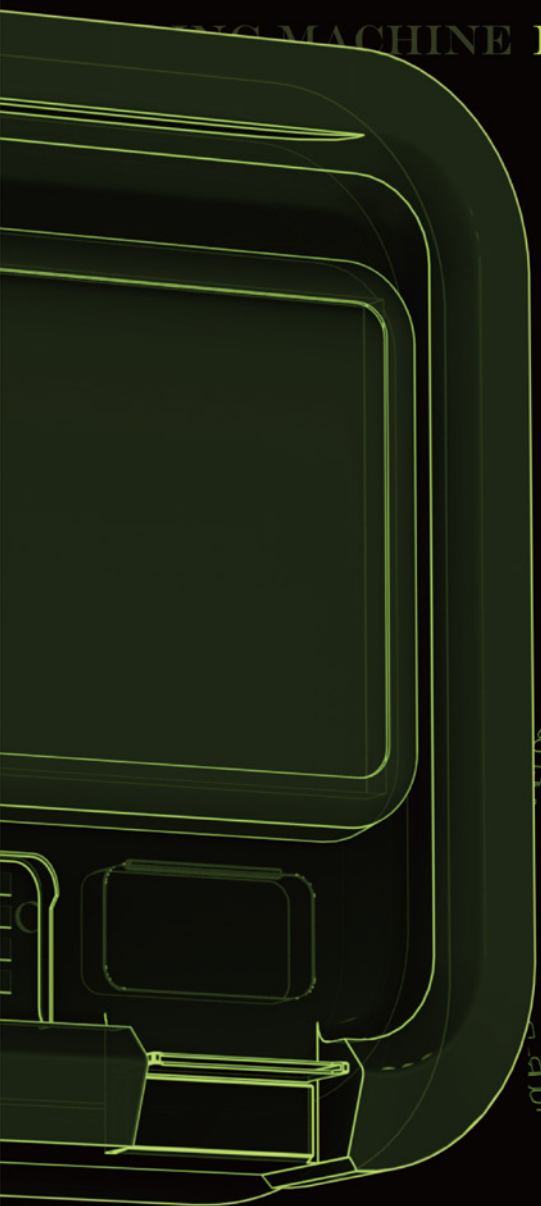
HOW MUCH DO YOU WANT TO SELL TODAY HOW MUCH DO YOU WANT TO

// THE FUTURE OF DATA

In 2025, ADM Device revolutionized millions of households. People embraced the convenience brought by automated decision-making devices, which required substantial personal data input for ADM Device to learn and make more intelligent, humanized decisions. This data was integrated into the Home Assistant control center, and local data storage provided users with peace of mind, ensuring that they could enjoy the benefits of automation securely.

This concept is part of a research project envisioning the future, where personal data could become commoditized. We anticipate that individuals might have the option to decide which portions of their generated data they wish to sell. By enabling users to monetize their data, they would gain a new level of autonomy and potentially even financial benefit from their personal information. This shift could redefine the relationship between consumers and their data, fostering a future where data privacy and user empowerment are prioritized.

DATA VENDING MACHINE



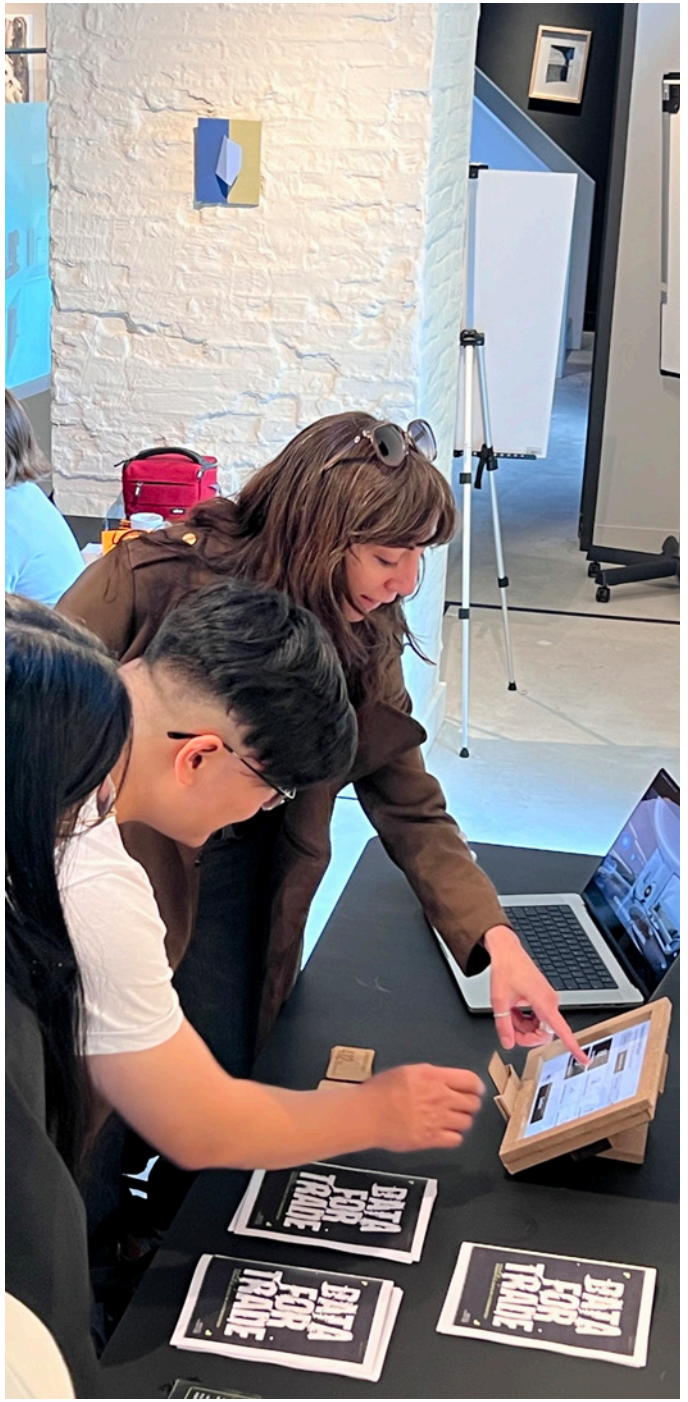
In the future, personal data will be valuable. WZW Company seized this opportunity and was the first to offer a service for selling personal information. They collect personal information from people's storage cards and anonymize important personal information through methods such as digital masking, data aggregation, data perturbation, and generalization, protecting sensitive information. The anonymized information is then sold to companies that need it for project learning and research, achieving a win-win situation for both individuals and companies.

WZW Company introduced personal information vending machines in communities, making it easier for people to sell their personal data.

This new model not only allows users to benefit from their own data but also provides valuable research resources for various companies, maximizing the value of data. By protecting privacy, WZW Company has pioneered a new chapter in the personal data market, making data circulation more transparent and secure.

insert card here

HOW MUCH DO YOU WANT TO SELL TODAY HOW MUCH DO YOU WANT TO


DATA FOR TRADE
DATA FOR TRADE
DATA FOR TRADE


DATA FO TRA

CHECK OUT OUR BLOG :)

"Knock Knock, Unmanned Economy"

Blog by Amber Wu

"Automated Decision Making or Automated Privacy Leaking"

Blog by Zhou Fang

"Home automated decision systems in 2039: an exploration of privacy and control"

Blog by Chenwei Liang

WHAT IF...
PERSONAL DATA IS COMMODIFIED

What would you choose if your home doesn't have the effortless power you have come to rely on?

Noah Poulssen
Fleur Vierhout
Kamilla Gorter
Jelmer Braamskamp

‘A small glimpse in 2050?!’

Visible in dioramas that takes you on a journey through
the upcoming developments of a speculative automated future.
 / Group 2B

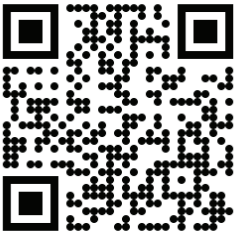

2050

Blogposts

Emergency Efforts to Alleviate Energy Crisis in the Netherlands: A Call for the 50+ Generation - *Fleur*

Will our homes be filled with spies? - *Jelmer*

The healthy living support plan of 2060 - *Kamilla*



Theme 3:
Challenging Consumerism by Design

Theme leader: Lenneke Kuijer

In this topic you will be exploring implications and opportunities for design to challenge consumerism by imagining alternative personas.

The number of technologies normal living 'requires' today in Western societies is a multitude of those a century ago. Not only in terms of direct materials – in cooking for example, next to ingredients sourced from all over the world, cooking today involves things like cookers, fridges, ovens, pineapple cutters, blenders, cooking apps, packaging, kitchen cabinets, counters and designated spaces – but also in terms of the infrastructures enabling the activity; e.g. water mains, electricity networks, factories, shops, trucks, roads and waste infrastructures that weren't part of it in the past. Similar developments towards higher resource intensity can be seen in many other areas of everyday life, such as cleaning, parenting, personal care, studying, getting around, socializing, etcetera.

Part of this 'success-story' of technological innovation lies in the unique capabilities of technologies to perform tasks that humans cannot, or do not want to do. Washing machines take over part of the hard work of laundering (Kuijer, 2019), central heating systems take care of indoor climate management, smartphones remember our schedules and motor vehicles relieve our legs and feet. Once such devices get adopted, life re-organizes itself around the new configuration; with the work of laundering made easier, people started to launder more often, and own more clothes (Schwartz-Cowan, 1976). This process of what Latour (1992) refers to as delegation, thus leads to technological lock-in (Sahakian, 2018). This is beneficial for technology developers, because it secures a steady market for continuously 'improved' versions of a growing range of devices, but not necessarily for the planet.

What also happens when human tasks are delegated to technologies, is that more tasks can be performed in parallel. For example, due to the rise of washing machines, dishwashers, microwaves and smartphones, one person can now be doing the laundry, the dishes, the cooking, watch television and socialize with friends at the same time. As such, more 'living' (and consumption) can be squeezed into less time.

In parallel, research is showing that these increasingly resource intensive lives aren't necessarily 'better' lives. Beyond a certain point of affluence, the correlation between happiness and levels of consumption breaks off (Millward-Hopkins et al., 2020; Steinberger and Roberts, 2010). What is also increasingly argued is that halting climate change requires radical reductions in consumption levels, or rather, climate change is for big portions of the world population already limiting consumption levels – even below those required for dignified survival (Vita et al. , 2019). Yet, reducing levels of consumption is not easy, in large part because the dominant neoliberal, techno-capitalist paradigm is cleverly geared towards increasing it (e.g. Pirgmaier, 2020).

Zooming in on the role of design in this system, Dahlgren et al. (2021) identify the lead figure of the 'techno-hedonist persona' towards whom design activities are dominantly geared. This persona prefers customized, pleasurable aesthetic experiences requiring low effort, and is therefore the ideal 'user' for technological innovations.

To break this cycle of accumulation and lock-in of technologies in everyday life, this topic asks you to challenge the techno-hedonist persona, for example by exploring alternative future visions, fictions and designs that assume futures in which people are willing and able to learn new skills, and to change their expectations of 'normal' living to align with the capacities of our planet and the realities of a changing climate (see also Kuijer 2022). A central question that then arises is: What might this alternative persona and future mean for design practices and their outcomes?

To read, watch, and listen:

» A talk for EHV Innovation Café in which I present an exercise of challenging the techno-hedonist persona in the context of summer comfort: https://www.youtube.com/watch?v=_Vn9RhoQr_Q (start at 8:00 minutes).

» Dahlgren, Kari, et al. "Personalization and the Smart Home: questioning techno-hedonist imaginaries." Convergence 27.5 (2021): 1155-1169.

» Kuijer, Lenneke. "Extending possible futures of summer comfort in Dutch households: Phase 2 report' Anticipating the role of smart technologies in the dynamics of everyday life'." (2022). https://research.tue.nl/en/publications/extending-possible-futures-of-summer-comfort-in-dutch-households-

RELAXOMETER 3000

RELAX LIKE NEVER BEFORE

NAOMI AFENKHENA
TESS GEERTS
SIMON NIEUWEBOER
STERRE WOUTERS


RELAXOMETER 3000

RELAXOMETER 3000

The Future of Relaxation

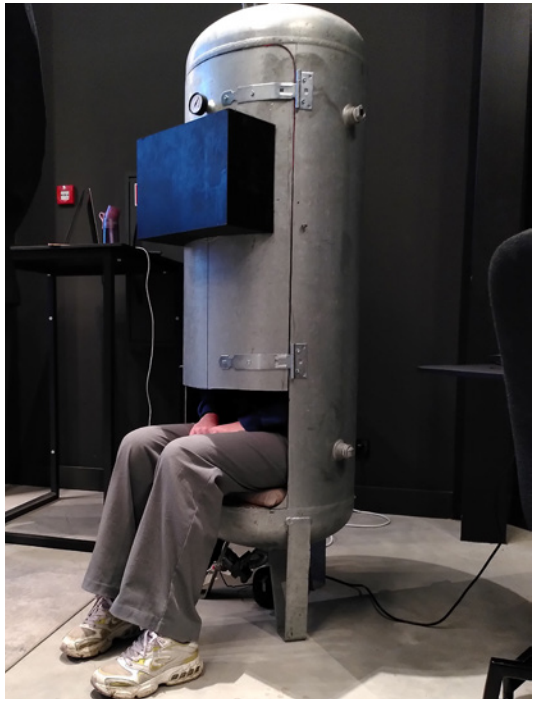
Step into the Relaxometer, a state-of-the-art machine that offers an hyper efficient relaxation experience. Inside, you are surrounded in a multi-sensory environment where soothing visuals, gentle massages, and calming fragrances come together to stimulate and relax all your senses simultaneously. How efficient!

In an increasingly fast-paced world, our pursuit of productivity and constant stimulation has transformed even our relaxation time into a series of multitasking events. The Relaxometer challenges this trend by presenting a speculative future product designed to provoke thought and discussion.

As we question why our moments of rest are filled with stimuli, the Relaxometer serves as a reflection on our current trajectory towards hyper-efficient relaxation. Is this the future we want for our downtime, or is it merely a result of our dopamine-driven lives?
Explore the Relaxometer and join the conversation about the true nature of relaxation in our modern world.


RELAXOMETER 3000


RELAXOMETER 3000



VISIT OUR BLOG POSTS!

The future of information overload and stimuli addiction

Juggling act that changes relaxation

Cycling highway a34 zuidhoorn to southeast asia

Beyond Convenience: From Roombas to Diswash Clubs

Luxurious Clouds

What if our daily access to water would become a luxury product?

Joey del Castilho
Leonie Vaccaro
Maria Castaño
Febe Meijer

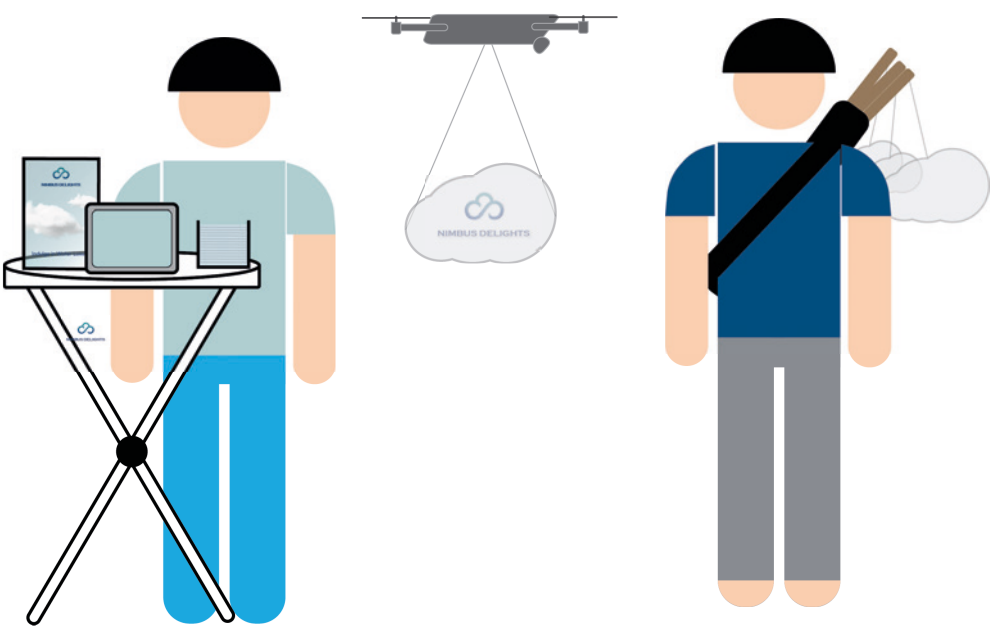
NIMBUS DELIGHTS

Indulge in Water Luxury

Is water scarcity bothering you? Leave those worries behind. With our innovative technology, you can have a cloud of your own tailored just for you! Imagine, having a constant supply of fresh, clean water whenever you need it, regardless of the water scarcity outside. However, only prime customers will be able to get them.

With increasing water scarcity due to factors such as climate change, access to clean water will become critical, making water a luxury product. In our project we embark on a journey to envision a future where personal rain clouds redefine access to water and increase class division. Because of the unequal distribution of sources, these sophisticated clouds will only be accessible to few, leaving the less fortunate ones struggle to find sufficient and safe water sources.

With our "Luxurious Clouds" we draw a future scenario and dive into the consequences of this unequal water distribution and the implications it would have for societal dynamics. Our exploration highlight the impact of water scarcity will have on class divisions, further enhancing disparities. Through our exhibition, we aim to provoke thought and initiate discussions about the future of water access and the ethical considerations its commodification will bring.



Exhibition setup with the luxury cloud sale and knock off cloud sale


Stick to your plan
The Research Council of Norway


NIMBUS DELIGHTS

Check our blogposts:

Consumerism, The Growing Class Gap, and The Role of Water in Future Inequality

Unlocked Memories

Rainy Days a Precautionary Tale

A Day of Moving and Modern Challenges

Becoming Climate Friendly: A transition journal and community

Vere Vreeswijk
Final Master Project

Climate change is a pressing issue, and our actions can make a difference. By transitioning to a growth mindset, we equip ourselves to embrace the challenges in our lifestyle and learn how to enhance ourselves, all for the betterment of our planet.

This journal guides you on your journey of adopting a growth mindset. Providing inspirational content helps you keep a positive perspective and motivates you to seek challenges. Through a cycle of creating goals, progress notes, and reflection, you are continuously working on your mindset and lifestyle.

In addition to the journal, a community is created to inspire, inform, support, and challenge you and others in your mission to become climate-friendly. This community is open to all on Instagram, but the journal contains specific assignments to share with the Instagram page to create content and connect journal users.

Join the community via @becomingclimatefriendly on Instagram!

Designing Spaces for Letting Go

Societal transitions do not only entail coming up with new, alternative ways of being and living but also breaking down, phasing out and letting go of lots of our existing practices, structures, and cultures. This inevitably means that many things we have considered normal, socially accepted and desirable for a long time might not be in the future anymore. As sustainability transitions are often discussed on a collective, meso level, the intimately personal dimensions of change and how these breakdowns and phase-outs manifest themselves as "transitions in everyday lives" tend to be overlooked. This hides how we as human beings living and shaping these transitions (while we are also being shaped by them) feel about letting go of well-established practices, structures and cultures and how our emotions could help us in sense- and meaning-making of these changes.

During the Researching the Future Everyday course we experimented with the concept of designing spaces for letting go and explored how different objects enabled us to let go of feelings that did not serve us anymore. To engage with this topic, the students prepared an individual reflection on a moment where they felt transformative change unfolding which had left a mark on them. This could be either a moment related to a societal transition that affected them personally, or something that occurred in their own life. They were asked to bring themselves back into this situation, make a drawing and add details to the story related to where they were, who was with them and how they got into this moment. Once they felt like they were in touch with the moment again, the students were asked to find an old piece of fabric (e.g., towel, t-shirt) and 'story' their moment on there. Accompanying reflection questions helped them to explore the different layers of this experience. The drawing and the fabric were used as inspiration for the workshop. In small groups they discussed what they had prepared (to the extent that they felt comfortable sharing) and explored possible overlaps and differences in the themes that they wanted to let go of. Based on this they co-created a space/ritual/material arrangement that helped them in their process of letting go.

Interestingly, most students chose a moment that had occurred in their personal lives. They felt like they hadn't really experienced a moment related to societal transitions that had impacted their life yet. We discussed this might be because of their relatively young age or societal positions. Transitions manifest differently in different

lives, meaning everyone will have different experiences related to transitions. Nevertheless, the concept of designing spaces for letting go and especially bringing yourself back to a situation that has left a mark on you relates to the practice of becoming more resilient in dealing with your own emotions. If we know how to engage and converse with our own emotions and gain an understanding of where they are coming from, we build resilience and groundedness within ourselves which creates a certain kind of transformation tolerance.

Femke Coops


What if Image Generative AI is
Utilized to Make the City Playful?


What if Image Generative AI is
Utilized to Make the City Playful?

This research project explores the design possibilities of playful urban interactions enabled by img2img generative AI. We conducted workshops with 12 designers, allowing them to experience, design, and prototype using two types of img2img AI, specifically Inpaint and Reimage AI. Following these workshops, six design proposals were developed, each integrating the AI technologies to enhance playfulness in urban environments. The project aims to gather public feedback on these proposals to better understand the opportunities and challenges of incorporating generative AI into the development of Playable Cities.



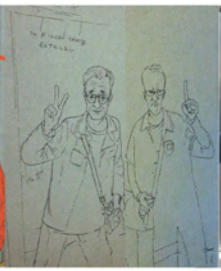



Dommel Inception

1 River

Want to know “more” about Dommel river? Observe weird things surrounding the river, scan the QR code to take a photo, enter the prompts, and share the results to the shared platform! People can interact with the environment objects physically and with previous players online. Newer players can build stories on top of the currently generated images and stories. They can be funny, scary, or creating legends around that space.



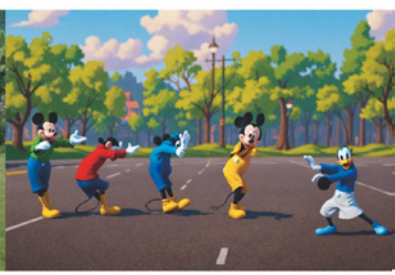



Tele-Photo Booth Elevator

2 Elevator

When no one uses the elevator, it turns into a photo booth by saying “activate !” Everytime, the mirror in the elevator connects with different elevator and choose different photo themes, you won't know what you'll until completing taking the photo with your tele-partner. You won't be identifiable as the mirror pit a filter on you, so... come and secretly connect with a remote stranger!

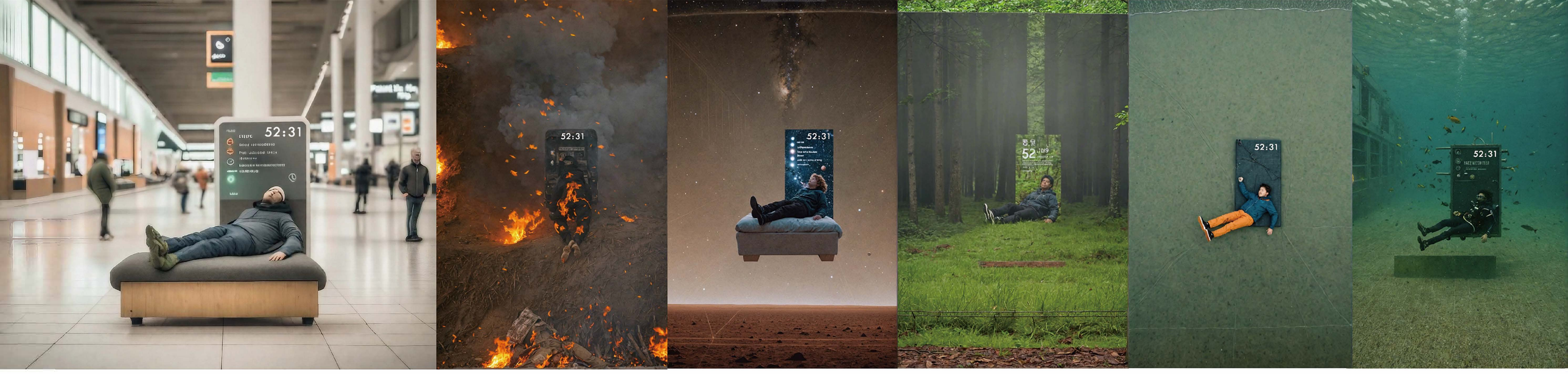




Imaginative Mirror

3 Street

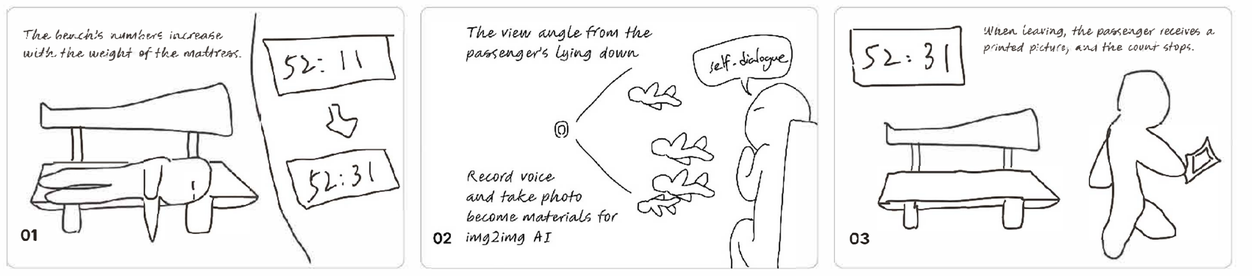
The play is triggered by someone walking by the mirror panel equiped with camera. It shows their mirror image in the theme that is displayed on top. The people in the tunnel can change the prompt (theme) by yelling (“SWITCH!”) followed by their chosen themes. This design hope to connect strangers and exchange cultures through role-playing, improvisational acting, and collaborating with AI.



Lie down, Rediscover the World and Self

4
Station

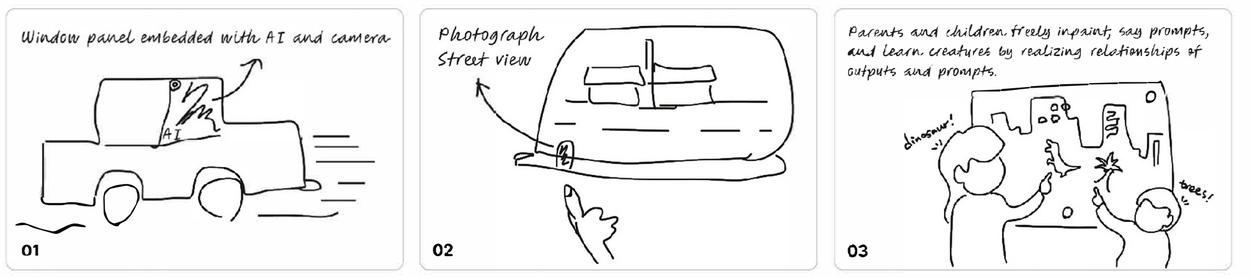
The numbers on the bench make passengers curious, and the soft mattress invites them to lie down and view the world from a different angle. They can talk to themselves, and their voices and images are recorded into the bench, which become the materials for AI . Before leaving, they receive a printed pictur from the bench where AI tries to depict their state of mind and the way the world sees them. They'll realize that the bench's numbers increase with the weight of the mattress, so the numbers (also the photo) only belong to them.



Mobile City as Canvas

5
Vehicle

Commuting often provides small fragments of time. It is also the quickest way to view various corners of the city. As numerous scenes pass by the window, people can capture urban landscapes meaningful to them. When drawing, they observe, incorporate their imagination, learn, and express their curiosity about the scene. Through the interaction, the personal connection to the locality and familiarity of the journey are preserved, while also providing a fresh experience.



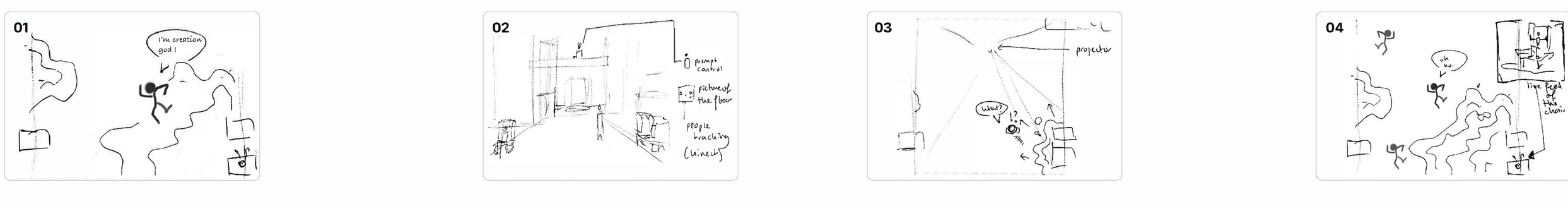
Atlas Floor is Lava !

6
Building

A person, the creation god, walks around Atlas ground floor with sensors to draw a specific route. This route becomes the area covered by inpaint AI's brush.

The creator then get on the bridge and use a panel to decide whether the route will be lava or safe area, and chooses a style.

People on the ground floor are naturally encouraged to run from the lava and get on top of chairs and stuff, or play other games. E.g., run after the butterflys, avoid stepping on fish and disturbing them, escape a sandworm from DUNE.

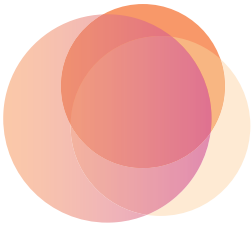



Back to the Net


Explanation of the journal


Imaginative Mirror
Write why this AI is playful

"The climate crisis is a crisis of culture, and thus of imagination"
-Amitav Ghosh



IMAGINE
contested futures of sustainability

- How do we imagine what a 'sustainable' future might entail in everyday life? Where do our ideas come from?
- How does the age of planetary crises affect how we imagine at the level of everyday societal experiences, e.g. eating, travelling, what we wear?
- Can speculative and participatory design methods play multiple roles in imagination infrastructuring?
  - by materialising aspects of diverse (and divergent) possible futures in engaging and experiential ways, enabling provocation, confrontation, emotion, and reflection?
  - by helping people imagine different futures, beyond dominant imaginaries?
- How can this approach be valuable as part of the ongoing processes of transition design for (just) transitions?

IMAGINE: Contested Futures of Sustainability is a 13.7m NOK (€1.37m) research project (2021-24) funded by the Research Council of Norway, led by Consumption Research Norway (SIFO) at Oslo Metropolitan University. Dan Lockton (Imaginaries Lab & Associate Professor of Imagination & Climate Futures at TU Eindhoven) is a co-investigator, working with Femke Coops. IMAGINE is an interdisciplinary research project across humanities, social sciences, design, and arts, bringing together researchers from Norway, the Netherlands and the UK. The project aims to address the societal power of cultural imaginaries of sustainability, specifically in relation to imagined futures, via a programme of research including working with design students in Norway and the Netherlands to develop new Master's courses. Consumption-related practices around eating, dressing, and moving are taken as focal points for exploring these imaginaries.

In an era of climate crisis, our imaginaries of possible futures are crucial. As Ruha Benjamin reminds us, "imagination is the invisible infrastructure" shaping our world. Yet, certain imaginaries, from certain groups of people, dominate popular culture and politics, whether centred on AI-driven techno-utopias, evoking fictional golden ages, or fuelling growing climate anxiety. The notion of an "imaginary crisis" (Geoff Mulgan) suggests that alternative imaginaries remain hidden, or are not even imagined, needing imagination 'infrastructuring' (Cassie Robinson) to support their development and emergence. There is a demand for creative methods that support diverse groups to experiment with more radical imaginaries for everyday life in an era of climate change: transitions towards "plural ways of making the world" (Arturo Escobar).

Design has a lot to offer here: design methods can surface imaginaries, enable shared exploration, and inspire creation of more radical, collective ideas; actively co-designing can spark a sense of possibility and shared emotion missing when materiality isn't there. Design methods can enable prefiguration: experiential futures (Stuart Candy), participatory prototyping and living (parts of) possible futures now, converging prefigurative politics with imagination. While sustainability transitions research engages with foresight methods, it rarely considers imagination infrastructuring, nor imaginaries as something that, socially and culturally, can be actively imagined, materialised, constructed, debated, reconstructed. IMAGINE opens conversations between creative disciplines, futures, and social sciences with a sustainability focus.

Our work with industrial design students in the Netherlands is at a technical university where largely techno-optimistic imaginaries of futures (whether 'sustainable' or not) dominate. Through redesign of the Master's course Researching the Future Everyday, we aim to explore where these ideas come from (in culture, media, and education), how they are socially performative (Oomen et al, 2021) within design, and how creative projects around treating the 'future everyday' as a site of Research through Design enquiry (Kuijer & Robbins, 2022) can challenge, provoke, and build a broader base for imagination and transformative conceptions of sustainability in design. We cover topics such as speculative fiction, hauntology, and 'lost futures' and explore how these approaches can be situated in relation to other work on futureas and design, including Transition Design (Irwin et al, 2015; Juri et al, 2021; Coops et al, 2024; Lockton & Candy, 2018) and the wider fields of design fiction and speculative design.

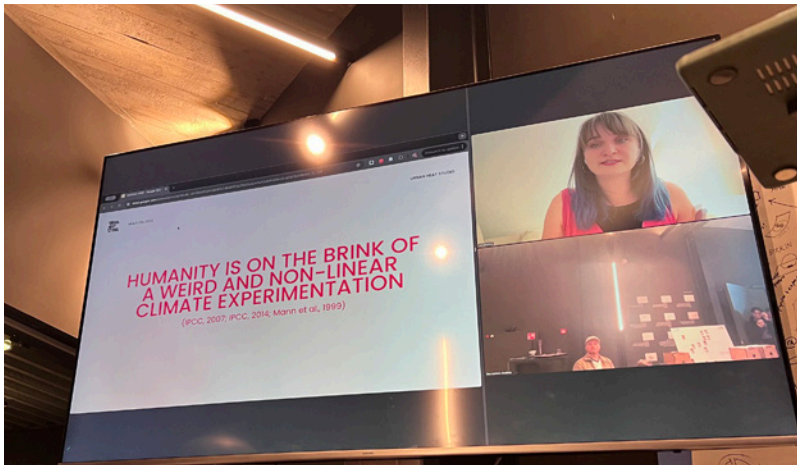
More broadly, we aim to examine how this kind of work can support imagination infrastructuring (Robinson, 2022), building on current and previous work from the Imaginaries Lab in research, education, and practice contexts. The Imaginaries Lab's New Metaphors toolkit has been used by a number of people within what is emerging as the imagination infrastructuring community, including workshops for the UK's National Lottery Community Fund and Demos Helsinki's UNTITLED initiative, and a talk for the European Foundation Centre. For the Design Research Society, Dan Lockton and Femke Coops are convening, with other leading transition design researchers, a special track at the DRS 2024 international conference on Designing (for) Transitions and Transformations: Imagination, Climate Futures, and Everyday Lives.

WARNING
USE SYNTHETIC BIOLOGY AT YOUR OWN RISK! MISUE AND PLAGIARISM WILL BE PUNISHED!
THIS ELEVATOR ONLY STOPS AT 0, 3, 6 & 9
TU/e
The origin of utopia?
En nu ...
Justice
Meal
"Oh huh is this policy now?"
Once upon a time...
Apple Tree
I do NOT Care
I do Care
Full Meal 100% Artificial
UTOPIA
Turn off the
Imaginaries lab
IMAGINE
imagining future everydays
Welcome


DEEP DESIGN
HOW
KASERNE
TU/e
imagining future everydays
Welcome


RELEASE THE MARKET


HEAT CON
RELAXOMETER 3000


HUMANITY IS ON THE BRINK OF A WEIRD AND NON-LINEAR CLIMATE EXPERIMENTATION
(IPCC, 2007; IPCC, 2014; Mann et al., 1999)

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Thank you to our guest lecturers and workshop faciliators: Joycelyn Longdon (University of Cambridge), Eva Oosterlaken (Futurall), and Josie Chambers (Utrecht University), Juli Sikorska (Urban Heat Studio) and to Kazerne for hosting our exhibition.

Aspects of this course were supported through the IMAGINE project, funded by The Research Council of Norway. Thank you also to Karel van Donselaar for his generosity.

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TECHNOLOGY

imaginaries
lab

11 June 2024
Kazerne, Paradijslaan 8 5611 KN Eindhoven

The 2050 Restricted Market, Exploring Alternative Economies through Speculative Design

PAULINE VAANDRAGER, Eindhoven University of Technology
MEREL VAN LIESHOUT, Eindhoven University of Technology
ISABEL KUIPERS, Eindhoven University of Technology
ROBIN HOYMANN, Eindhoven University of Technology

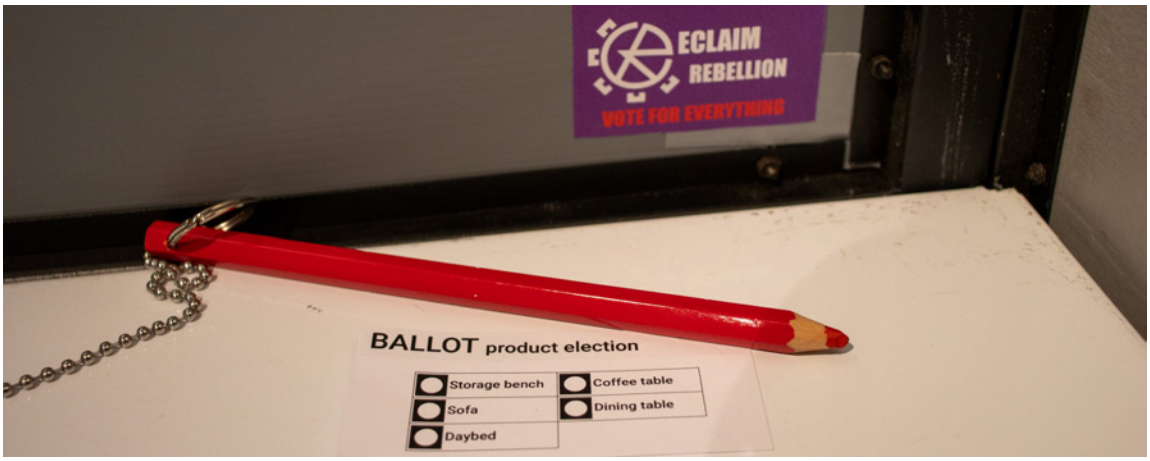

Fig. 1. Product election

Modern society is deeply rooted in consumerism; however, our excessive consumption has profound negative environmental impacts. This paper explores a speculative scenario of an alternative economic system instead of the current consumer capitalism. By broadening our perspectives beyond our consumerism lifestyle, we aim to open up people's imaginations to alternatives. Through our Restricted Market 2050 exhibition, we give an example of an alternative economy and urge people to rethink their behaviour towards today's products and practices. In this "democratic market," the people have a chance to vote each month on the production of a new product. Moreover, there is a rebellion group trying to reclaim the free market and boycott the voting. In this way, we highlight both the positive and negative aspects of the scenario. Through this exploration, we aim to look into the issue of letting go which is deeply associated with helping to reduce negative impacts on climate. Through the use of design fiction principles and the showroom method, we explored the 2050 restricted market scenario to find out how speculative design can help people imagine a world beyond consumer capitalism.

1 INTRODUCTION

"Born into mass consumption societies where excess is omnipresent, where we are surrounded by toys, candies, fast food, fast fashion, electronic devices, games and all sorts of entertainments associated with shopping, and where we experience social confirmation through our behavior as consumers, we learn to love consumption" [6].

Please cite as: Vaandrager, P., van Lieshout, M., Kuipers, I., and Hoymann, R. (2024). The 2050 Restricted Market, Exploring Alternative Economies through Speculative Design. In: Imagining Future Everydays, 11 June 2024, Eindhoven, Netherlands. http://rtfe.imaginari.es

Consumption has become an integral part of our identities [6, 45]. Our possessions are carriers of self-perception, memory, and emotions [40] and the practice of consumption has evolved into an expression of social status, security, and community [21]. The acquisition and use of material items bring joy [40] and their nostalgic value allows us to connect to the past [69].

1.1 Homo consumens

While these social objectives explain consumerist behavior, excess consumption is not an end in itself [6]. Ironically, consumers chase autonomous choice through consumption [21, 32], yet what we find is artificial temptation produced by consumer capitalism [72]. On the facade, consumption seems liberating, but it can be equally perceived as a form of oppression [40, p. 7]. According to Fromm, we have evolved into "homo consumers," a species that seeks solace in material possessions to temporarily alleviate insatiable dissatisfaction and fear [20]. The underlying argument is that consumerist pursuits conflict with the fulfillment of other essential needs [8, 50].

1.2 Infinite growth - finite resources

This framing of consumption as an irreplaceable form of self-expression further overlooks the environmental and global repercussions of a consumption-driven society [56]. Consumerism is part of the larger system of extractive capitalism, an economic system built on principles of profit, forcing a non-reciprocal, hierarchical relationship with the earth [10]. Natural resources, workers, and Indigenous communities are exploited without fair compensation or regard for sustainability [1, 18, 26, 28, 68]. Since World War II, consumption has been monopolized by the rich minority, both among and within nations [44]. Life goes on in the global North, despite the global South suffering the effects of our consumerism [32]. A model dependent on infinite growth is fundamentally flawed on a planet with finite resources [7, 46]. The current for-profit model is self-destructing, like a "snake eating its own tail" [27].

1.3 Need for transition

It has been established that tackling consumerism is crucial in the context of climate change and sustainability [51, 57]. A growing number of citizens recognize that the adverse effects of consumption [6, 71] and their conscious dissatisfaction has motivated deliberate change [59]. However, exploring alternative consumerist lifestyles, like conspicuous green consumption [11] will not suffice [32]. There are limits to how much a person can deviate from dominant consumerist norms no matter how reflective and concerned they are [29]. The individual, believing they control their choices in the marketplace, is constrained within the economic framework [72]. We must dismantle the for-profit economy and collectively transition towards a new economic system [1]. Understanding and embracing these changes will allow us to shape a future that adapts to the environmental reality [57].

1.4 Imagining alternative economic systems

However, cutting down on plastic is easier to grasp than confronting issues of injustice, inequality, and environmental crisis [1]. As Mark Fisher put it, “It’s easier to imagine the end of the world than the end of capitalism” [28]. This work investigates how speculative design, a strategy to encourage people’s imagination by creating a space for discussion and debate [15] can be used to help people imagine such an alternative economic system.

1.5 Contribution

While related work has been done to help people imagine new futures and systemic change [15], imagining alternative economic systems is currently an under-explored topic within speculative design [14]. Moreover, although research in economics has examined various alternative economic models [28], few efforts have been made to represent these through tangible scenarios.

Through our speculative design, the 2050 restricted market, we aim to open up people's imagination to alternatives to consumer capitalism. Inspired by the work of Coops [12] we further investigate how voting as a collective activity can help people let go of consumerism. In order to transition to a new system, it is essential that we can let go of the old [62].

"Let us remove the shackles of the past that determine our future by relying on the same systematic patterns that produced the previous problem and leave them to repeat those patterns; to let go of the familiar and lay with the discomfort, the discomfort that can help imagine the world anew." [1].

2 RELATED WORKS

2.1 Consumerism

"Consumerism" encompasses the lifestyle associated with the sociological aspect of consumption [45]. It encompasses a system of economics, growth politics, and consumer culture [7]. Commodification is one of the elements underpinning consumerism [44]. The concept of need, which traditionally drove consumption, has been replaced by a 'desire impulse' that forms the core of consumerist attitude in contemporary society [72]. With commodity status extending to an ever-expanding number of objects, we have moved from an era of mass consumption into an era of excess consumption [58]. This shift is signified by consumer practices like 'pecuniary emulation' and 'conspicuous consumption' [67], where individuals engage in status competition through their possessions [72]. Consumer ideology manifests in social representations and marketplace actions that permeate individuals' lives both consciously and unconsciously [59]. The process of consumer subjectification assigns people the role of consumers, subjecting them to order, control, and discipline within the framework of consumerism. In a heightened depiction of this trend, WALL-E (Figure 2) shows individuals who have completely surrendered to a consumer identity. Passengers at mega store Buy 'N Large swiftly change their clothing color with the push of a button when the onboard voice announces that "blue is the new red" [66]. The dystopian society, where Earth has become unlivable due to excessive consumption, further highlights how the expansionist worldview underlying consumerism prioritizes material needs at the expense of natural resources. In other words, immediate gratification is prioritized over the long-term consequences of mass production [6]. The long-term implications are undeniably real: consumption-driven society significantly contributes to environmental stress, waste, degradation, and resource exhaustion [26]. Fiction comes remarkably close to predicting the future.

2.2 Consumer capitalism

Consumerism has become the essential ideology of our capitalist society [26, 59, 64]. Consumer capitalism represents a theoretical economic and social condition where consumer demand is deliberately and extensively manipulated through mass-marketing techniques and a 'manipulation of needs' [72]. Both the fear of deviating from norms and the urge to stand out drive people to engage in excess consumption [6]. Ironically, Western consumers chase autonomous choice through consumption [21, 32], yet what we find is artificial temptation produced by consumerism [72]. Problems, needs, and desires are fabricated and presented with pre-packaged solutions [30]. There is no option not to choose and thus the

Fig. 2. WALL-E - life on the spaceship axiom [53].

duty to choose among numerous options becomes a never-ending process stained by regret and guilt over non-essential purchases [72]. Like the example from WALL-E, blue and red are not merely colors, they are dictates. Michel Foucalt describes consumer capitalism as a "panoptic apparatus" that controls and punishes those who do not play by the rules of consumerism [19]. Much individual behavior is shaped by corporate and societal structures, which require collective restructuring [33] due to barriers of shame, stigma, and exclusion [6].

2.3 Anti-consumerism

Growing numbers of citizens recognize that excessive consumption adversely affects the environment [6] and can be detrimental to individual and public health [71]. While consumption ideology often operates unconsciously during routine spending, these unmet desires have led to conscious dissatisfaction with consumerism, motivating deliberate change [59]. Motivated by individual and global needs, some individuals are now exploring alternative consumerist lifestyles [4, 42]. Practices like conspicuous green consumption [11] and ethical consumption [36] have faced criticism as forms of soft consumption [32]. Attaching ethical messages to profit-oriented products suggests social responsibility and positive impact, while the consumer's lifestyle remains unsustainable. More effectively, others are engaging in sustainability-rooted anti-consumption [60] and environmentally oriented anti-consumption [37]. The objective of anti-consumerism practices is to challenge the influence and power of consumer culture [72], which manifests in behavioral patterns like voluntary simplicity, collaborative consumption, and living within one's means [71]. Collective activism against consumerism includes "Buy Nothing Day" [9], a counter to Black Friday, and the social media movement "Do I Have Enough Stuff for Now?" [55]. Brandalism, like the work of Adbusters [56, 63] challenges consumer culture through subvertising.

2.4 Alternative economies

Consumer activism, often confined to private consumer decisions within the capitalist system, has limited impact in today's market-driven economy [23]. Corporations can easily capitalize on ethical trends, resulting in market diversification rather than systemic change. This underscores the need for alternative forms of political engagement beyond individual consumer decisions. Boström (2020) [6] identifies normalization as an obstacle that prevents consumers from envisioning alternative systems. This process has obscured potential alternatives and ingrained the false dichotomy that any non-capitalist system equates to communism [28]. To address unsustainable overconsumption, effective strategies need to span multiple domains, including politics, economics, civil society, and individual actions [3].

Additionally, imposing legal constraints on profit-driven production planning can contribute to a more sustainable economy [20]. Governance and politics are essential components of shaping sustainable transformations [26].

Jennifer Hinton introduces an alternative: the not-for-profit world model, where the objective is to meet community needs rather than generate private gain. In this model, ownership is structured collectively, with all profits reinvested in serving communities [25]. The proposed model is rooted in the principles of degrowth. Degrowth advocates a restructuring of economies to respect the planet's limitations, aiming for socio-political equity and environmental justice [48]. It seeks to overthrow the capitalist system through democratically-led downscaling of production and consumption in industrialized countries. Degrowth strategies are rooted in the post-growth rejection of perpetual growth [31]. The post-growth philosophy promotes a shift from GDP growth as the conventional indicator of prosperity [38, 61]. For instance, some academics have creatively reinterpreted the acronym GDP to stand for 'Green domestic product', thereby incorporating environmental impact into the assessment of a nation's economic health [2]. Post-growth economics emphasizes the importance of redefining "enoughness" as a positive goal for society [27].

"It is time to reassert the foundational tenets of a democratic economy: that corporations are fundamentally embedded within society, that the corporation is a public creation and should be publicly accountable, and that markets are public creations and structured by politically determined rules. Rules that we — the public — need to set" [24].

2.5 Speculative design and design fiction

As the challenges we face today are becoming too complex to solve through design, there is a need for people to change their values, beliefs, attitudes, and behavior. Instead of aiming to solve the problem, the speculative design approach encourages people's imagination by creating a space for discussion and debate [15]. These spaces allow people to experience alternative realities and futures and communicate their thoughts and feelings about this scenario. Design fiction is among the speculative design approaches, it focuses on exploring possible near-future scenarios [13, 47]. Design fiction relies on immersive, vivid, and object-based storytelling to create a realistic future world. Often daily objects or elements of the present are used to visualize insights, research, and trends as if they are real [5].
To illustrate potential futures and its' likeliness of coming true, futurologist Stuart Candy created the taxonomy of futures cone (Figure 3) [15, 65]. Outside of the possible cone lies the zone of fantasy. As there are only limited links to the world we currently live in, it is hard for people to grasp futures outside of the cone. Next to this, probable future scenarios are closely related to the current world, so they will not encourage people to imagine that much. That is why speculative design is often located in the cone of plausible and/or possible. While design fiction uses near-futures which often fall in the probable.

To show an extreme vision of the world often a utopia or dystopia is presented [70]. These visions can be seen as a world to strive for or back away from. A utopian or dystopian scenario can be used as a starting point for discussion and imagination. Dystopian futures can be seen as critical design and are often associated with negative views of the world. However, critical design does not have to be negative. The aim of critical design is to encourage people to think critically about the presented scenario.
"Critical design needs to be closer to the every day; that's where its power to disturb lies. A critical design should be demanding, challenging, and if it is going to raise awareness, do so for issues that are not already well known." [15, p. 43]
An interesting example of a speculative design project is Facestate by Metahaven (2011) [43], as shown in Figure 4. The project critiques the political consequences of blurring the lines between consumerism and citizenship, specifically related to governments adopting social software to enhance transparency and interaction.

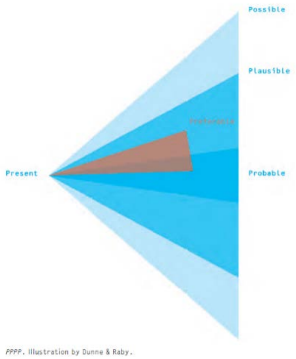

Fig. 3. The futures cone by Stuart Candy [15, 65].

Fig. 4. Facestate by Metahaven [43].

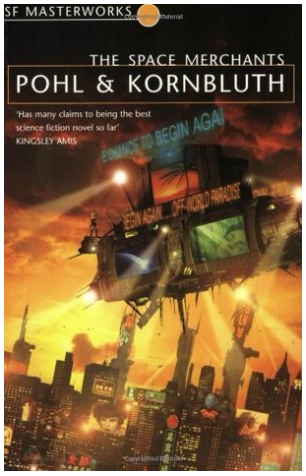

Fig. 5. The Space Merchants [22].

Another compelling example of speculative futures is the science fiction novel: The Space Merchants, by Frederik Pohl and Cyril M. Kornbluth [54]. The work is set in a dystopian future, in which executives manipulate a hyper-consumerist society and market the colonization of the inhospitable planet Venus as an enticing opportunity. Like our design, the novel is a social critique of consumer capitalism, corporate manipulation, and the unsustainable aim for limitless growth.

3 METHOD

As a starting point for our research, we investigated a traditional method that was used in the seventeenth century to create a collection of memories: The cabinet of rarities. Through group speculations, we discussed what would be in a cabinet of rarities in 2050. We shifted our focus to what would not be in there anymore in 2050. As discussed in the introduction, it is likely due to climate change and material scarcity that we must reduce the number of products we have. We then speculated about how this would be possible, concluding that the problem is the capitalistic market;

consumerism is woven into society; we do not know any better. To reduce consumerism, we would need to switch to a different economic system. The questions that then came up were what economic system would this be and how would people accept this change? And how can we translate this future into an immersive exhibition? Thus, we defined our research question as follows: *How can speculative design help people imagine the transition to different economic systems beyond consumer capitalism?*

3.1 2050 Restricted Market

Fig. 6. The product election at the exhibit.

As a result of the research question, we created a speculative future scenario in the year 2050 to base our exhibition on. The scenario falls within the realm of plausible futures on the future cone [15]. It is in theory possible, but the amount of societal change needed makes it less likely to happen. It is important to have a scenario that is in the future but not far away from our present, we will elaborate more on this later.

In 2033, the government decided to restrict the capitalistic market by introducing a "democratic market". In this democratic market, the people have a chance to vote each month on the production of a new product (Figure 7). Every month a selection of products in a specific category gets presented by the expert product panel. From this selection, people are allowed to choose one product to vote on in the monthly product elections. The product that has the most votes will be the product that gets produced in that product category for the year. The goal of this democratic market is to limit consumption and the use of materials.

However, not everyone agrees with this systematic change. A big rebel movement, Reclaim Rebellion, is fighting to release the market from government chains. Their slogan is "reclaim the free market" (Figure 8). The movement was created by the companies that are not allowed to produce their products anymore. The designers and engineers joined

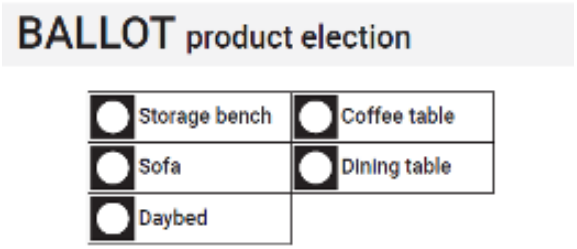

Fig. 7. Product ballot from the election.

as well, because they suddenly lost their job. Lastly, civilians who believe in the freedom of choice and the right to personalize their lives. They strongly believe that this democratic market is not the right solution for the problem.

Fig. 8. Posters from the rebellion movement.

3.2 Exploration of the scenario

The exploration of our research question and scenario was done using showroom-type research [35]. In this section, we will explain how we brought our scenario to life. The showroom method was chosen because it allows the visitors to immerse themselves in the scenario and experience it accordingly [35]. Moreover, the design approach of design fiction [47] was applied to suspend the disbelief about our Restricted Market near-future scenario. It is important that the visitors do not immediately see it as an impossible future but consider it as a possibility. This is relevant to our subquestion: How can a speculative future assist people in imagining their everyday practices in such an alternative society?

The showroom consisted of two different perspectives on our imagined 2050 Restricted Market future. The decision

was made not to create a utopian or dystopian scenario, instead a balance of both; often referred to as ustopia [49]. By highlighting both positive and negative consequences in this society we hope to strike that balance. Moreover, it is likely society would be divided by this, with people for and against the restricted market. It is more realistic to show these two perspectives rather than focus on one.

3.3 Pro restricted market

In the first perspective, we translated the benefits and positive aspects of a future where society would have to vote on products. The first perspective illustrates the benefits and positive aspects of the future scenario. It shows that this new restricted market system is good for the world. The people who are for the restricted market believe that this is a necessary measurement to battle climate change. However, as with all aspects of society, there is also a sense of conformity; people vote because others do as well. They might not agree with the system but don't express it.

3.4 Anti restricted market

The second perspective illustrates the negative consequences of the system. As explained in the scenario, there are groups who will experience a negative impact on their lives due to the restricted market. However, these are groups that do express their discontent and actively try to change the system back. Thus, they set up the Reclaim Rebellion. They believe there are better ways to battle climate change, but a restricted market is not the solution.

3.5 Showroom exhibition

The future scenario was presented at an exhibition in Eindhoven: Imagining Future Everyday. This exhibition was organized by Eindhoven University of Technology [16], as well as the Imaginaries lab [39]. The people visiting the exhibition were all adults, of which the majority were familiar with design practices.

3.5.1 Exhibition. Walking into the exhibition a futuristic screen showcased a video with a message from the government (Figure 9). In this video, an explanation was given about the voting process. After this, all products that were selected for this month's voting were showcased and explained. The screen glitched and a message from the rebels showed the freedom of choice back in 2024. The rebels called to boycott the elections by voting all the boxes to show your protest of the current system. After the glitch, the governmental message continued, and the visitors were wished good luck with their voting. Walking around the video, a table was located at the polling station with polling workers. The visitors were asked to show their voting pass and verify their identity through a hand scan. Once their voting pass and identification was confirmed, they received a voting ballot. They were asked to cast their vote in the voting booths and drop their ballot into the ballot box. After submitting their ballot, the polling workers engaged in a discussion with them about their experience in this 2050 scenario. At the exhibition, a member of Reclaim Rebellion was walking around, motivating people to boycott the voting. Around the polling station, posters and stickers of Reclaim Rebellion also showed their resistance.

3.5.2 Design choices. The elements of the showroom were designed based on the design fiction approach to suspend the disbelief of the visitors about our imagined 2050 restricted market future. This section will discuss the design choices we made to achieve this. To make the voting interaction realistic and familiar, the polling station was based on polling stations in The Netherlands. With the use of the actual voting booths and bin borrowed from the municipality of Eindhoven together with posters and signature red pencils, the polling station was very similar to a polling station at elections. The decision was made to vote on paper, because the role of trust in elections makes it unlikely that a

Fig. 9. Visitors watching explanatory video

Fig. 10. Validity check of voting card and identity

Fig. 11. Visitors filling out the ballot

Fig. 12. Inserting the ballot into the ballot box

transition to a digital system will be made in the near future [52]. They concluded that the benefits of it do not outweigh the problems. However, as this did not communicate the future of 2050 as much, other futuristic elements were added to support this. To explain more of the context, we created a video that explained what the visitors were voting on and why. We used the rebel glitch to explain the history and the introduction of this democratic market. With the rebel glitch, we also wanted to show the clear discontent of people about this future and why the rebellion was created. We purposefully made the graphics and style of the rebellion very colorful and bold, so visitors would not miss the rebellion elements. It was inspired by the climate activist group Extinction Rebellion [17], which also used bold colors to stand out. Moreover, we handed out stickers that visitors could wear on their shirts to show their "solidarity". In this way, we spread the rebellion over the whole exhibition. To communicate the aesthetics of 2050 and balance out the present and future, we designed a holographic screen to show the video on. This was done using a projector that showed the video onto a transparent plate hanging in the air. Next to this, the identity verification was done through a hand scan, instead of the check of a personal identification document.

Link to the video: https://www.youtube.com/watch?v=AIka-mc_t0o

4 RESULTS

During the exposition of the restricted market future in 2050, 27 people cast a vote. Of these votes, 10 decided to join the rebel movement by boycotting the voting through voting for all the options. The winning product of the election was the sofa with a total of 7 votes.

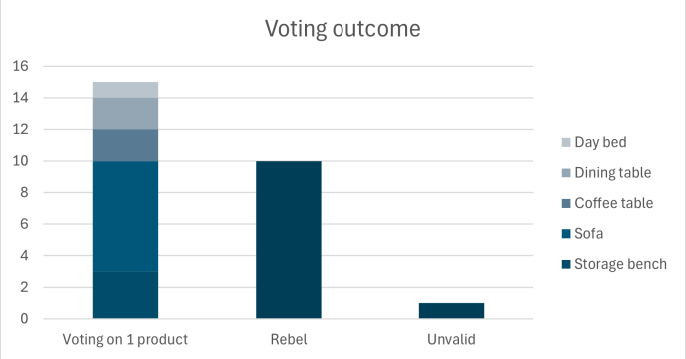

Fig. 13. Election results.

The exhibition in speculative design research created diverse reactions from attendees. This analysis synthesizes the key insights gained from feedback and provides a comprehensive overview of the implications of this speculative future.

4.0.1 Democratic regulation of products. The central theme of democratizing products created mixed responses. The aim in mind, reducing waste and increasing consumer involvement, created critique. Some people thought it would be impossible to implement due to the monopoly of some companies to create and manage a fair voting process. The process we proposed would resemble the style from "Democratic" Soviet control and thus potentially work against innovation. However, visitors do believe in the effective waste management of the system and the promotion of sustainable consumption.

4.0.2 Impact innovation and consumer choice. While speculating about the future scenario, the visitors were concerned about a restriction of innovation, especially mentioned in combination with healthcare. The concerns expressed due to the regulations revolve around the potential delays in essential advancement of products which might result in slower innovation. There was a big resistance to restricted consumer choices, which relates to today's desire for individuality as well as personal expression. This creates an inherent fear of participants entering such a restricted market.

4.0.3 Waste and environmental sustainability. The visitors resonated with the focus on waste management, and they saw the idea within the outcome of the presented voting system aligned with a broader environmental goal. The visitors often expressed reactions towards an acknowledgment of bad environmental impacts from excessive consumerism after experiencing the exhibition.

4.0.4 Cultural and psychological considerations. The biggest challenge we saw was aligning the cultural values of the visitors with their environmental responsibility. Influenced by our Western culture, which emphasizes freedom and individualism, the visitors often rejected the thought of having just one choice per category. This was often the reason for visitors to vote for everything and boycott the system. On the same side, some restrictions are widely accepted for

the greater good, for example, regulations and weapon controls. This implies that there is a need to balance individual freedom and collective responsibility.

4.0.5 Dynamic markets and economic implications. Many visitors raised the question within our conversation of how market dynamics would react under regulations. Limiting product releases could lead to higher prices due to the limited stock and profit. On top of that, there were affordability concerns, voters might not be able to afford the products and that is an issue if it is the only choice available. Additionally, the influence of business interests and lobbying in such a system was a significant concern, suggesting that achieving true democratic regulation might be challenging.

Fig. 14. Votes in the ballot box

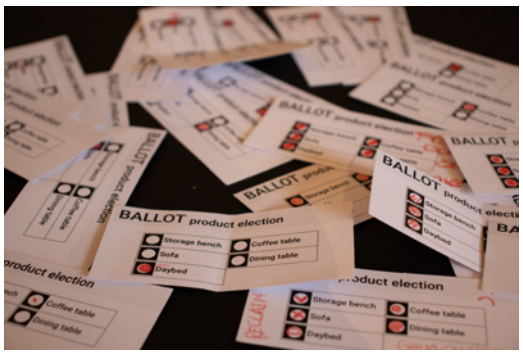

Fig. 15. Collection of voting ballots

5 DISCUSSION

Within this paper, we explore how speculative design can help people imagine the transition to different economic systems beyond consumer capitalism. The results of the voting show a clear distribution between people agreeing on the system, by voting for one product, and people rebelling against the system, by voting for all products. After inquiry or through written notes on the ballot, participants expressed a fear that a restricted market would limit self-expression. This finding echoes the argument from literature that consumerism has lead to products becoming an inherent part of our identity [40]. Additionally, many visitors compared the restricted market with a communist system. This aligns with our findings from theory that people generally perceive economics through the dichotomy of capitalism and communism [28]. However, this perspective was likely enhanced by the significant government intervention proposed in the scenario.

As the exposition made use of official voting booths, posters, and bins of the municipality, it became easier for visitors to embrace this 2050 restricted market. Next to this, the exposition took place a week after the official elections, so visitors had a fresh memory of their voting experience. In the 2050 restricted market both the view of the government and rebels were represented at the expo. This created a more general view of the restricted market instead of presenting it as a utopian or dystopian scenario. Visitors were able to learn about both sides of the story and could better imagine how they would feel in this 2050 restricted market. This resulted in interesting discussions between the researchers and the visitors leaning towards both the governmental view as well as the rebel perspective. As the 2050 restricted market exposition was hosted at a general design exposition, not all visitors were able to fully immerse themselves in the exhibition, missing out on the entire explanation in the video. Because of this, it is hard for us to know whether all visitors who casted a vote did this with a complete understanding and imagining of the 2050 restricted market. This

makes it unsure if all people that voted for the rebellion did so because they disagreed with the system, or because they followed the orders of the rebellion in the video. We decided to simplify the scenario in order to make it more understandable and accessible to the general public. Therefore, we did not aim to create a realistic, fully detailed embodiment of an alternate economy, but instead aimed to convey a more general perspective that counteracts current practices as a means to reflect on consumerism and extractive capitalism. However, this simplification meant that it was also presented in a more radical form, which made people more sceptical towards accepting this as a potential future.

6 FUTURE WORK

As a future iteration on the scenario, it would be interested to go a bit more in depth within the scenario and possibly embody a setting that more closely resembles some of the not-for-profit economies proposed in the literature [27]. Furthermore, the proposed scenario could be translated from a governmental perspective to a home settings, allowing people to more explicitly experience the implications of a non-consumerist society. While systematic changes have to be made, the ideologies of consumers must also be changed in transitioning from the current system to a new system. Therefore, future work should consider methods for letting go that target the consumer directly. This work could be inspired by practices like Swedish Death Cleaning [41]. These practices offer a promising approach to install anti-consumption behaviour. Swedish death cleaning, or "döstädning" in Swedish, is a method of tidying and clearing out your home during your lifetime [34]. The aim is to make things easier for relatives after your death and at the same time to lead a more liberated life with less clutter. It's about consciously deciding which possessions are important and what you can let go of. As a next step for this research, the individual rituals of letting go can be combined with the collective practices of letting go, as illustrated through the voting system. While this work explores preliminary methods for conveying alternative economies through design, further efforts are needed to help people envision futures beyond consumerism.

7 CONCLUSION

In this research paper, we explored the research question: *How can speculative design help people imagine the transition to different economic systems beyond consumer capitalism?*

We created the 2050 restricted market scenario; a near-future where people must vote for the products that will be produced. This alternative economic system reduces consumerism and thus helps in the battle against climate change. We translated our scenario into a showroom using a design fiction approach which let visitors experience the voting of the products and the rebellion that's against the system. In this exhibition we wanted to strike a balance between and intertwine the utopian and dystopian aspects, creating what is defined as ustopia. Our exhibition can be regarded as a case study of how a speculative scenario about an alternative economic system can be turned into a tangible immersive experience. The results from the exhibition showed that participants were able to immerse themselves in this alternative economic system, but through discussions they indicated having difficulties accepting this as a possible future scenario. Although it made them reflect on their own consumerism, they would miss the possibility of choice.

It shows how speculative design and more specifically design fiction can help people imagine systems beyond the present and communicate their view on this. Understanding the need for a transition is important because minor changes in our lifestyles will not suffice due to the environmental crisis. In order to escape consumer capitalism and transition towards a not-for-profit economy, we must help people imagine a future beyond capitalism.

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Futures of Forever: A Critical Exploration of the Futures of Marriage and its Promises

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ABSTRACT
This research paper explores the future transformations of marriage as a social construct through analysis of and speculation on the collection of cultural rituals emblematic of the institution as whole: wedding ceremonies. The study examines how traditional customs could or should adapt to changing societal trends by the year 2050. Using speculative design practices and a transition design approach an experiential exhibition has been set-up to engage visitors to reflect on today's notions of marriage and imagine futures through a creative exercise. The aim is to provoke a deeper comprehension in participants of the fluidity of social constructs. By analysing diverse cultural traditions as well as the historical changes in weddings and marriages, speculative images of future rituals were contextualized to increase the accessibility, variety and depth of their position in societal transitions. The Findings of this research seem to suggest that imagining futures of weddings and marriages through informed, speculative workshops can result in a more diverse and inclusive definition of these concepts. This research displays the ability of creative speculative practices to open up rigid understandings of social phenomena such as marriage traditions and wedding ceremonies.

Authors Keywords
Marriage; traditions; rituals; exhibition; speculative; design; transition design.

INTRODUCTION
Marriage is a tradition and custom that has been interpreted in various and diverse ways across cultures for centuries and remains prevalent today amidst ongoing changes in social values. Underlying this conformity are the relational structures officially recognized by society. Indeed, marital ceremonies are emblematic of the social roles of men and women and how they interrelate between each other and with their social environment [3, 12, 13]. However, what would happen if we paused for a moment to analyse this construct and see whether it is stagnant or evolving alongside our conceptions?

This topic was identified within the context of research developed for the university course "Researching the Future Everyday." The task was to create a "cabinet of rarities," which is a collection of objects that no longer have a place in the 2050 scenario. Will people grieve the disappearance of these objects or practices? If so, how? Our secondary goal was to design a guide for individuals to create their own "cabinet of rarities," accompanying them through the process and demonstrating the steps, to replicate the activity we undertook for constructing the exhibition.

This led us to question the widely recognized constitution of marriage, its vows, and ceremonies. Marriage has historically reflected the social conception of relationships and their changes. Consequently, its nature is continuously evolving, as it should always be inclusive. The concept of family and couples is already changing [19]. In our vision, we imagine that in 50 years it will be a much more adaptable tradition to one's own family or household model. As a consequence, many ceremonial objects will change with it. Therefore, the objective of this research is to explore if and how people reflect on and imagine possible future scenarios when through speculative design practises.

As research shows, traditional marriage has been losing importance. This is because of two important social trends, Weiner [2007] states "the growing dissatisfaction with or indifference to it on the part of a significant number of couples eligible for marriage, and the emergence of nontraditional families headed by adults who may wish to marry but who are excluded from doing so by law". Consequently, there emerges a need for the future to be more inclusive, both at the civil/official level and in ceremonial contexts, with a focus on the creation of new, fluid traditions.

This research contributes to the understanding of marriage as a flexible social construct by having participants actively reflect on the past and diversity while applying this notion through creating their own personal visions on the possible futures of marriage and weddings. By enhancing the fluidity of the ceremony in the future, we gave users the power to shape and give meaning to their marriages. Therefore, the gathered data results in useful material for broadening the spectrum of

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what falls into the marriage/household/family category and developing further research on the topic.

This research paper starts by position itself in current literature surrounding the social contexts and evolution of marriages and wedding, transition design and speculative design practices. Following the literary background, we explore specific traditions and through our individual lenses imagine speculative futures. We further explain and explore the speculative design concept, going deep in our process and its intuitive method. In the second main part of the paper, we explain how we designed the guided exhibition and activity, the questions and tasks we asked to the people. During this event, we documented people's responses to our proposed activity as valuable data for our research question. Therefore, we analyse this feedback and its implications to our research question. Finally, a discussion connects all the different pieces, reflecting on the first-person perspective and the researcher's perspective, to outline a speculative and hypothetical response to our research question.

RELATED WORKS

The Wedding - siutating the ritual in a larger context

Throughout history and across diverse global cultures the institution of marriage has bound individuals together. Both the similarities and the differences of these varying practices are the result of deeply embedded cultural, religious and social norms. A holistic perspective on these rituals sketches a picture of relative fluidity in time and space based on the values of the societies these traditions stem from.

Yet, although we see that these customs are subject to social change, the modern concept of weddings is still predominantly dominated by conservative heteronormative standards and values. The pace of ritualistic evolution does not match the pace of societal evolution, resulting in a growing need for more alternative formats in the future. This section of the research paper will academically position our research in this context and highlight the insights and inspiration we utilized in our process.

Marriages are societal structures representing the norms and values of the society they originated from [9, 12]. As the western matrimonial customs largely illustrate the significance of Christianity in our culture today and throughout the past millennia, so is the immensely large global plethora of diverse marriage rituals emblematic of the various religious doctrines and cultural practices they emerge out of. These practices never exist in a societal vacuum. Therefore, the authenticity of a designed ritual is inseparably and fundamentally related to the specific norms and values that specific people enshrine and need to propagate in though their cultural practices.

Weddings specifically are ceremonies abundant with symbolism. This symbolism is a representation of the societal function of the following marriage. From a biological perspective marriage is a reproductive contract between men and women to conceive and raise children [3]. The biological asymmetry between men and women is continued in their cultural roles in society and in marriage. Wedding customs have developed to display these pre-imposed roles on the participants, including emotional behavioural demonstrations of among other things chastity, fertility and wealth.

The reproductive significance of marriage is the foundational source for wedding rituals. In today's society this primary goal of marriage has shifted towards a more emotional long-term commitment which can be separated from the reproductive nature of man-woman relationships [13]. In the quest for a more societally adaptable mold for wedding ceremonies the abstract objective of the relationship should be central in this exploration.

However, in today's rigid understanding of marriage there seems too little room for re-constructing this social structure [7, 13]. The contemporary western legal and social set-up of marriage still has a lot of untapped potential for a more diverse and inclusive framework. These gaps need addressing in order to accommodate our societal versatility. A broader range of forms of belonging and partnership should be adjusted for in our current marriage paradigm to support different types of unions [19].

The notion that marriage as a social institution is changing is not new, nor is the direction that change is heading towards universally accepted upon [10]. Whether the value of marriage is in decline, and we are heading towards a concept more aligned with cohabitation over the spiritual romantic concept it is regarded as currently. Or are we expanding the perimeters to include a more diverse and liberal understanding. However, what is clear is that societal shifts are reshaping the landscape of marriage. Wedding rituals will inevitably evolve to reflect these changes and represent the contemporary values of the time.

Transition Design and Letting Go

Using a holistic and systems-thinking approach, the emerging academic field of transition design seeks to guide society towards more sustainable futures by focussing on intricate and long-term issues [8]. Socio-economic, and environmental systems and the interconnectedness between them are highlighted to acknowledge that changes in one impact the other. This approach encourages collaboration between multiple academic disciplines and communities through participatory design, resulting in more resilient solutions. Additionally, transition design emphasizes the value of imagining future scenarios to inform current decisions.

Achieving large scale societal change is an endeavour easier said than done. Summers-Effler [2002] helps us to put transition design into perspective by addressing the power of individual emotions and cognitive shifts as catalysing agents for broader social transitions. Promoting individuals to re-organize their emotional energy towards a constructive form of critical consciousness can in turn mobilize them into participating in a macro-level movement for societal change.

The act of creation through designing cannot be separated from the destruction it causes [18]. New design is not simply brought into existence from nothingness

into a perfect vacuum waiting to be filled. Innovation is destruction. A perspective change through this lens poses some important and intimidating ramifications for transition design. For when creating on a large scale we should also prepare ourselves to destroy on a large scale.

The chapter 'Letting go in sustainability transitions' in the Routledge Handbook of Sustainable Design [5] directly focusses on this complication by laying out the conflict between letting go of old systems by the introduction of new systems. Making space for new alternative transitions will inevitably transform or even completely eliminate old and relied upon practices. The phasing out is as important for social support of the transition as the introduction of the new, but as of yet has not been given the same amount of importance to.

Losing and letting go of systems we have developed attachment bonds with evokes feelings of sadness and grief which can cause pain and trauma. Creating safe spaces, or even brave spaces to navigate these emotions is imperative to facilitate collective acceptance and move forward. Assisting processes of engagement, experimentation and reflection through the materiality and experienceability of specifically organized spaces affords people to become more comfortable with the vulnerability and uncertainty that go hand in hand with change. These design practices enhance people's openness towards phase outs through the making sense and expression of complex emotions.

Sas and Coman [2016] provides an insightful example, exploring how people process grief in transitional periods in their lives. Through the creation of, and engagement with personally created grief rituals, individuals navigate these complex feelings. This study showcases the power of reflectional and creative practices in the processing of emotions of grief and sadness. Providing a structured way to manage and express these feelings offered a sense of comfort and control during times of major change.

Speculative Design for Facilitating Social Change

Speculative design is a design methodology in which imaginative scenarios are used to explore and/or critique a variety of futures. This approach extends beyond the traditional design practices by questioning and reframing contemporary norms to navigate societal issues. In our research the speculative design method is used in the positioning of study and the realization of the exhibition.

In the work of Dunne and Raby [2013] design is utilized as a tool to challenge and reflect on convention through provocative fictional future scenarios. For communities, speculative design can be a way to envision and recontextualize their future lives, inspiring them to take an active stance. In this research this approach fits our focus on stimulating people's ability to understand the nature and importance of the structural transitionally of the institute of marriage.

By combining ethnographic studies with speculative design, the Ethnographic Experiential Futures (EXF) field guide [4] lays out a design driven approach to increase the accessibility of future images. This approach exemplifies how participatory and immersive experiences support people's ability to viscerally understand future possibilities. This notion of fostering engagement through experience was employed during this study to provoke thought in visitors to imagine potential futures of marriage.

Stripple et al. [2021] presents an example of an experiential futures exhibition where visitors were invited to experience, alter and create fragments of the future in a post fossil fuel context. This world-building exercise demonstrates the power of speculative design practices to provoke retrospection and self-reflection in participants, and also indicates the potential for inspiring them to view themselves as agents of change in a larger societal sense. This approach provides an appropriate framework for our research and exhibition.

METHODOLOGY

This research was aimed at exploring how wedding ceremonies could and should change, to accommodate the ways in which relationships and social structures develop. The process of this exploration can be divided into three main stages, which will be separately discussed in the following sections.

Intuitive Design Process

In the first and longest phase of the process, we applied intuitive design methods through continuous rapid brainstorming sessions and mapping of concepts related to the theme that came to mind. The importance of using this method has been highlighted in several studies, despite the use of intuition not being extensively researched within the design fields. Some of the advantages of this practice lie in the holistic and synthetic nature of intuition, which allows for action on a more abstract and conceptual level (source as above). As Badke-Schaub and Eris [2014] state, intuition possesses four main characteristics: it is unconscious, time-related, emotion-related, and holistic. Consequently, this approach fits perfectly within our research due to the complex and multifaceted meanings of marriage and its strong connection to the emotional sphere. Therefore, many of the decisions and ideas emerged from our personal reflections on our visions of marriage and our efforts to go beyond them. It gives this part of the research a first-person perspective approach.

Creating a step-by-step guide for a process as fluid as this one is more challenging compared to a more analytical or rational process. Nonetheless, a general mapping of the ideas and the main reasoning behind them could be constructed (figure 1). For this mapping, inspiration was drawn from Gaver and Bowers [2012], who suggest that annotated portfolios can be used position the designs in research and theory. The dimensions drawn from these, while presented here, can therefore also be considered as results. Reflecting on the intuitive design process, three main questions for the future were highlighted: What promises do we want to make? To whom do we want to make them? What material arrangements do we need?

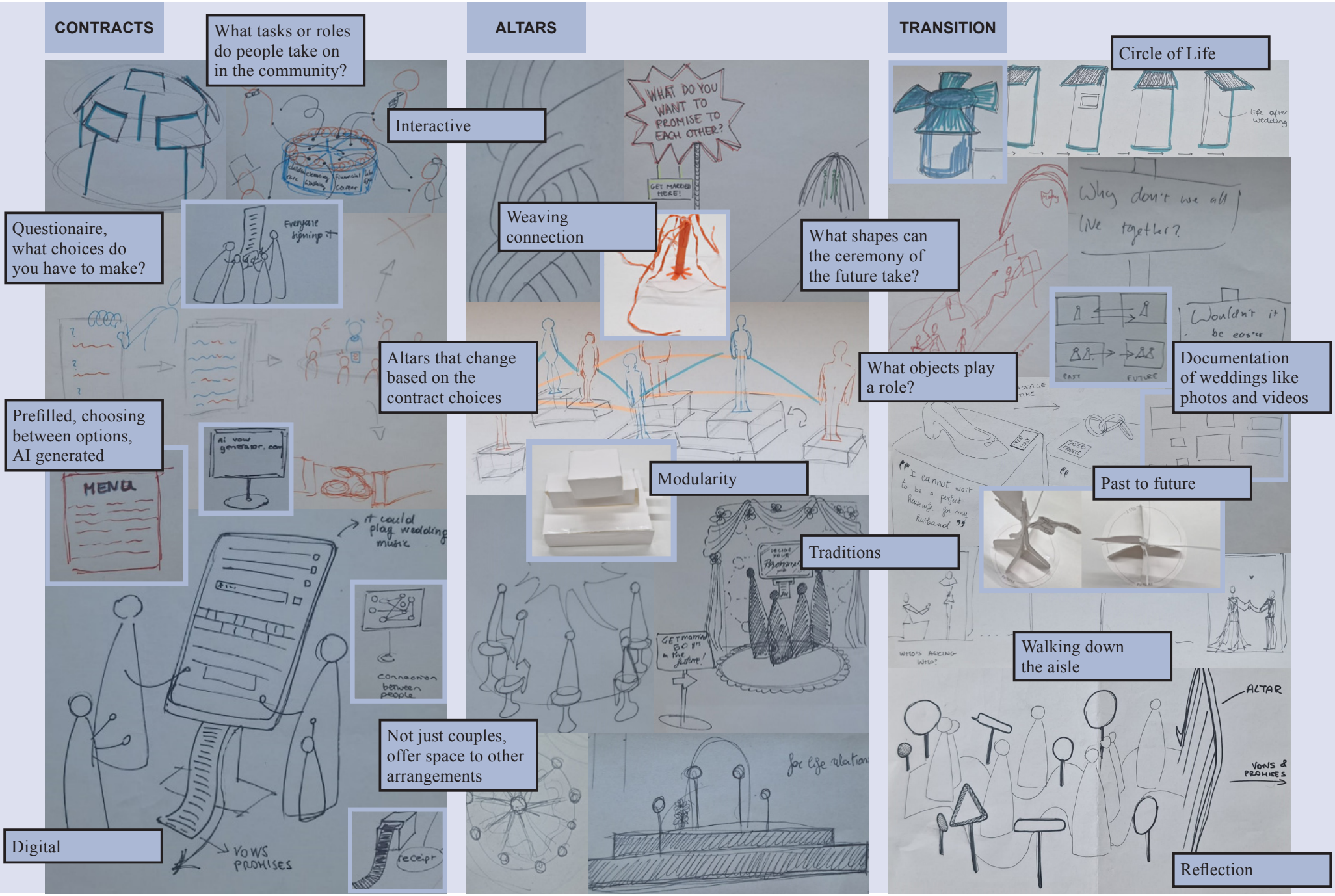

Figure 1: Mapping of the intuitive design process, highlighting the question of what promises we want to make in the future, to whom, and what material arrangements we need for that.

Speculative Design - The Exhibition

With the research generally being focused on accommodating ways in which relationships and social structures develop, a critical stance towards the current space for different ways of marriage was established. Moreover, speculating on how the questions derived from the intuitive design process could be embodied, many differences were recognized in the personal visions of the individual researchers. Therefore, the next part of the process was aimed at creating a design through which these questions for the future in an inclusive way. But also, and in relation to the previously introduced approach of speculative design, how this critical stance can be embodied to immersive the audience more effectively into imaginary thinking [2]. With the critical nature and focus on public engagement with societal issues for which speculative design is described, it is closely connected to our theme. More specifically, as curator Hans Ulrich Obrist stated, "The function of curating exhibitions is to help artists and audiences bridge the distance between the ideal and reality, presenting the unrealized plans in their minds." This is why speculative design has a slightly different tendency compared to other practices: in this context, as designers, the primary goal is communicative rather than focusing on usefulness and usability [17]. Thus, it makes exhibition design and thought experiments highly applicable for our aim, as they allow users to step out of reality for a moment and investigate the nature of things imaginatively [2]. In general, they are devices, even if only mental, that enable immersion into the scenario and exploration of responses. They can also be embodied in physical objects, allowing the enhancement of imagination through tangible engagement.

All these elements were instrumental in the design of our exhibition. The aim was to create a field of conversation between the audience and the researchers. But maybe even more so, to create a space that affords the re-framing and re-designing of the practices and visions people have on marriage. As described by Koops et al. [2024], this can support transitions. To facilitate this kind of engagement, it was crucial to enable an experience that was engaging in various forms—informational, provocative, and questioning. With these premises in mind, we can now outline the process that led us to design the exhibition. In the same way as for the intuitive design process, figure 3 (see next page) shows a mapping of the different elements that were taken into account in the design of the exhibition. For a detailed view of the different pictures and descriptions, refer to Appendix A.

Reflection - Gathering and Analysing Data

As the exhibition was aimed at allowing people to critically reflect on their vision on marriage, we also wanted to offer space to share and documents people's thoughts. Therefore, a kit was created with which visitors could develop their own artwork. The kit included cards with different prompts (figure 2) and the same clay material that was used for the exhibition objects. Offering participants the same material and similarly styled description cards, was aimed at providing a sense of quality to their creations.

After walking along the exhibition, visitors were invited to join in a reflection through an open conversation. After that, they were offered space to create something for themselves, and write a description including an artwork title and a date to situate the artwork in the future. To provide a sense of remembrance and reflection after the exhibition, they were given a polaroid photo of their creation. The artworks and descriptions were documented in photos.

After the exhibition, the artworks and descriptions were analysed thematically through an open coding approach, allowing the themes to arise from the data itself. The full analysis can be found in Appendix B.

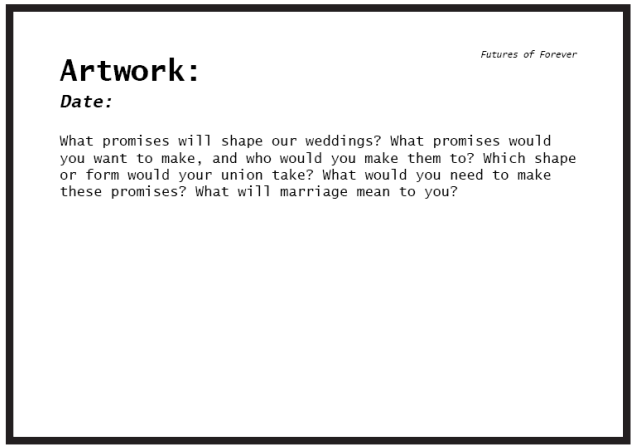

Figure 2: Prompt Description Cards for participants

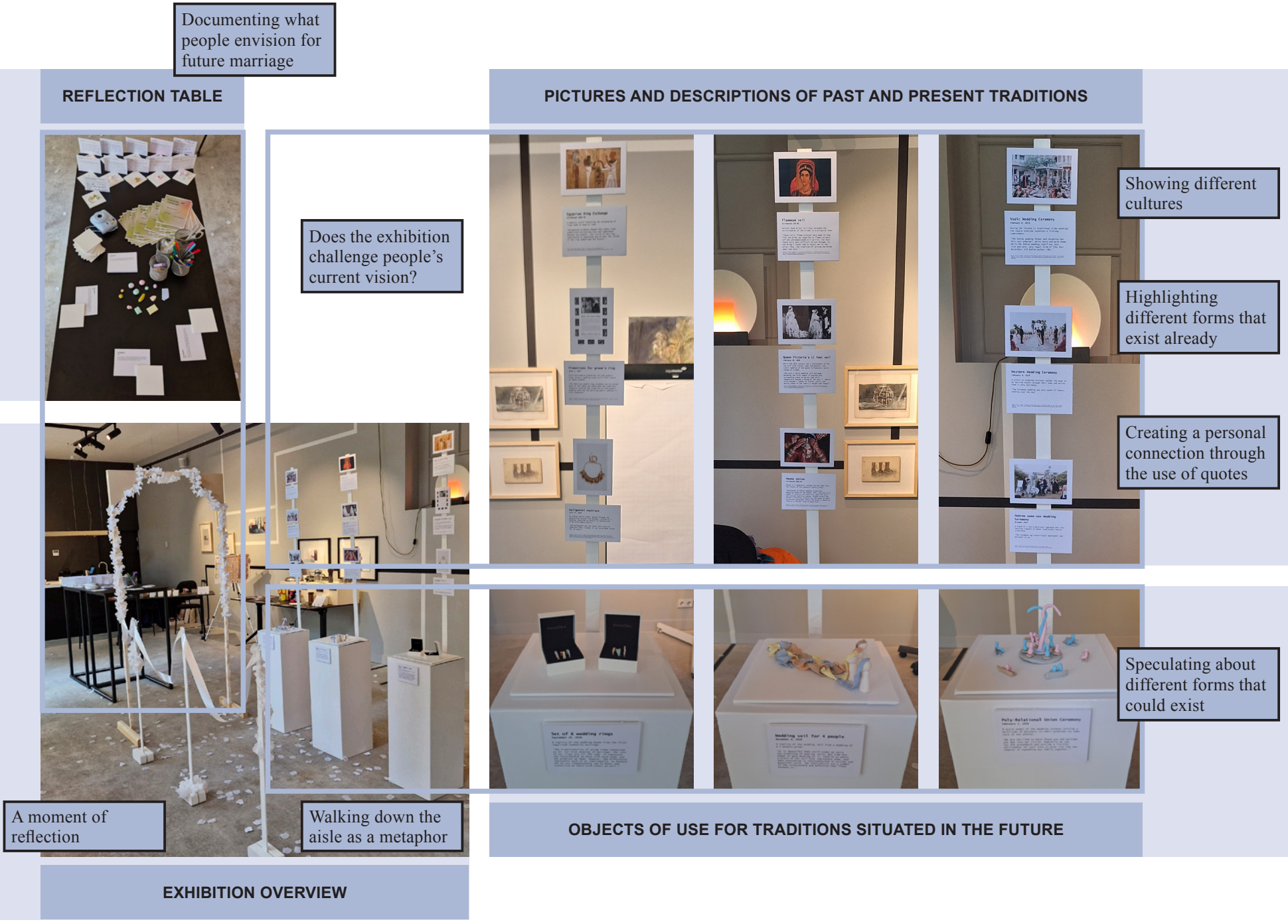

Figure 3: Mapping of the exhibition set-up and its details

RESULTS

In the results, the clay artworks made by participants were considered alongside the descriptions that were given to them, while the descriptions were also considered separately through thematic analysis. As said, an overview of the artworks and the analysis can be found in appendix B, while the analysis is elaborated on in the following sections.

Types of Artworks

The type of artworks that were showcased in the exhibition were specific 'objects of use' imagined to play a role in the wedding ceremony of the future. Looking at the clay artworks created by the participants however, in relation to their description, they were mostly of different nature. Firstly, they generally focused on the concept of marriage, more than on the wedding ceremony itself. Secondly, only P1 created a literal object of use, which was the jewellery they would wear, with rings of their and their partners family.

Instead, most of the participants created an artwork that was a 'symbol' of their description. For example, P3 used an infinity sign and a measuring scale to represent "A promise to explore my infinite potential along with my partner! A promise to balance and work together towards our infinite selves." Another example is P4, who used a flower as a representation of pronouncing their love regularly in small rituals. In the artwork of P13, more of an overlap could be found between an object of use and a symbol, as the key they created represented both the literal "key to your house" as well as the more symbolic key to "life together".

Next to 'objects of use' and 'symbols', some participants also created artworks that represented 'social arrangements'. In these objects, an overlap to symbols can also be considered. Exemplified by P7 and P10, the artworks give an abstract sense of the way their community or family looks like.

An overview of the objects and their types can be found in (figure 4).

Figure 4: Overview of the created artworks and a mapping of their type

Situated by Date

To explore how far in the future participants imagined their artworks to exist, they were asked to situate them in the future with a date. Looking at the data derived from this, there was one participant who did not write anything down and three participants who responded with the date the exhibition took place. It was unclear however, if they used that to position it in the present, like P6 did, or if they misunderstood the question.

The rest of the participants mainly situated their artwork in the near future, with 4 participants choosing a date within the upcoming 10 years (2028, 2030, 2030, 2030), and 4 participants choosing a date within the upcoming 20 years (2035, 2035, 2038, 2042). A little bit further in the future, P4 chose a date in the year 2060. All of these dates, however, can be considered as within our lifetime. Finally, as more of an outlier, P15 situated their artwork in the year 3000.

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Other Forms of Marriage

Looking more specifically into the description of the artworks, the most reoccurring theme can be recognised is that of going beyond the forms of marriage that currently exist. This is exemplified by P1, who says: “I would not want a traditional wedding but do things differently.” In doing things differently, several forms are highlighted by participants.

Demonstrated by P6: “marriages between two people are outdated.” Multiple participants mention marrying with more than one person. P8 mentions specifically that “unions can be with 2+ people, between all genders, etc.” Also described by, “romantic partner(s)” (P4), “a system of relationships” (P10), “community” (P5 and P6) and “embracing the whole of one in a collection of others” (P14).

Moreso, participants also see marriage as going “beyond romantic love” (P7). On the one hand, this is about sharing their love with their “loved ones” (P1), and with their partner but “also my close friends and family (loved ones)” (P3). On the other hand, it is about wanting “to marry my friend” (P4) to share platonic love.

In this theme, P13 also emphasizes that “Not everyone will enjoy every shape which others might like.”

Divorce / Care

A specific theme that relates to the development of other forms of marriage, was the space for divorce. This is exemplified by P8, who said that “divorce isn’t shamed or difficult to do” but also by P6 who describes “hybrid tribes”. Moreover, P15 mentioned that you should not stay “together because you’re married, but because you choose to do so everyday. It is okay if the flame goes out. You shouldn’t be pressured to stay together, but you should choose.”

This also bridges towards forms of care, or “mutual care” (P7), that other participants mention. As exemplified by P13: “the care it needs to keep this fragile piece (marriage) together”. While this might contradict the notion of divorce in a sense, it also describes the value of “strengthening and pronouncing my love and dedication regularly”, in small rituals, “rather than just one” large ceremony (P3).

The Individual

Next to the care for others, several participants mention a sense of care for personal identity. P1, P11 and P14 all mention, respectively a promise to “keep being ourselves”, “cross over without losing identity” and “allow one individual to be themselves”. P8 also says that we should “accept the other(s) as they are.” Contrary, P5 mentions the way “we are moulded by others and affect others”. This is mentioned in relation to having one partner as well as in a community.

Traditional Marriage

Finally, while all themes emphasize a certain difference to the way in which marriage is shaped now, 9 out of 15 participants in some way reference aspects or values that can also be recognized currently.

As an outlier, P9 is the only one who says they are “still quite happy after 13 years of ‘traditional’ marriage and expect to be in the future.” P2 adds to this with their description: “Marriage is a journey! A promise to explore my infinite potential along with my partner!” Moreover, P12 mentions “sharing everything and building a life together” while emphasizing that most people would “want to keep everything separated in the future.” In that sense, they highlight a contrast between their wants and what they expect for others.

For the other participants, while they envision a change in marriage, they also emphasize different values that would stay important to them. P1 and P3 both mention a relationship with just one other partner, “my partner”. More generally, the values of “commitment to each other, to be there and support in good and bad times” (P4), “to love unconditionally” (P8), and to “have a place in our hearts forever” (P10) are described. Finally, P13 says that they “believe we should keep the respect and importance it (marriage) has.”

DISCUSSION

Introduction & Summary of Key Findings

In this study, the authors investigated the meaning and traditions related to marriage in different cultures and times, with the aim to speculate about the possible future of them in a 2050 scenario. The results of the discursive exhibition designed highlight how marriage itself is such a malleable and continuously changing concept, not only in time and place, but also between different people. These findings are interesting as they challenge the conventional structure that is still carried on today, and that is proved to be losing meaning. Moreover, thanks to the cabinet of rarities, users seemed to appreciate the history of ceremonial objects while also being able to position themselves in the future scenario. Although weddings are symbolistic ceremonies, the participants have proved how they are merely empty rituals by themselves, and gain meaning only when they truly represent the marriage values of the couple or community.

Interpretation of Findings

The absence of correlation to the wedding ceremony in the shaped clay objects was an interesting point of reflection. Most, if not all, of the users instantly thought about marriage, its meaning and its abstract structure, rather than its celebration. This reflects how the traditional ceremony is losing importance, as people perceive its correlation to old values and do not feel completely represented by it. Still, values of present marriage and opinions showed in the results. The possibility of desiring the traditional marriage even in the future, in spite of all the new different possibilities and changes, was affirmed. Concepts like mutual respect, shared growth and care are present now and will still be a goal for future marriages. However, the findings showed how the promise of "forever" is questionable and not realistic anymore. Separation and divorce have been growingly accepted in recent years, and the hope is that in the future it will be normal to continuously reshape relationships depending on the people' desires.

Furthermore, it is interesting as only one of the users mentioned kids in their idea of marriage and family. Comparing to past concepts of marriage, it is still important to underline how society is moving towards the acceptance of the concept of family and love even without children.

Secondly, the results suggest an underlying worry for the possible loss of self-identity during marriage. This aspect was not counted before in our research, but surely clarified its importance as traditional marriage is seen as a fusion of the two into one unity. Comparing the old concept of couples where the woman had no identity and was merely an object of desire, to today's evolving concepts of individuality and self-affirmation, the worry of the participants is still understandable. The possibility of both co-living and living separately needs to be present in the future, as a way to include every need and inclination.

Lastly, during the exhibition, it was evident that people needed guidance and sought examples at the beginning of their engagement with the shaping experience. They were not accustomed to conceiving marriage as something that could be derived from and created by their own desires. Instead, they viewed it as a pre-defined social construct imposed upon them. It was fascinating to observe how participants gradually became aware of the 'power' they were given and grew confident in expressing their perspectives and engaging in dialogue about it. These findings suggest that the concept of marriage is still perceived as being distant from individuals' personal agency, even though it is something profoundly personal and emotional. It is time to help people feel in control of the meaning of marriage, its promises, and its consequences once again.

Implications & Limitations

Comparing the results to related works, our findings confirm that the pace of ritualistic evolution does not align with the pace of societal evolution. Many participants showed openness to new relational forms, both in the possibility of experiencing them personally and coexisting with them. Although the number of interviewees was small, it is a significant indicator that reflects how systemic changes of this nature require time. While individuals may shift their opinions towards innovation, collective change necessitates many more intermediate steps. However, speculative design emerges as extremely important in prompting such reflections, which, when aggregated, could accelerate the transition.

The installation created for the exhibition had to be adapted to the available space. Unfortunately, due to this restriction, the original plan had to change, limiting the number of elements displayed to the public. Initially, the idea was to immerse the audience in the roleplay experience of a wedding in 2050, where they could decide on their vows and the structure of their own ceremony. However, given the spatial and temporal constraints, and considering that many visitors might come alone, we decided to modify the experience into something different. We chose to allow visitors to reflect at their own pace, responding to the question in both abstract and written forms. This approach encouraged the introspection we aimed to evoke. In doing so, we hoped that participants would carry the value of the experience with them, challenging the universally recognized concept of marriage and reappropriating its meaning for themselves. Moreover, the ceremonial objects analyzed and displayed were fewer than we had originally planned, due to the same limitations mentioned earlier.

An important factor to consider regarding the results of the exhibition is the limited amount of data we were able to collect due to its one-day duration and the restricted number of visitors. Additionally, the audience was quite specific, predominantly coming from a design-oriented background and generally open to this type of reflection. Unfortunately, it is not possible to predict the outcome we might have achieved with a broader and more diverse audience. Nonetheless, we consider the insights we gathered to be significant and valuable, given their subjective and qualitative nature. We were able to gather many results from them, as they were all pretty different

and variegated thanks to the strong self intepretations.

The intuitive method also proved beneficial for the participants, who could deliberately choose to focus on ceremonial objects, the meaning of marriage, or the marriage contract during their reflection. It is evident that most responses concentrated on the more abstract, conceptual, and emotional aspects, addressing themes like self-identity and the nature of connection. Practical reflections, which focused on aspects such as housing and children, were surprisingly few. The variety of responses highlights how the meaning of marriage is already highly personal in the present and will be even more so in the future. This is why the clay medium had a strong importance in the experience. Its shapeability had an inherent child-like quality that pushed people' creativity and imagination, maybe even making them reconnecting to their inner desires and hopes for the future.

While this study provides valuable insights, it also proves the effectiveness of the methods used. This is important as it shows the possibility of broadening their applications to other traditions other than weddings and marriage. The exhibition design can be shaped around different context and configure a space for people to reshape their visions by confronting traditional objects from the past and present to possible future ones. The final interacting moment is crucial as it opens to a moment of self reflection and creativity through tangible engagement.

Nonetheless, the results of these methods are strong individual interpretations that do not reflect society as a whole. They need to be connected to the context and to a wider structure, and to be considered by different corporations such as the educational one, the government, to then lead to societal change.

CONCLUSION

In conclusion, our research explores the potential changes of the meaning of marriage and wedding rituals by comparing past and present traditions to a 2050 scenario. By showcasing ceremonial objects to users and then asking them to 'shape' their own wedding, we gathered useful insights on the individual interpretations of the research questions. These findings confirm that the pace of ritualistic evolution does not align with the pace of societal evolution. As a consequence, it is important to continue to foster this kind of reflections through discursive design, to accelerate societal change.

ACKNOWLEDGEMENTS

First and foremost, we want to thank our teacher Dan for is coaching and enthusiasm during the class. Moreover, we want to thank the whole teaching staff for their guidance.

Secondly, we use this section to note that several parts of the report have been translated with the support of ChatGPT. Importantly, no content was created with the help of AI, it was only used to translate text from Italian to English.

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APPENDIX A - EXHIBITION MATERIALS
(SEE FOLLOWING PAGES)

Promotions for groom's ring

June 1, 1927

Early Hollywoord promotions for the groom's ring, using a wedding scene still from a movie as advertisement.

"The American double ring ceremony can be traced back to the 1940s and 1950s when the jewellery industry invented the tradition of the groom's wedding band and the marrying public adopted it with vengeance."

Howard, V. (2003). A "Real Man's Ring": Gender and the Invention of Tradition. Journal of Social History, 36(4), 837–856. http://www.jstor.org/stable/3790353

Egyptian Ring Exchange

Estimated 1000 BC

A papyrus scroll featuring the exchanging of rings made of hemp or reed.

"Documented evidence showed that these rings symbolised everlasting love and commitment between two people – the circle of the ring represented no beginning and no end. The inside of the ring symbolised the future."

Cape Town Diamond Museum. (2016). The History of the Wedding Ring. https://www.capetowndiamondmuseum.org/blog/2019/03/the-history-of-the-wedding-ring/

Kaliganthi necklace

July 27, 2023

An Indian Family Jewel, passed through two generations across five decades, gifted at a wedding. Upcycled to retain its essence but align with modern spirit.

“The Kaliganthi was the least chic piece of jewellery that I owned. It sat in my bank locker for 10 years!”

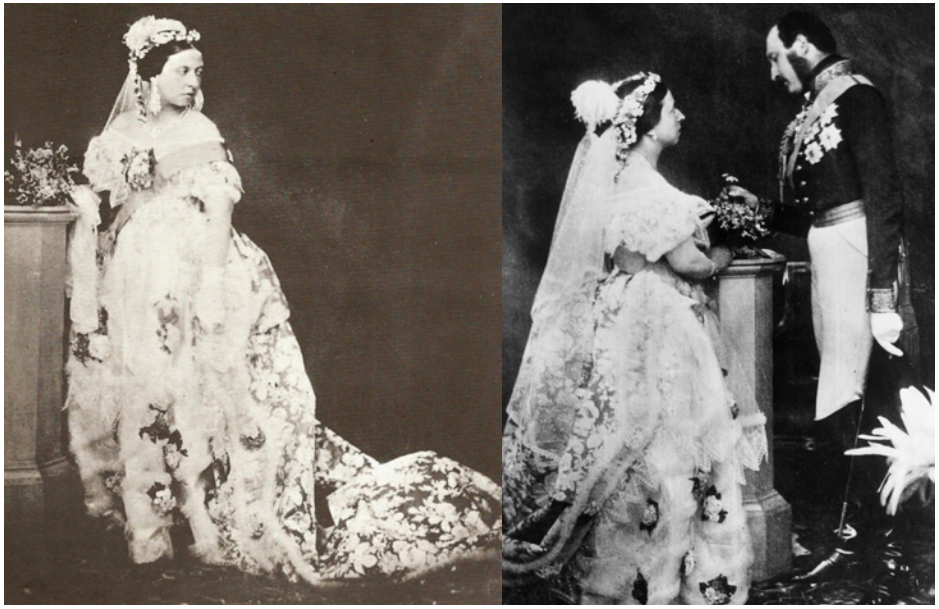
Somaia, R. (2023, 27 juli). A family heirloom passed down generations sparked this project documenting the lost art of crafting old-school Indian jewellery. Vogue India. https://www.vogue.in/content/a-family-heirloom-passed-down-generations-sparked-this-project-documenting-the-lost-art-of-crafting-old-school-indian-jewellery

Set of 6 wedding rings

September 20, 2056

A replica of the wedding bands from the first legalized community marriage.

“The traditionality of using rings connected us to our true meaning of marriage. The core of our rings are all the same. It expresses the relationship we have with each other and the promises we made. However, the differences represents each of us individually, to feature who we are indepentendly and to honor the connection we share with others as well.”



Queen Victoria's 12 feet veil

February 10, 1840

While the 18th century saw a replacement of the red veil with tiaras, caps and bonnets, the iconic wedding of the queen influenced a quick change of trends.

"She wore a white wedding veil and gown, becoming the first woman in England and surrounding areas to do so. Red veils immediately became a thing of the past [..]White veils became a symbol of status, style, and wealth shown in the fabric's weight and length."

Bride, N. (2023, December 7). The history of bridal veils – NK Bride. NK Bride. https://www.nkbride.com/blog/2022/7/7/wedding-dress-the-history-of-bridal-veils#:~:text=Ancient%20Origins,they%20walked%20down%20the%20aisle.

Flammeum veil

Estimated 150 BC

Ancient Rome bridal veil that shrouded the entire bodies of the brides to distinguish them.

"These veils "flame-colored" were made to look like the bride was engulfed in flames to ward off the aforementioned evil spirits. Fun fact: These veils were difficult to see through, so the bride's father had to escort her to the altar. Thus, the tradition of "giving the bride away" was born."

Bride, N. (2023, December 7). The history of bridal veils – NK Bride. NK Bride. https://www.nkbride.com/blog/2022/7/7/wedding-dress-the-history-of-bridal-veils#:~:text=Ancient%20Origins,they%20walked%20down%20the%20aisle.

Henna tattoo

Estimated 1000 BC

Henna is a temporary, orange-red dye made from the leaves of the Lawsonia inermis plant.

“According to Indian wedding traditions, applying henna to the hands, feet, and arms of a woman is said to aid fertility, ward off evil, and attract positive energy. Hidden within the bride’s intricate artwork are the names of both the bride and groom, which the groom is meant to find as a further sign of good luck.”

Ribinik, J. (2022, March 15). Everything you need to know about Indian wedding traditions. NYC Wedding Photographer | Wedding Photographers NYC | Wedding Photographey | Julian Ribinik.

Wedding veil for 4 people

November 6, 2050

A replica of the wedding veil from a wedding of a 4 people group.

“It is beautiful that still today we carry the tradition of wearing veils, but time has added so much meaning to it. Each of us wears a piece of the veil that represents them, and then everything is interconnected in various and beautiful tails. The intricancies are a symbol of the relationship and affection that flows between us.”

Western Wedding Ceremony

February 8, 2019

A priest or ordained minister guides the soon to be married couple through their vows and unites them in holy metrimony.

“The European wedding was very south of France, nothing over the top”

Bazaar Bride. (2019). Influencer Diipa Khosla Wore 9 Different Looks for Her 4-Day Indian Wedding. https://www.harpersbazaar.com/wedding/photos/a25397587/diipa-khosla-oleg-buller-wedding/

Hebrew same-sex Wedding Ceremony

October 2019

A blend of a non-traditional approach whit the families request to honor traditional Jewish traditions

“The ceremony was surprisingly meaningful and personal to us,”

Brides. (2021). A Palm Springs Wedding Full of Laid-Back Luxury. https://www.brides.com/palm-springs-wedding-colony-palms-hotel-5097614

Vedic Wedding Ceremony

February 8, 2019

During the Vivanha (a traditional Hindu wedding) the couple promises eachother a lifelong commintment .

“The Indian wedding dinner and reception had this very ethereal, white roses and gold theme, while the Indian wedding itself was very rich and very, very regal. Kind of like that Rajasthan, old Indian palace vibe,”

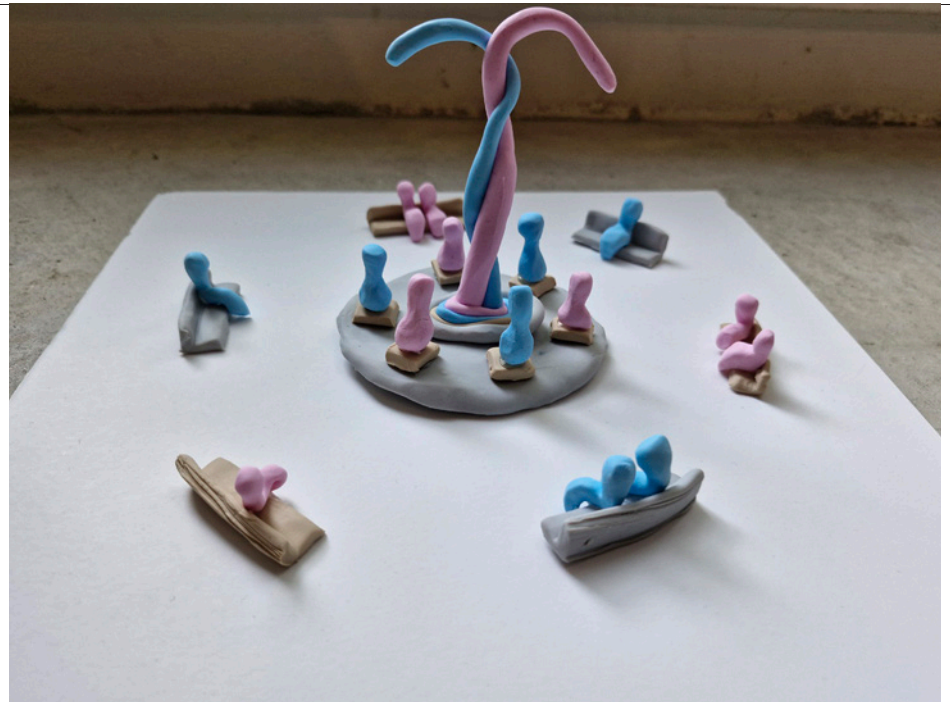
Bazaar Bride. (2019). Influencer Diipa Khosla Wore 9 Different Looks for Her 4-Day Indian Wedding. https://www.harpersbazaar.com/wedding/photos/a25397587/diipa-khosla-oleg-buller-wedding/

Poly-Relational Union Ceremony

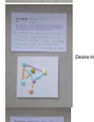
February 5, 2056

A scale model of the wedding cermony joining a multitude of partners in their promises to take care of one another.

“We are thrilled to have found you and welcome you two into our circle. Hopefully we can lay the groundwork and provide a fruitful environment for your love to grow into the new chapter of expanding our family together.”



APPENDIX B - ANALYSIS OVERVIEW
(SEE FOLLOWING PAGES)

Picture	Title	Year	Description	Type	Other forms	Divorce / Care	The individual	Traditional Marriage
	Distance from the ring	2035	I would not want a traditional wedding but do things differently. I would only have a wedding to celebrate love (with loved ones) and promise to keep being ourselves. But I would like a neklace with rings from my and my partners family.	Object	I would not want a traditional wedding but do things differently. celebrate love (with loved ones)		promise to keep being ourselves	But I would like a neklace with rings from my and my partners family.
	The promise to find balance	-	Marriage is a journey! A promise to explore my infinite potential along with my partner! A promise to balance and work together towards our infinite selves.	Symbol			A promise to explore my infinite potential along with my partner! A promise to balance and work together towards our infinite selves.	Marriage is a journey! A promise to explore my infinite potential along with my partner!
	gewoon een heidibeentje omdat ik van je hou *(just a meadow flower because I love you)*	11-6-2060	We now put more value in small rituals over large ceremonies. Strengthening and pronouncing my love and dedication regularly, rather than just one. This goes for my partner, but also my close friends and family (loved ones).	Symbol	This goes for my partner, but also my close friends and family (loved ones).	We now put more value in small rituals over large ceremonies. Strengthening and pronouncing my love and dedication regularly, rather than just one.		This goes for my partner, but also my close friends and family (loved ones).
	Love platonically	11-6-2024	Marriage would mean a certain commitment to each other - to be there and support in good and bad times. I would want to celebrate this with both my romantic partner(s) as with my friends. We put too much pressure on finding 'the perfect partner' and forget the love we share and exchange with our friends. Thus, actually, I would want to marry my friend.	Social arrangement	Thus, actually, I would want to marry my friend.			Marriage would mean a certain commitment to each other - to be there and support in good and bad times.
	What does it mean to exist in a community?	Present	Community / practices of care "you shape me / I shape you / we shape each other" Just like clay, we are moulded by others and affect others.	Symbol			"you shape me / I shape you / we shape each other" Just like clay, we are moulded by others and affect others.	
	Open bonding with (non-)humanels	19-4-2042	Marriages between two people are outdated. We will live in hybrid tribes and will (sometimes) bond these community part ary non-human partners.	Social arrangement	Marriages between two people are outdated. Community	hybrid tribes		
	Mutual care	2030	The guiding promise of future relationships (romantic and otherwise) should be notion of mutual care, more than anything else - same of belonging, safety, understanding - also beyond romantic love.	Symbol	(romantic or otherwise) also beyond romantic love.	The guiding promise of future relationships (romantic and otherwise) should be notion of mutual care		
	Casual Marriage	2035	To love unconditionally and to accept the other(s) as they are. To embrace difficult times together and offer support whenever needed. Unions can be with 2+ people, between all genders, etc. Divorce isn't shamed or difficult to do.	Symbol	Unions can be with 2+ people, between all genders, etc.	Divorce isn't shamed or difficult to do.	to accept the other(s) as they are.	To love unconditionally
	Traditional marriage	11-6-'24	I'm still quite happy after 13 years of "traditional" marriage and expect to be in the future. The contract is useful for us as a nuclear farmmily with multiple nationalities. Finances and parenthood are well arranged in the standart marriage contract for us.	Social arrangement / Symbol				I'm still quite happy after 13 years of "traditional" marriage and expect to be in the future. The contract is useful for us as a nuclear farmmily with multiple nationalities. Finances and parenthood are well arranged in the standart marriage contract for us.
	Systemic Kindness	11 june 2024	We have a place in our hearts forever. Doing our best The names might change: husband, wife, parent, friend, bonuspanent, family,... A system of relationships with ending dynamics - united by kindness	Social arrangement	The names might change: husband, wife, parent, friend, bonuspanent, family,... A system of relationships with ending dynamics - united by kindness			We have a place in our hearts forever.
	Together	2028	Promising to cross over without losing identity, to mix, to create something new together	Symbol			Promising to cross over without losing identity, to mix, to create something new together	
	Key	2030	Sharing everything and building a life together the key to your house and life together (most people will probably want to keep everything seperated in the future)	Object / Symbol				Sharing everything and building a life together the key to your house and life together (most people will probably want to keep everything seperated in the future)
	Fragile Artwork	2030	That marriage remains a special, unique and fragile thing. Just like art. Not everyone will enjoy every shape which others might like. However, I believe we should keep the respect and importance it has. Together with the care it needs to keep this fragile piece together.	Symbol	Not everyone will enjoy every shape which others might like.	Together with the care it needs to keep this fragile piece together.		I believe we should keep the respect and importance it has.
	Desire in all	1-1-2038	The promise to allow one individual to be, be themselves and loving towards whatever their love desires. Therefore maybe embracing the whole of one in a collection of others.	Social arrangement	Therefore maybe embracing the whole of one in a collection of others.		The promise to allow one individual to be, be themselves	
	Marrying every day again until it stops, that's okay	3000	I don't see the value in staying together because you're married, but because you choose to do so everyday. It's okay if the flame goes out. You shouldn't be pressured to stay together, but you should choose	Symbol		I don't see the value in staying together because you're married, but because you choose to do so everyday. It's okay if the flame goes out. You shouldn't be pressured to stay together, but you should choose		

A bittersweet brew: exploring the role of nostalgia in speculative rituals

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ABSTRACT

An increasing number of researchers are employing speculative design to examine our delicate food production system and the pressures we place on it. Coffee, in particular, has been shown to be highly sensitive to climate change. In this research through design inquiry, we explore the role of nostalgia in speculative rituals to promote reflections on our current practices related to coffee making and drinking. It aims to challenge the status quo to surface the embedded social and cultural values as well as sociopolitical tensions. To make sense of this space, we create an experiential futures exhibition contextualised in the year 2050, and synthesise three fabulations: (1) It's all gone, (2) Collective nostalgia, and (3) I need closure. Our discussions in this pictorial unpack the interconnectedness of personal and collective identities, material cultures, social structures, and broader societal issues, offering invitations to design researchers to explore alternative ways of engaging with speculative rituals through scent-evoked nostalgia.

Author Keywords

Speculative design; Worlbuilding; Nostalgia; Ritual; Imaginaries; Coffee-drinking and making

INTRODUCTION

What would life be without coffee? - King Louis XV of France is said to have asked, then added "*But then, what is life without coffee*?" [12]. Imagining life without coffee right now is for many of us, almost impossible.

27th of June 2024 - It is no uncommon sight; terraces bustling with people sipping coffee, workplaces adorned with branded coffee mugs on every desk, and stations filled with travellers dashing by, coffee cups in hand. The beloved beverage that graces our mornings and fuels our conversations is more than just a drink. With 2.25 billion cups consumed around the globe daily [2], it has been integrated within diverse cultural threads [11] and fuels a purpose that extinguishes beyond superficial perception. But what if an established habitual routine that has been integrated into society, and has enveloped into the renowned coffee-culture on a global scale, ceased to exist?

Coffee production is threatened by climate change and socioeconomic factors. Rising temperatures and shifting weather patterns disrupt coffee growing regions like Brazil and Vietnam, reducing both yield and quality [15, 37]. Pests and diseases further jeopardize crops [5]. A glimpse into this potential yet unfavourable outcome is provided by research published in PLOS One, which suggests that regions suitable for coffee production could shrink with 54-60% by 2050 if global temperatures rise; "*Crop disease, infestation and premature ripening will become more likely, resulting in a lower quality of coffee produced in lower volumes*" [34]. Socio-economic challenges, such as fluctuating coffee prices and inadequate farmer support, undermine the livelihoods of small-scale producers, leading to decreased investment in sustainable practices [26].

Such phenomena, especially in the context of coffee production threatened by climate change and socio-economic factors, help us reflect on the role of design as a crucial mediator addressing the problem-solution dichotomy. In this project, we employ speculative design methodologies to address this. Speculative design offers a valuable approach by envisioning and materialising potential futures, thereby illuminating current issues and prompting discourse on sustainable practices [29]. By imagining an alternative future without coffee, we aim to challenge the status quo and employ design probes in the form of rituals to investigate such complex issues serve as tools for reflection and debate, encouraging participants and viewers to engage with potential futures in a more concrete and personal manner [4]. Through this design exploration, we we aim to delve into how tapping into nostalgia can evoke emotional responses, demonstrating how

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speculative design can intersect with human experience on a personal level. Nostalgia often has flavours of sadness [49] and a mixture of bittersweet emotions [8]. Nostalgia is a research interest in many fields including design research [20], where focus is to use media to evoke nostalgic emotions. Examples include using media to support nostalgic experiences [3], and presenting nostalgic media in various environments like museums [44] or elderly homes [36]. In this this research through design inquiry, through worldbuilding, reflective activities, and a personal ritual, we investigate

how can nostalgia play a role in speculative rituals to promote reflection on the contemporary practices of coffee-drinking and making to surface the embedded social and cultural values we share and sociopolitical tensions that arise?

As part of the course 'Researching the Future Everyday' at the Technical University Eindhoven, an experiential futures project was developed, utilising design in an exhibition format to evoke, materialise, and influence imaginaries. Visitors of the year 2050 were guided through a cabinet of rarities displaying historic coffee-related products, a self-reflective questioning pinboard, and a closing ritual where they created their own nostalgic scent blend. This led to a three-part experience, now referred to as fabulations. To analyse the outcomes of the questions of fabulation 2 and the observations during the closing ritual of fabulation 3, inductive reasoning was employed to prevent a biased evaluation procedure. Finally, this report discusses the emergent themes and tensions observed during the exhibition.

For centuries, the two most commonly grown coffee beans, C. arabica and C. robusta, have been cultivated in the equatorial regions of the Americas [2], and have been utilized as the sole resource for preparing coffee. It is these seeds from the Coffea plant species that result in coffee having that darkly colored, bitter, and slightly acidic taste. Additionally, it has a stimulating effect on humans, primarily due to its caffeine content. As a result, coffee as a beverage, especially due to its unique resource and interwoven nature in society, can be considered a phenomenon with far-reaching implications for the future. Considering this forecast, and knowing that C. Arabica accounts for approximately 70% of the total world production, the initial stages of potential future implications would hit hard and fast on a global scale [34]. Conversely, C. robusta, which can be cultivated with lower production costs, and is more resilient to less favorable soil and climate conditions, may not be able to compensate for this extensive loss. Instead, producers may turn to additional resources, such as avocado or cashews to replace the conventional coffee bean [34]. Though this scenario may seem unimaginable now, the future of coffee remains uncertain and no longer assured marking a pivotal juncture between centuries of entrenched coffee culture and the unpredictability of forthcoming outcomes.

Figure 1. (2018) Arabica vs Robusta by Pio Gastro Bar & Bistro, retrieved from *https://piogastrobistro.com/pratikbilgiler/arabica-versus-robusta/*

BACKGROUND

1. Expanding the notions of human-thing relationship

Artefacts are not merely passive items in our daily lives, but active participants in the construction of our social and emotional worlds. Ian Hodder, in his book [23], explores the concept of entanglement, which highlights the intricate and reciprocal relationships between humans and objects, illustrating how material culture shapes and is shaped by human behaviour and social structures. Further, Hodder temporally examines artefacts showing how development of technology and culture are intertwined [23]. Material culture delves into how the spaces we inhabit as being autobiographical representations [21], the significance of objects in everyday life [19], how mundane objects become evocative of life events offering comfort during significant life transitions [45], and how heirlooms provide an understanding of the distant pasts [31]. Autobiographical memories refer to memory that is specific to the self and personal in nature [44]. These experiences form the essence of our identity, shape who we are, who we have been, and importantly, who we have the potential to become [17]. This emphasises that we do not only form bonds with other humans around us, but also deep relationships and attachments to established practices, physical environments and systems we live in and with [28 , 38]. These attachments extend the meaning of self implying that materials can become a part of who we are and can constitute our self identity [9, 18, 38].

Human-thing relationships are not isolated, but part of a network which can be physical or conceptual, entanglements that extend beyond items to systems of objects and practices. Using an autoethnographical approach to build on this understanding, we aim to examine and reflect on how physical artefacts can serve as powerful tools in preserving and evoking memories. By exploring the reciprocal connection between us and our material world related to coffee practices, we seek to uncover the nuanced ways in which items related to practices of coffee making and drinking, shape and are shaped by our personal and collective identities. By critically engaging with the emotional and cultural significance of such artefacts, we want to explore how the extinction of coffee can impact our sense of self and cultural memory.

2. Crafting futures by reflecting on the past

Design fiction is a uniquely productive approach towards speculative inquiries. It extends the speculative aim of design–its future orientation–into more reflective realms that critically challenges assumptions we hold about design. This offers design researchers an approach for critical speculative inquiries [48]. Wakkary et. al. emphasise that actual situated artefacts in the everyday can offer for speculative and critical inquiries in design making everyday setting sites for speculative and critical inquiries [48]. Further, embodied speculation approaches offer ways to identify social opportunities and ethical implications of possible futures [40]. By offering an enriched problem definition, it can help shift focus towards real-life concerns and contexts [13, 50]. Additionally, Robertson and Wagner advocate for ethical approaches to participatory design which emphasises on reflective engagement with participants. This involves recognizing participants' agency and fostering emancipatory participation, ensuring their voices and experiences shape the design process meaningfully [35].

These perspectives are highly relevant focusing on a reflective approach being essential for speculative design. By adopting a reflective approach we aim to bring to the foreground ethical, reflexive, and emancipatory approaches. We hope to align this with the aim of creating meaningful interactions with the material world and its cultural significance. By engaging participants in reflective exercises, the objective is to uncover the deep emotional and cultural significance of coffee, as well as the broader social implications of its absence. Through these reflections, we aim to uncover the broader implications of coffee's extinction, touching on themes such as social structures, societal problems, inequality, post-colonialism, and personal values and practices. This project aims to highlight the interconnectedness of personal habits, social structures, and broader societal issues.

3. Rituals for meaning making

Theory in sociology claims the context of recollection changes the reconstruction of memories, arguing rituals are fundamental for the transmission of collective memories in the form of tradition [22]. Some of the most important cultural evolutions have involved the invention or re-imagination of rituals or routines. According to anthropologists and historians, humans have a long history of designing rituals [10]. Certain design fiction prototypes help speculate about 'interaction rituals' through particular interfaces [32]. Rituals generate emotions and are symbolic actions that transcend the obviously visible and bring higher meaning to experiences [10 , 27]. Kluber et al. [27] outline six principles for designing rituals. They emphasise balancing the privateness and publicness of rituals, suggesting that while rituals may be intimate, their public display enhances visibility and perceived power. Customisation and uniqueness are important, allowing users to personalise rituals to express themselves. The rituals should embody societal values, with symbolic components that foster transcendent experiences. Structuring and creating extraordinary experiences make rituals feel special and temporally significant. Ensuring physical and psychological accessibility is crucial for reminiscence. Lastly, rituals should stimulate participation, inviting others to join and repeat the activity, making it a collective and cultural phenomenon.

In accordance with Coops at al., we want to acknowledge emotions of people when letting coffee go, we want to create a space to address diverse knowledge, opinions, worldviews, and emotions to initiate an open and honest exchange with one another [18]. Further, we consider rituals to be fluid, a "*series of actions or activities from which experiential meaning emerges*"[30] (p. 1) to express personal and collective values [18]. Through creating a ritual, we want participants to be able to make sense of and find meaning in what is happening or has happened and explore what the interactions in the ritual feels like, both with other participants and actions, and how it can support us in the process of meaning making.

UNDERSTANDING NOSTALGIA

Nostalgia is generally defined as the feeling of having lost something important or dear. This manifests as nostalgia for the (personal) past. It is also defined as a joy tainted with sadness [49], often noted for positive attributes such as promoting self-esteem, providing opportunities to form social connections, and an increased sense of meaning in life [39 , 51]. It is often connected with fond memories about youth and high school periods. This phenomenon is called Youthful sentiment. This expresses itself in places, TV shows, toys, games and other aspects that people experienced in their youth in a positive way. On the other hand, negative emotions such as sadness, regret, loss, and loneliness can be associated with feeling nostalgic [24, 51]. It is this mixture of emotions which has led to many definitions of nostalgia. Batcho [8] describes how a once medical term has morphed into a widespread set of emotions. For example, vicarious [42], collective [6], restorative [14], reflective [14], and personal which is defined as autobiographical experiences from memory [42 , 43]. Further, it has been researched that nostalgic memories triggered by taste and smell are especially relevant, arousing, and familiar. Scent-evoked and food-evoked nostalgia also confer numerous psychological benefits, including enhanced self-esteem, feelings of social connectedness, and deeper meaning in life. Gustatory nostalgia, a form of nostalgia in relation to food, has insightful linkages between memory and food and extends beyond tasting food [25]. An exploratory study of nostalgic food consumption elicited six themes: childhood, yearning, substitution, homsickness, special occasions, and rediscovery [46].

OUR INTERPRETATION

To provide a unique perspective on nostalgia, and possibly identify key elements within undergoing a nostalgic experience, we performed a reflective study that involved choosing 3 food-related products that evoke a nostalgic feelings (Figure 2). Subsequently, each item was photographed and placed on a Miro board along with explanations detailing what each item is and why it elicited a sense of nostalgia. Upon evaluating the items selected by each of us, it became evident that nearly all of them were not food items, but rather objects associated with the act of preparing or consuming a meal. Examples include a pahsul for cutting vegetables, an Indian coffee set, a steel candy drum, a children's lunch box, and a specific glass bottle containing salt. Moreover, a similarity between cultures and upbringing was recognised between two researchers of Dutch nationality: the lunch box and drinking bottle set. Both researchers chose lunchboxes and drinking bottles in the same style, which can be attributed to these aesthetic sets being a trend among children approximately 20 years ago - The Mepal set introduced in 2004 [33]. This indicates that the items were not only recognizable through personal use but also familiar within the environment, as hundreds of these sets were visible in sight multiple times during the day in primary schools. Additionally, cultural influences emerged in our evaluation. For instance, someone who wasn't raised in a school where these lunchboxes were popular might not share the same nostalgic connection. Conversely, this was highlighted by one member of our group with an Indian cultural background, who had nostalgic associations with items unfamiliar to the Dutch researchers. An explanation was necessary, highlighting the vast differences in cultural practices, such as the skill required to use the pahsul with one's feet and the tradition of pouring coffee from one cup to another to cool it down. As a result, these differences prompted us to evaluate the elements influencing

Figure 2. Miro Board | Reflective study

our selection of these items, aiming to understand the underlying factors that contribute to the formation of nostalgic connections. This evaluation revealed the following elements in our selection:

- There is an emotional connection present, mostly due to deeper social connections with other individuals
- The nostalgia brings you back to a positive memory/ experience from the past
- Recognition when specifically one item stands out among other 'non-relevant' items to the nostalgia connection, almost evoking the emotion of surprise
- The items haven't been seen or touched in a significant period of time, such as many years. Conversely, some items that have been used since childhood and are still in use today did not bring up the same nostalgic feeling

In conclusion, this reflective study highlights the interplay between memory, identity, and material culture. By examining objects related to food we find nostalgic, it underscores how mundane artefacts become vessels of personal and collective memory. This phenomenon is rooted in the philosophy that nostalgia is not just a longing for the past but a complex emotional state that reconnects individuals with their cultural heritage and personal history. The exercise's finding that nostalgic items are often tools or objects related to food rather than food itself—reveal how actions associated with these items evoke sensory and emotional memories wich anchored us in our memories. The identification of similar nostalgic items among individuals of shared cultural backgrounds, such as the Dutch teammates' lunchboxes, demonstrates how collective memory shapes and is shaped by communal experiences and sometimes extend to societal norms. This shared nostalgia is indicative of the social nature of memory which influences individual memory. Conversely, the unique nostalgic items from different cultural backgrounds highlights the importance of cultural specificity in understanding nostalgia.

OUR IDEA

The above insights were pivotal in understanding ways to induce nostalgia in our exhibition set-up of a speculative future. As coffee becomes extinct, preserving the artefacts of its preparation and consumption can evoke a rich tapestry of memories, rituals, and cultural practices. Based on our reflective exercise, stories and social construct seemed to be essential in evoking nostalgic emotions. We believe everyone shares social experiences, personal experiences, or fond memories related to coffee, making it an appropriate choice for such a research. Based on our experience, stories served as powerful tools for us to see patterns where there is chaos, and find meaning where there was randomness [52]. This meant that worldbuilding would serve as an essential tool for the visitors to step into the future. aligning with the idea that material culture and ritualistic practices are essential for the transmission of collective memories [16]. Worldbuilding is "the creation of imaginary worlds with coherent geographic, social, cultural, and other features" [47] (p.32). According to Zaidi, worldbuilding can forge a stronger relationship between foresight and design because it is a form of social constructivism and systemic design and instil a sense of completeness [52].

In order to create an engaging experience for visitors and participants, worldbuilding became essential to contexualise a future where coffee and coffee related items and practices have gone extinct. This led to creating stories to help people step into the future. Next to this it was decided to divide the exhibition in three different parts/fabulations: A static exhibition section, a memories and experience-related section and a hands-on workshop section.

WHY DID COFFEE GO EXTINCT? *In the future there are some problems in regards to production and logistics of coffee. First of all, high caffeine levels within people and addictions are becoming more prominent, and producing coffee has become more expensive due to limited resources in the world. The high intensity of producing and competition to get hold of the resources has been taken its toll on workers and the environment. Thus multiple governments around the world have decided to ban coffee due to all the negative consequences its existence has. Big consequences because of this were that many people started protesting and rioting because of the disappearing of coffee. Many people felt like governments robbed them of their culture and way of life due to coffee disappearing. They could also never relive precious moments, memories or create more priceless coffee experiences. Other factors like companies that design and make coffee equipment also were not very happy about this as they lost assignments and people lost their jobs. They decided to appeal to the government to come to a solution. These are the reasons why companies and other producers have resorted to create other forms of coffee and resources. They looked at sources like grain which was already used before by companies like zonnatura. Burning grains brings a taste close to coffee without caffeine and without using arabica beans. to produce alternate forms of coffee with less caffeine. Other beans that were less used but a bit more expensive were used for production but only slightly. The Robusta beans could only be harvested in small amounts and by select companies so not everyone could enjoy them. Subsequently different coffee machines were able to be developed and designed so more jobs were made available. Governments also started supporting ideas with these alternate coffee beans and sources. This way people could at least drink their beverages again and start to make new memories with this new form of coffee. But these memories were never the same as the old ones with the original forms and sensations of coffee.*

In 2050, climate change has ravaged coffee-growing regions, driving the beloved beverage to extinction. Coffee shops have shuttered, and the daily ritual of grabbing a cup has vanished. “Let’s grab a coffee” has become an antiquated phrase. People have adapted by drinking herbal infusions or nutrient-packed energy drinks, but the warmth and comfort of coffee is irreplaceable. Without the communal coffee break, offices feel colder, and less connected. Mornings have lost their magic, replaced by functional but soulless substitutes. Coffee machines, grinders, and mugs have been repurposed as nostalgic decorations in homes, museums, and galleries, relics of a time when coffee was the heartbeat of daily life. The familiar aroma of freshly brewed coffee has become a memory, a whisper of a bygone era. Society mourned the loss of more than just a drink—it mourns a cherished tradition.

Figure 3. Description coffee item ‘AEROPRESS’

2004 | AEROPRESS | The emergence of the AeroPress revolutionized the coffee-making process in the 21st century. With its compact design and simple operation, the AeroPress quickly gained popularity among coffee enthusiasts seeking a convenient way to enjoy quality coffee at home or on the go. Its ability to produce rich, flavorful coffee in mere minutes made it a staple in kitchens worldwide. However, as coffee brewing techniques continued to evolve, the AeroPress faced competition from newer brewing methods such as pour-over and espresso machines. Despite this, the AeroPress remains a beloved tool among coffee aficionados, cherished for its reliability and consistency.

Lastly used in 2008 on a camping trip when taking a break from walking a Geo-cashing route

Each artefact describes the identities of its past users and reminds us how cofee was woven into the fabric of everyday social life. Intimate and personal rituals highlight how individual practices contribute towards shared cultural experiences.

The memories associated to each artefact aims to help individuals associate to those around themselves, fostering a sense of shared purpose. Each artefact serves as a bridge to the past, and helps reflect on the social phenomena that these artefacts represent

This cabinet serves as a time capsule of coffee-making artefacts and practices from 2024, each meticulously preserved to illustrate the diverse methods and functionalities of coffee preparation. The collection underscores the significance of coffee as both a daily ritual and a cultural cornerstone, prompting reflections on the value of these activities now lost to time.

Figure 4. Visitor observing fabulation 1 | Cabinet of rarities

Each artefact’s story details its materials, skills essential for the operation, and history of its creation. For example, a manual coffee grinder, crafted from steel and plastic, highlights the blend of modern manufacturing technology and traditional coffee making practices. The story of its last use describes a repeated morning ritual, emphasizing the tactile satisfaction of grinding fresh beans by hand.

The extinction of coffee serves as a powerful narrative on ecological fragility and sociopolitical neglect. It raises questions about cultural and and environmental conditions. By showcasing these artifacts, the cabinet encourages reflection on current practices and the potential sociopolitical actions needed to preserve other cultural staples from a similar fate.

The display aims to preserve and commemorate the cultural and social significance of coffee in 2024. By documenting the last memories associated with each artefact, the exhibit highlights the emotional connections and cultural practices that have been lost, prompting reflection on the factors that led to coffee’s extinction.

FABULATION 1: IT’S ALL GONE!

FABULATION 2: COLLECTIVE NOSTALGIA

People grieve deeply for coffee, a symbol of simpler times. Photos of frothy cappuccinos and ornate latte art circulate online, stirring bittersweet memories. Coffee enthusiasts hold gatherings to share stories of their favorite blends, the cozy ambiance of cafes, and the joy of the first sip in the morning. Conversations often drift into nostalgia, recalling the warmth of holding a cup on a cold day. Baristas, now out of work, reminisce about their craft and the smiles they brought to customers' faces. Coffee's extinction has left a void, a collective longing for the lost sensory and social experience.

The second fabulation was created to let visitors think about their coffee related memories through three questions, share them with other people and write them down. These three questions were (1) What is your fondest coffee memory?, (2) If coffee were to disappear, how would you feel about that?, and (3) What would be the hardest coffee related item to let go of? (Figure 5). Visitors could write their answers on notes referring to the three questions based on the colour of the note (Figure 6). Then they could pin them on a pin-board under the category relating to the three questions (Figure 7). After the exhibition day the answers were read analysed and summarised to find out what people answered mostly to the three questions and what they think about the proposed future regarding coffee and their memories about it.

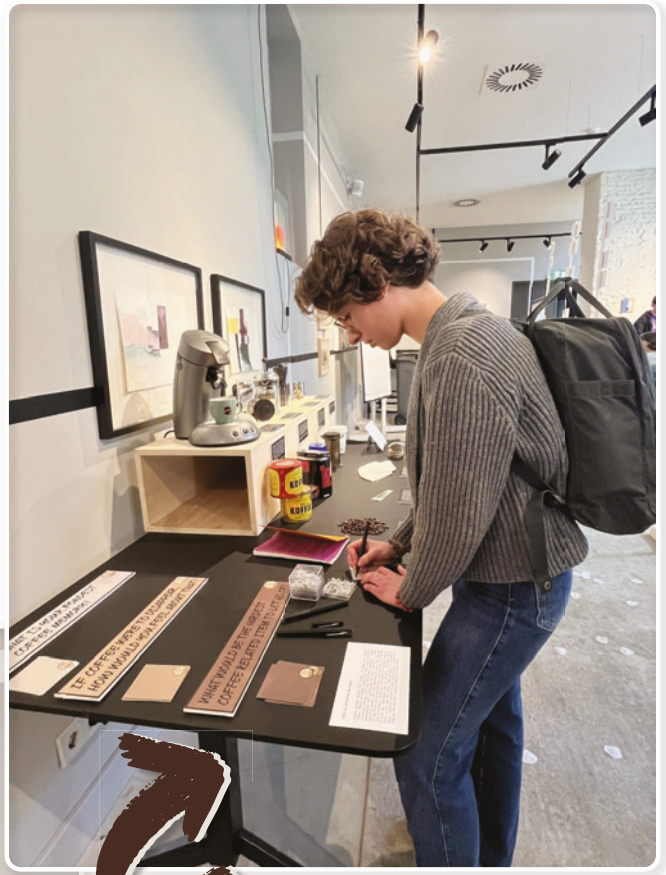

Figure 6. Visitor creating self-identity

Figure 7. Pinboard containing answers of visitors

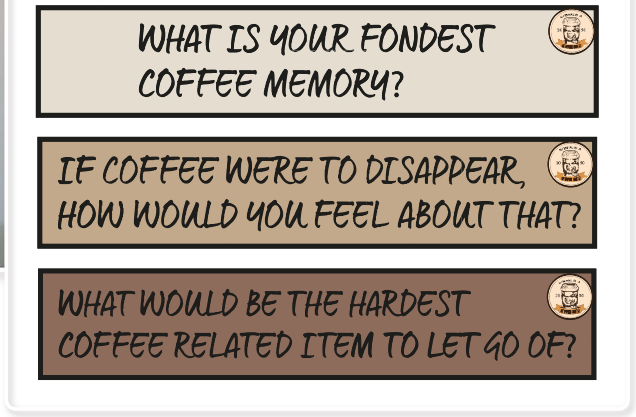

Figure 5. Questions evoking self-reflecting on coffee rituals

Concluding responses to 'What is your fondest coffee memory?': Most visitors think about enjoying coffee with friends and family and cherish the moments that accompany it. They also reminisce about meaningful locations such as their homes, countries they hold dear, and specific cafes they have visited. **Concluding responses to 'If coffee were to disappear, how would you feel about that?'**: Visitors mainly said they would feel sad for various reasons. Coffee is part of morning routines; they would miss the smell, traditions, fun moments, rituals, and social interactions more than the taste itself. Additionally, visitors expressed hope for nice alternatives if coffee were to disappear, and that they would seek these out to maintain enjoyable social moments with friends and family. **Concluding responses to 'What would be the hardest coffee related item to let go of?'**: Visitors provided multiple yet similar responses. For example, they mentioned missing the smell and sounds of the coffee machine, their coffee makers, and other coffee-related items. They also expressed missing memories with friends and family, coffee rituals, and the nostalgia associated with coffee and everything it represents.

FABULATION 3: I NEED CLOSURE

The world struggles to fill the void left by coffee. The collective yearning has become a source of shared sorrow. To move forward, a ritual is needed—a symbolic farewell to coffee. This ritual serves as a means to honor the past while accepting the present. It provides closure, allowing people to acknowledge their grief and let go. Such a ceremony can foster unity, helping society to find new forms of connection and comfort. By creating a space for communal mourning and remembrance, the ritual helps heal the collective heartache, allowing a new chapter to begin in a world without coffee.

Figure 9. Example

With the prospect of coffee becoming inaccessible, a more drastic image was created, envisioning coffee going extinct in November 2026. Consequently, the need to change current habits becomes urgent, and the realization might sink in more deeply than if the prospect were still years away. After engaging with the second fabulation, a self-identity in relation to coffee was established, which was necessary for the third part of the exhibition: undergoing a ritual to find closure on coffee's extinction.

Figure 8. 12 Ingredients | Scents

Figure 11. Public Ritual arrangement

Figure 10. Dry flowers | Available tools

The ritual consists of creating a personal nostalgic scent blend in an 80x30 mm glass flask with a cork closing mechanism. An example of a created 'nostalgic scent' is illustrated in Figure 9. Upon arriving, visitors were instructed to sit behind a table that contained the following available items; a collection of empty glass flasks containing a personalization tag, 12 white trays including a distinctive scent related to the coffee-culture (Figure 8), dry-flowers, mortar and pestle, funnels, toothpicks, scissors, and a mug for spilling ingredients (Figure 10). Visitors were provided with practical suggestions, such as adding each scent one by one in the order of the trays, utilizing the funnels to fill up the glass flask, and the option to adjust the ingredients with a toothpick. Additionally, it was mentioned that the nostalgic scent is meant to give the visitor a nostalgic experience whenever the aroma is taken in, meaning that the ingredients the visitor chooses could also include connections outside the sole ingredients of coffee. Think about incorporating the scent of lavender to highlight a cup of coffee experienced in the south of France, or adding strawberry because your child was eating strawberry ice cream at a restaurant while you were drinking your cup of coffee for dessert. Furthermore, participants were informed that they had complete freedom to choose which ingredients to add to their nostalgic scent blend, yet the ground coffee beans should be utilised as the foundation. Lastly, after completing their creation, visitors could personalise their aroma by filling out the 'perfume of' name tag (Figure 9).

Upon leaving their seat to signify their commitment to finishing the ritual, they also received a guide. This guide included detailed information for future use, covering topics such as 'Benefits of Using Your Nostalgic Scent', 'Ritual for Maximum Nostalgic Experience', and 'Storage Recommendations'. On the back, it featured all the selected scents and their characteristic nostalgic properties (Figure 13).

Figure 12. Visitors creating their personal nostalgic scent perfume

RESULTS -During the ritual, the ethnographic technique of observation was employed to gather data. A total of 15 visitors participated in the ritual, leading to the following observations. Despite being provided with practical instructions to follow the order of the trays due to the differing densities of the products, every participant chose to ignore this guideline and filled their flasks based on personal preference. Some created aesthetically pleasing layers, while others purposefully mixed all the ingredients. The number of ingredients varied significantly among participants; some opted for a minimal blend with just three ingredients, while others included as many scents as possible. Some people chose to describe the memory based on which the scent was created, others remained silent, and worked personally. Each visitor's final product looked and smelled unique, with no two results matching (Figure 12). Additionally, before beginning the ritual, visitors often shared their interpretations of how coffee might become extinct or reflected on environmental issues, expressing appreciation for the ingredients currently available. On average, participants took a few minutes to complete the ritual and left with smiles on their faces, indicating they went through a positive experience.

NOSTALGIC SCENT

Thank you for participating in our exhibition and creating your own nostalgic scent blend! This personalized fragrance is designed to transport you back to comforting times whenever you need a touch of the past.

BENEFITS OF USING YOUR NOSTALGIC SCENT

1. **Stress Relief**: The familiar and pleasant aroma can help reduce stress and promote relaxation
2. **Spark Creativity**: Recalling past experiences can inspire creative thoughts and artistic expression
3. **Increase Motivation**: Positive memories can motivate you to pursue future goals and dreams
4. **Connection & Belonging**: Reliving the past with loved ones can strengthen future bonds and foster deeper connections
5. **Reinforce Identity**: Nostalgia helps reinforce a sense of self and personal history, contributing to a stable identity

RITUAL FOR MAXIMAL NOSTALGIC EXPERIENCE

Brew a scent-less cup of coffee, also known as black coffee. After taking a sip, close your eyes, inhale the aroma of your personalized nostalgic scent, and let the comforting effects of nostalgia wash over you.

STORAGE RECOMMENDATION

We recommend storing your nostalgic scent on a flat surface in a location that holds personal value to you. As a result, the elements within the flask remain in place. Moreover, having assigned a designated area allows you to fall back on the nostalgic experience whenever you need it.

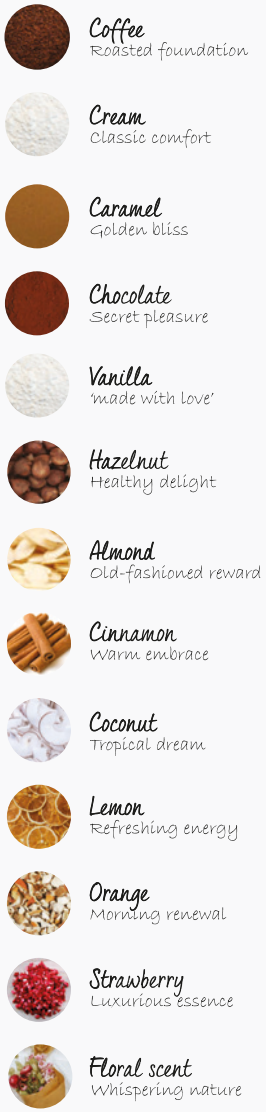

Figure 13. Nostalgic scent guide

The final segment of the exhibition, focusing on a ritual to come to terms with coffee's potential extinction, drew inspiration from Sas and Coman, who emphasize that grief rituals aid in understanding and giving meaning to emotions experienced during significant changes [41]. Such grief rituals ideally encompass three key elements: (1) a continued connection with the lost loved one/item, (2) transition to one's new social role, and (3) transformation of one's sense of self. Within our exhibition, these three elements have been realized by (1) the availability of a personalized nostalgic perfume, (2) transitioning visitors to a new appreciation for alternative scents and experiences, and (3) fostering a deeper self-understanding through the act of creating and reflecting on their unique blend. Consequently, employing grief rituals creates a framework for emotional expression and sense-making during transitions, fostering personal growth through nostalgic practices. Moreover, Dr. Tim Wildschut's research at Southampton University suggests that engaging in nostalgic reminiscence often enhances social connectivity and optimism about the future, as continuity with the past fosters a positive outlook [7]. Accordingly, during the exhibition's ritual, nostalgia was employed to bridge the gap between past and future, leveraging this profound psychological phenomenon.

Figure 14. Poster fabulation 3

DISCUSSION

The research conducted through this experiential future project aims to explore how nostalgia can be leveraged in speculative rituals to encourage reflection on contemporary coffee-drinking and coffee-making practices. In order to gain a deeper understanding of the complex relationships individuals and communities have with coffee, nostalgia is employed to reveal embedded social and cultural values and to highlight the sociopolitical tensions that emerge. Yet, the challenge lies in balancing the deeply personal nature of nostalgic experiences with the objective documentation needed for comprehensive analysis. This discussion will explore the findings from the project, addressing how nostalgic elements in the ritual elicited personal reflections, the effectiveness of these rituals in revealing shared values, and the sociopolitical dynamics that were brought to light. Additionally, we will consider the potential improvements and implications for future applications of such speculative rituals.

Utilising the ethnographic observation technique, external information through variables such as individuals' behaviours, facial expressions, and verbal communication could be captured. It was observed that allowing visitors to initially reflect on questions about the potential extinction of coffee (fabulation 2) led them to open up and share their thoughts openly before commencing the ritual of making a nostalgic scent blend (fabulation 3). Common themes such as an appreciation for coffee itself, its social aspects, environmental changes, and the idea that coffee is now deeply woven into society yet often taken for granted emerged, enabling us to identify shared values and highlight the sociopolitical dynamics that surfaced. However, during the exhibition, the internal experiences of visitors had not been documented. Rather, visitors experienced the ritual privately without interference from the study during and after the process. Subsequently, this leads to the gap in understanding the internal processes of how visitors crafted their nostalgic scent blends and which internal states they went through. Questions like "*What inspired your perfume creation?*", "*Why did you select these specific ingredients and what significance do they hold for you?*", and "*Who is the intended recipient of the perfume?*" could have provided valuable insights related to the research question. Answers could have been analysed in order to uncover what ingredients people are most nostalgic about and the various meanings they represent, as well as provide a natural understanding of participants' responses. However, speculation about why it was decided not to include these questions in the exhibition resulted in the understanding that nostalgia can be very individual and private, relating to the assignment we created for ourselves capturing nostalgic elements at the beginning of the course. Therefore, posing such questions during or after the ritual might have been perceived as intrusive and had the potential to disrupt the established experience. Nevertheless, we perceive promise in a proposal to provide visitors with a QR code after the ritual, connecting them to a questionnaire that can be completed voluntarily and anonymously once they are at home. In this manner, the ritual in the present moment is not disrupted, yet insights into internal processes can be obtained. However, we acknowledge that personal information is highly sensitive, and we must approach inquiries about personal history, feelings, and memories with great care. Individuals may harbour emotional or traumatic experiences that they are hesitant to disclose. Therefore, in future exhibitions, we would respectfully invite participants to share their experiences, emphasising that sharing is voluntary and they are under no obligation to disclose anything they are uncomfortable with.

Further discussion points could be raised regarding the aesthetics of the ritual arrangement. As part of a larger exhibition, the ritual occurred in an open setting where visitors passed by and engaged in conversations. One might argue whether these conditions influenced the pace at which participants considered adding elements to their perfume bottles and completed the ritual as a whole. Additionally, visitors might have felt self-conscious, as the values guiding their choices are personal, while the ritual was publicly visible. In future iterations, an environment where participants can engage privately, without external observers, would be ideal. Moreover, it could be argued that visitors had a limited selection of

options to include in their perfume, and there might have been instances where someone wished to incorporate a specific nostalgic scent that was not available. Nonetheless, an unlimited source of scents would make associations to the selection difficult, which is why a limited selection, with various choices related to coffee-culture, worked optimally for this investigation.

Lastly, our interpretation of nostalgic experiences, along with nostalgic objects, indicated that culture, and consequently historical norms and values, play a significant role. Therefore, in future applications, it could be intriguing to explore which scents individuals of certain ethnicities choose and how these scents relate to their personal experiences and memories.

CONCLUSION

To conclude, this project aimed to use nostalgia to create a cabinet of rarities exhibition together with experiences related to coffee/coffee related memories and experiences. This was done to answer the following research question: *How can nostalgia play a role in speculative rituals to promote reflection on the contemporary practices of coffee-drinking and making to surface the embedded social and cultural values we share and sociopolitical tensions that arise*?. Using an auethnographic and reflective process, we created three fabulations to evoke feelings of nostalgia and allow participants to step into a possible future and prompt reflections on current practices. Overall, this exhibition was received positively and prompted discussions on coffee and its history and perception, as well memories and experiences. People were also very positive about engaging in the ritual to capture the nostalgic scent. It could have been nice to find out more about why participants choose specific ingredients for their perfume. This can be done within future exhibitions and ritual making sessions but has to be done very discreetly to not hurt people as these are personal questions and might be considered as being intrusive. An idea could be to have a specific perfume making workshop session next to the exhibition where a group of people could engage in ritual making and be open about their memories and experiences (if they wish) in a safe and open environment. Other future work could be to keep expanding the cabinet to include more items from different timelines and also to have more available ingredients for the ritual making. This way, people have more to talk about and engage in, expanding the exhibition and discussion. Lastly we can say that we hope that coffee never disappears but that we shouldn't take anything for granted to stay forever. But even if coffee disappears, that doesn't mean that memories and nostalgia about coffee have to disappear

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Data for trade: What if personal data is commodified?

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ABSTRACT
This study explores the impact of personal data commodification under automated decision-making systems in the household environment. As the digital economy increasingly intertwines with daily life, the value and utility of personal data continue to rise, bringing not only new opportunities but also ethical challenges. We propose a design framework that treats personal data as a manageable and monetizable asset. Through speculative design of a "home assistant" system, this study presents a future scenario where individuals can control and benefit from their own data. The model incorporates enhanced privacy measures, such as local data storage and anonymization techniques, to protect personal privacy while maximizing economic benefits. Feedback from the study indicates that such a system inspires people to think about future data applications and enhances individuals' autonomy in data management. This paper contributes a new perspective to current discussions on privacy, data ownership, and the ethics of data commodification, aiming to stimulate broader contemplation of these critical issues.

Author Keywords
Design for the Future, Automated Decision Systems, Speculative Design, Critical Design, Privacy, Data.

INTRODUCTION
With the development and proliferation of artificial intelligence, AI's potential to take over household tasks is stronger than ever (Jin, 2022). In the pursuit of convenience and comfort, Automated Decision-Making (ADM) systems have become an integral part of home life. These systems possess unprecedented capabilities to predict and meet users' needs before they are even aware of them (Hughes, 2018). However, as these systems become more widespread, they also raise significant concerns about privacy and data security.

In the digital economy, personal data is widely used in various fields such as targeted advertising, market analysis, and product development, becoming an extremely valuable resource (Fabio, 2017). Our life data, like the blood circulating in our bodies, is crucial for survival in the digital age. By 2039, almost every household device, from smart refrigerators to security systems, is expected to collect and process data through ADM. While these devices' intelligent decision-making capabilities provide great convenience, they also raise significant concerns about personal privacy (Suranga, 2019). Thus, people cannot help but ask: How great is the risk of privacy breaches? What personal information might be leaked, and when? What consequences will these leaks bring? Rather than having personal data stolen, why not take control of the data ourselves (Vincent, 2018)? These questions urgently need careful consideration and effective management as ADM systems become more prevalent.

Based on these concerns about privacy and data security, this study proposes a design research plan: By 2039, ADM furniture will have entered millions of households. While people enjoy the convenience brought by automated decision-making furniture, they need to provide a large amount of personal data for ADM furniture to learn and make more intelligent and humanized decisions. This data is integrated into a central console, Home Assistant, where local storage of data ensures users can use automated furniture with confidence and enjoy its convenience. At the same time, this also grants users the right to manage their own data, gradually taking control of their data.

In the future, personal data will become an important asset. Third-Party Company seizes this opportunity and takes the lead in offering services to sell personal information. They collect personal information from people's memory cards and anonymize important personal information using methods such as digital masking, aggregated data, data perturbation, and generalization processing to protect personal privacy. The anonymized information is then sold to companies in need, for project learning and research, achieving a win-win situation for both individuals and companies.

Third-party Company facilitates the sale of personal data through the deployment of personal information vending machines in communities, making it easier for people to

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sell their data. In this project, the designer will act as a third-party company providing information trafficking services to users. Users can extract data memory cards from Home Assistant, insert them into the vending machine, and confirm their identity through fingerprint verification to ensure it is themselves selling their personal information. The vending machine offers various options, allowing users to choose the type and time of the data they want to sell. After confirming the information to be sold, the interface displays the corresponding revenue, and users can choose their preferred payment method (cash or bank card). Once the transaction is completed, the third-party company will anonymize the information and sell it to other companies in need.

This new model not only allows users to benefit from their data but also provides valuable research resources for various companies, maximizing the value of data. Under the premise of protecting privacy, Third-Party Companies has opened a new chapter in the personal data market, making data circulation more transparent and secure.

This study mainly explores the question: If personal data is commoditized in the future, how will this affect individuals' rights to privacy and societal views on data ownership? Moreover, how can we protect personal privacy and security while leveraging the economic benefits of data?

By researching the commodification of personal data and its impact on daily life, this paper not only discusses the potential economic benefits of data circulation but also deeply analyzes the ethical and legal issues that may arise during this process. It is hoped that this research will stimulate broader discussions and promote deeper thinking on data rights, privacy protection, and data commercialization.

Related Work

ADM system applications in the home environment

As research into the application of automated decision-making systems (ADM) in home environments continues to advance, there is a lack of clear understanding of who these users are and how they use smart home technology (Wilson et al., 2015). This is particularly true in the areas of integrating smart home devices and data analysis. These systems not only improve household energy efficiency but also enhance residential security and the automation of daily life. For example, by analyzing the behavior patterns of residents, smart thermostats and security systems can automatically adjust settings to optimize energy use and ensure safety. In terms of health monitoring, ADM systems support daily care for the elderly by comprehensively analyzing behavioral and physiological data, preventing health risks, and improving the quality of life for residents (Pal et al., 2014). These advancements demonstrate the tremendous potential and practical value of ADM systems in enhancing the home environment.

ADM is a double-edged sword

In the field of automated decision-making systems (ADM) research, prior work has demonstrated the immense potential of these technologies in enhancing the convenience of everyday life. Currently, many studies focus on how smart home devices utilize user data to serve their users (Dahlgren et al., 2021). However, this use of data also raises concerns about privacy infringement. For instance, a short essay on privacy protection mentions that Apple CEO Tim Cook stated in a speech that fully utilizing technology means relinquishing your right to privacy (Clarke, 2019). Therefore, Apple seeks user consent when collecting data because the data belongs to the users. Consequently, while smart home devices bring convenience, they may also inadvertently disclose users' daily activity information, increasing the risk of external surveillance.

Data and blood

In modern information society, personal data is increasingly regarded as an important and valuable resource. In the fields of big data analysis, personalized services, and artificial intelligence, the importance of data is growing, as some scholars have noted: "Data is the raw material of modern society, just as oil was the raw material of the industrial age" (Mayer & Cukier, 2013). Personal data to various systems is like blood to the human body. Blood transports nutrients and sustains life activities, while data provides the necessary information flow to drive the operation of systems. The sale of personal data is akin to selling blood, providing economic income to the data provider while holding significant market value for businesses and institutions.

Ethics and law of selling blood

In some places, selling blood is legal. For example, in the United States, individuals can sell plasma through legal plasma donation centers, which are regulated by the Food and Drug Administration (FDA). Donors typically receive $20 to $50 per donation (Slonim et al., 2014). However, in most European countries, selling blood is illegal. The European Union prohibits commercial blood sales to ensure the purity of the blood supply and the voluntariness of donations. For instance, the UK's NHS Blood and Transplant service explicitly states that blood donations must be altruistic and unpaid, to avoid any economic incentives that might negatively impact blood quality and safety (Titmuss, 2018).

Additionally, some scholars and ethicists argue that selling blood may exploit economically disadvantaged groups, as they are more likely to sell blood for financial gain, potentially jeopardizing their health (Farrugia et al., 2010). This perspective holds that medical services and resources should not be part of commercial transactions.

Ethics and morality of data trafficking

Data is as important in modern society as our blood. The ethical and legal aspects of data trafficking have been a point of focus for society, and in the digital economy the ability of consumers to make informed decisions about their privacy is severely hampered, as consumers do not

have much power to decide what their privacy is used for nor can they derive much substantial benefit from their privacy (Curtis & Liad, 2016). The article "How to use health data" therefore raises the importance of personal data ownership and control, emphasizing that users should have the right to decide how their data is used and shared to get the most value from their private data (Kaplan, 2016).

DESIGN

This project is based on the topic "Disputing Automated Decisions in the Future Home," exploring potential scenarios for embedding Automated Decision-Making systems into residential environments by 2039.

First design exploration

During the initial design phase, our project primarily focused on data privacy protection and user information security. We envisioned a future where ADM systems collect extensive and comprehensive information through voice and facial recognition, user preferences, and daily behaviors, making privacy issues a significant concern. To address this, major tech companies such as Amazon, Google, and Apple have introduced Privacy Protection Card services. Each month, these cards provide a fixed amount of protected data to ensure a certain level of user privacy by preventing information from being leaked from their devices. However, if users want more of their privacy data to remain secure and not be exposed, they need to purchase additional Data Protection Cards to increase their privacy storage capacity.

It is worth explaining that the reason for mentioning tech companies in this project is the frequent news reports about these companies misusing user information, selling it for profit, and engaging in unethical behaviors, which have led to increased scrutiny (Beloume, 2023; Acquisti et al., 2021; Toscano, 2021). We anticipate that as privacy issues become a focal point of societal concern, tech companies will change their profit-making strategies. By claiming that protecting user privacy requires personnel and maintenance, they will introduce Privacy Protection Card services. Much like Apple Cloud services, which has fixed data storage, and users who want more storage capacity will need to spend money to purchase. In our project, if users want tech companies to protect more of their personal data, they will need to purchase these Privacy Protection Cards to increase their data protection capacity.

However, there are some design flaws in this approach. First, given the past misuse of user data by tech companies, convincing users that their data will be genuinely protected is a challenge. Secondly, not all users can afford the extra costs associated with Privacy Protection Cards. This could result in only wealthier individuals being able to fully protect their data, leaving others more vulnerable to privacy breaches. Additionally, the process of purchasing, maintaining, and managing Privacy Protection Cards might be seen as cumbersome and inconvenient, hindering their widespread adoption. Considering these factors, we decided to abandon the design direction of Privacy Protection Cards.

Final design concept

In our second design proposal, we focus on the commercialization of personal information, enabling users to profit from their own data. This concept is inspired by an article in Quartz, "You should be paid for your Facebook data" (Scott, 2022), which discusses a "third option." In the wake of the Cambridge Analytica scandal (Engadget Is Part of the Yahoo Family of Brands, 2018) , Facebook users who were outraged by the misuse of their data seemed to have only two choices: either stop using Facebook and lose the social connectivity and convenience it offers, or continue using it without being able to control their data privacy. But is there a third possibility where companies profiting from user-generated data must pay for it? Users could have the right to decide to whom they sell their data and set their own prices. We aim to explore this direction further.

During our subsequent design process, we discovered Home Assistant (Assistant, n.d.), an open-source home automation system that prioritizes local control and privacy, making it ideal for use in local services. The Home Assistant acts as a central console, supporting over a thousand different devices and services. This means that the data collected by ADM devices will be aggregated and managed by the Home Assistant. By using the user's network, Home Assistant can retrieve ADM system device information and assist users in setting them up. Additionally, it allows data to be stored locally without the need for cloud storage, greatly enhancing user privacy. Local data storage provides users with peace of mind, ensuring they can enjoy the benefits of automation securely.

We considered selling the information collected by Home Assistant on the internet. Third-party websites would allow users to select the type and duration of information they wish to sell, enabling them to profit from their data. These websites would then sell the users' personal information to companies needing it for market analysis, strategic adjustments, product improvement, and development, creating a win-win situation for both users and companies. However, directly uploading local information to the internet may pose a risk of data leakage. To mitigate this risk, we plan to have users store their personal information on a memory card via Home Assistant. The card's design reminded us of the ATM (Figure 1) and the recyclable plastic vending machines (Figure 2), where users can insert empty plastic bottles to receive discounts. This inspired us to design an information vending machine, envisioned to be placed in high-traffic areas like other common vending machines for drinks and snacks.

Figure 1: ATM

Figure 2: Recyclable plastic vending machines

Users can take their memory card from home and insert it into the card slot of the information vending machine. The machine will read the card's used capacity and the number of user accounts. After verifying the information, users select their corresponding account, as Home Assistant records data for all household members, including children and parents. The memory card will display multiple user accounts, similar to Disney+ VIP accounts that require selecting the active user.

Figure 3: Information vending machine

After selecting their account, users follow the system's instructions for fingerprint authentication. Upon confirming their identity, the system displays the user's ADM-recorded information divided into six categories: Usage Habit Data, Environmental Monitoring Data, User Behavior Data, Personal Preference Data, Health and Biometric Data, and Audio-Video Monitoring Data. Users can then choose the types of data they wish to sell and the duration. The system provides a selectable time range from the initial data recording date to the moment the card was taken from home. After selecting the time range, the system calculates and displays the potential earnings.

Figure 4: Six categories

Figure 5: Information vending machine interface

Users can read the terms and conditions of the data sale and, upon confirmation, choose between cash and bank transfer for payment. This completes the information vending machine operation process. Additionally, during the data sale, the system will automatically anonymize personal information. For example, if ADM collects real names and ages, the system will assign a numeric identifier instead. For facial data, the system will apply mosaic processing to protect sensitive personal

information. Third-party companies will only have access to anonymized data, which they can sell to other companies for profit.

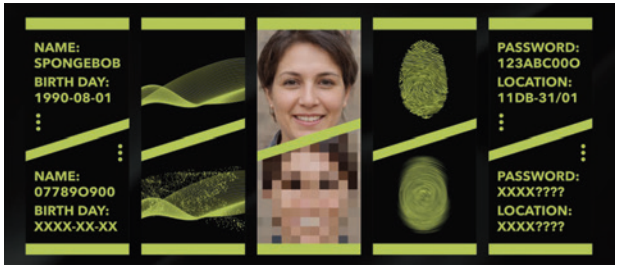

Figure 6: Anonymize personal information

This design aims to envision a future where personal data could become commoditized. We anticipate that individuals might have the option to decide which portions of their generated data they wish to sell. By enabling users to monetize their data, they would gain a new level of autonomy and potentially even financial benefit from their personal information. This shift could redefine the relationship between users and their data, fostering a future where data privacy and user empowerment are prioritized.

METHODOLOGY

This project was inspired by the current social debate about tech companies paying users for data usage (Mitchell, n.d.). We aim to make design decisions, outcomes and potential impacts open and transparent through the use of "exposed design". The project presents the concept of an information vending machine in the form of an exhibition that explores the social, ethical, and technological issues that the commoditization of personal information may bring about in the future by presenting prototypes and facilitating exchanges and in-depth debates. Our project collects feedback from people through a curricular exhibition, and the entire project experience is divided into three parts.

Video

To help viewers better understand the project background, we produced a video depicting the future scenario of 2039. In this future, Automated Decision-Making devices have revolutionized the daily lives of millions of households. People widely embrace the convenience brought by ADM devices, which learn and make more intelligent, humanized decisions by processing large amounts of personal data. All data collected by ADM devices is integrated into a home assistant control center, where local data storage ensures users can enjoy the benefits of automation securely. Additionally, third-party companies offer opportunities for individuals to sell their personal information through the Information Vending Machine.

Prototype display

Following the video, we introduced our design prototype using an iPad that simulated the Information Vending Machine. Visitors could interact with the interface, experiencing the process of selling personal information. Participants inserted memory cards that we provided into the device, initiated the system, and followed prompts to select the types and duration of personal information they wished to sell, earning monetary rewards. This hands-on experience allowed participants to engage directly with the prototype and understand its functionality.

Figure 7: Exhibit materials

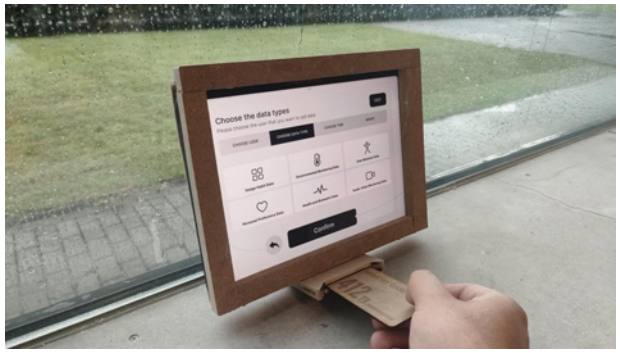

Figure 8: Put the card into the information vending machine.

Feedback collection

After participants experienced the product, we conducted interviews to gather their evaluations and opinions. The feedback collection phase aimed to achieve multiple objectives:

1. Acceptance Assessment:

- Gauge the overall acceptance of the concept of selling personal information.
- Explore the sensitivity and acceptable range of different types of personal information for sale.

2. Information Classification:

- Identify the types of information people are more willing to sell.
- Understand which information is deemed absolutely unsellable and why.

3. Concerns and Worries:

- Investigate major concerns participants have about selling personal information.
- Gather opinions on data security, privacy protection, and potential risks.

4. User Experience Feedback:

- Evaluate the usability and intuitiveness of the product interface.
- Collect suggestions for improvements in interactive design and functionality.

5. Ethical and Social Impact:

- Discuss the potential societal impact of personal information commodification.
- Explore participants' views and expectations regarding the future data economy.

By utilizing this feedback collection method, we gained valuable insights into user perceptions, potential areas for improvement, and the overall acceptance of our design. This approach not only helps us refine the current design but also provides essential guidance for future iterations and developments. Moreover, such in-depth interactions capture user perspectives on the complex topic of data monetization, enriching our exploration and research in this domain.

Summarize

In this project, we designed and presented a future scenario set in 2039. In this scenario, the widespread adoption of ADM devices exacerbates personal privacy issues. As a response, we proposed a solution using Home Assistant as a central control hub, enabling local data storage and settings, thereby granting users control over their personal information. To allow the audience to deeply engage with this future scenario, we used an iPad to simulate an information vending machine, enabling participants to experience the process of selling personal data firsthand. This interaction not only enhanced the realism of the experience but also helped us gather valuable feedback on various aspects, including acceptance evaluation, information classification preferences, user concerns, user experience feedback, and ethical and social impact awareness.

We created an interactive and participatory platform that encourages the audience to critically think about the implications of personal data commodification. This aims to stimulate broader discussions, challenge current perceptions of personal data usage, and explore potential future directions for the data economy.

Our "future scenario presentation + prototype experience + in-depth feedback" approach has application potential for exploring topics related to future societal changes. For example, we could apply this method to showcase a smart learning environment in 2040, allowing participants to experience personalized AI tutoring systems. This would facilitate discussions on the potential impacts and concerns regarding the role of traditional education. The strength of this approach lies in its ability to help researchers and designers better understand people's visions and expectations for the future, ensuring that future technological developments better meet societal needs.

FINDING

The Variability in Data Pricing

Many visitors have shown interest in the variability of data pricing. Currently, the data of different individuals already exhibits significant differences in the market. For example, the data of various celebrities is typically more expensive than that of ordinary individuals due to their extensive social influence and audience base. Some studies suggest that the social media accounts of celebrities can be used for targeted advertising and promotion, thus possessing high commercial value (Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. Business Horizons, 53(1), 59-68).

Certain special groups may also generate more "valuable" data. For example, the LGBTQ+ community, due to their unique consumption behaviors and social habits, may produce data that is highly valuable in specific markets. Badgett (Badgett, M. V. L. (2001). Money, Myths, and Change: The Economic Lives of Lesbians and Gay Men. University of Chicago Press.) found that the LGBTQ+ community tends to spend heavily on fashion and entertainment. When personal identity is combined with such targeted data, it may exhibit higher value.

Ownership of Information

Many visitors also raised the issue of selling shared information. Given the complexity of various types of information in real life, especially in shared living environments, data generation may involve overlapping identities. This overlap brings up the question: When data has commodity attributes and can be handled by users themselves, will privacy breaches become more serious? Will there be behaviors such as "covert recording" leading to data theft? To address this, we have considered several methods, which are reflected in our prototype, such as each person having their own exclusive data storage card. When selling data, verification of the seller's biometric information, like fingerprints, ensures that the seller is the owner of the data. However, in certain scenarios, more thought is needed. For instance, in audio recordings, might there be voices of other people? How should such data, with traces of interference from others, be handled? In this regard, we referred to some real cases and laws. The EU’s GDPR (General Data Protection Regulation) and California’s CCPA (California Consumer Privacy Act) provide some insights. They state that data collection requires the subject’s consent and adherence to transparency principles. Data subjects must have the right to access, modify, and delete their data. The

CCPA also mentions additional protections for minors and the preservation of civil litigation rights for data subjects. Legally, there is a need for targeted and stringent data protection laws and policies to ensure the legality of data collection and processing. In shared environments, it is also crucial to clarify each person's data ownership and define data-sharing rules, which may require consensus among individuals within a legal framework.

Multiple Sales of Information

Regarding the issue of repetition, there are some reference cases in the existing market. We can view the continuous updating and multiple sales of data as a subscription service model. For instance, platforms like Netflix offer services where users need to subscribe to access the latest content. Similarly, under the premise that data becomes a commodity, subscription, buyout, or borrowing models could provide potential solutions.

However, given the uniqueness of certain data types, such as health records and physiological data, their prices might significantly drop or become unsellable upon repeated sales. On the other hand, behavioral data and consumption habits, which are dynamic, might have more relaxed requirements for multiple sales.

What Information Are Users Willing to Sell

Existing studies have provided some insights into this question. According to a survey, users are cautious about selling sensitive data like health information, financial information, and home addresses, while they are more open to selling non-sensitive data such as shopping habits and browsing records (Acquisti, A., Brandimarte, L., & Loewenstein, G. (2016). Privacy and human behavior in the age of information. Science, 347(6221), 509-514.). However, from a market perspective, such data, although having minimal direct impact on personal lives, is highly valuable for market analysis and advertising. Thus, understanding users' privacy preferences and data sensitivity is crucial for the act of "data trading," which also relates to the issue of variability in data pricing mentioned above.

From the audience feedback, their responses to this question are relatively consistent. Most are willing to convert personal preferences, environmental detection, and user behavior data into economic benefits, while health and physiological data are divided, with some willing to sell at higher prices and others unwilling to sell. For audio-visual and financial data, most people are not willing to sell them.

Privacy Issues

Similar to existing privacy protection methods, facial recognition information in financial and social domains needs to be obscured using certain methods. For this issue, the question is not "which fields can" but "whether it is possible." With current mainstream technology, facial and voice data are highly sensitive and have high priority. Especially when they include user behavior records, obscuring facial and voice data helps build a "behavioral research model" rather than identifying the person—comprising specific identity details.

Existing differential privacy technology shows that by adding noise to protect privacy data, the data's utility can still be retained (Dwork, C., & Roth, A. (2014). The algorithmic foundations of differential privacy. Foundations and Trends in Theoretical Computer Science, 9(3–4), 211-407.). However, under the premise of data "commodification," further research is needed to determine if existing privacy protection methods are applicable.

Social Impact

Overall, users have shown some concerns while also adopting a positive outlook towards this potential future. Concerns mainly focus on privacy breaches and data security, personal rights and control over information, data misuse, and ethical issues. These key points have also been reflected in the previous sections. Interestingly, most visitors believe this system might improve current issues. From a system perspective, this behavior can help users better understand what information they generate and which devices are collecting their information. From a legal perspective, further refinement of related laws benefits personal information protection. When personal data is commodified, individuals can have more control over their information instead of passively relinquishing some privacy. Psychologically, some visitors feel that this system might not solve the prevalent privacy leakage issues but would at least give users a sense of control. The data they generate becomes a commodity, allowing them to trade it according to their will rather than being silently collected and used by large corporations.

Participants also mentioned the perspective of enterprises. From this angle, this system has both pros and cons. Some visitors believe that it remains to be seen whether large companies will participate in such a system. Overall, it provides a more convenient and legal way for fields that need certain data to obtain it.

User Experience Feedback

Regarding the current user experience, many participants feel that data categorization and presentation are still not direct enough. People hope for more detailed data categorization and display interfaces. This direction of improvement could enhance users' sense of control over their data and improve transparency in the data trading process. Further research is needed to find the balance between convenience and transparency. Overall, our interactive experience process allows participants to gain some insights into how the future personal information system might change. This method also provides a platform for interaction and participation, encouraging visitors to critically think about the potential impacts of such a system and review current privacy issues.

DISCUSSION

In this project, by envisioning the scenario of future data trading, we explored potential issues and opportunities, gaining new insights and thoughts. This potential future might change the way humans coexist with their data, making personal data a part of personal assets. Bringing this transaction to the forefront can prevent excessive data

theft and misuse by large corporations through proactive trading. Ironically, most visitors expressed that this seemingly extreme consumerism scenario "sounds better than the current situation." During the exploration and design process, we gained a deeper understanding and thought about data privacy and value. Like the financial system, such a trading system requires more exploration from both technical and ethical perspectives to ensure transparency, fairness, and security.

We also discovered more interesting research directions, such as the social impact of data trading and the digital wealth gap, which can draw inspiration from existing thoughts and work. The unique interactive design of the exhibition helped us create a credible experience scenario, examining current social issues and potential solutions from the perspective of designers and design researchers.

CONCLUSION

Through the discussion of personal data commodification, we explored a possible future. Data is not only a personal asset but also a crucial resource for driving information systems. This paper not only explores the potential economic benefits of data circulation but also delves into the ethical and legal issues that may arise in this process. We hope this study can stimulate broader discussions and promote deeper thinking on data rights, privacy protection, and data commercialization. Additionally, this study serves as a reflection on modern society: Do ordinary people lack means to resist the theft and exploitation of personal information by large corporations? How do ordinary people view this helpless situation? Through this exploration, we have reached more conclusions. Overall, we believe that this seemingly dark yet intriguing future scenario is not only a potential outcome of the rapid development of ADM systems but also a possible choice through multi-party negotiation for the future.

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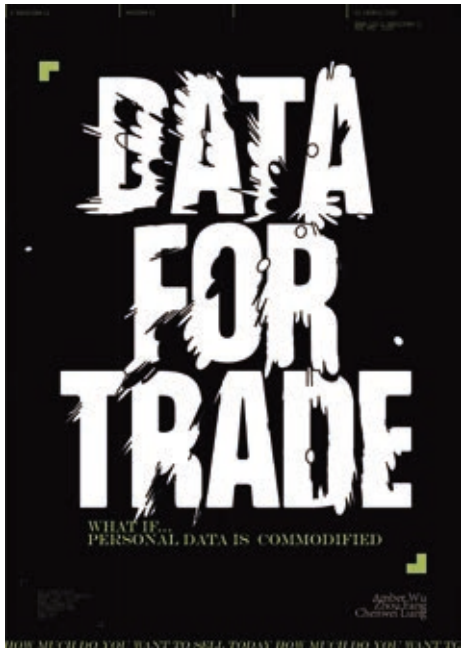
Appendix

A: Video

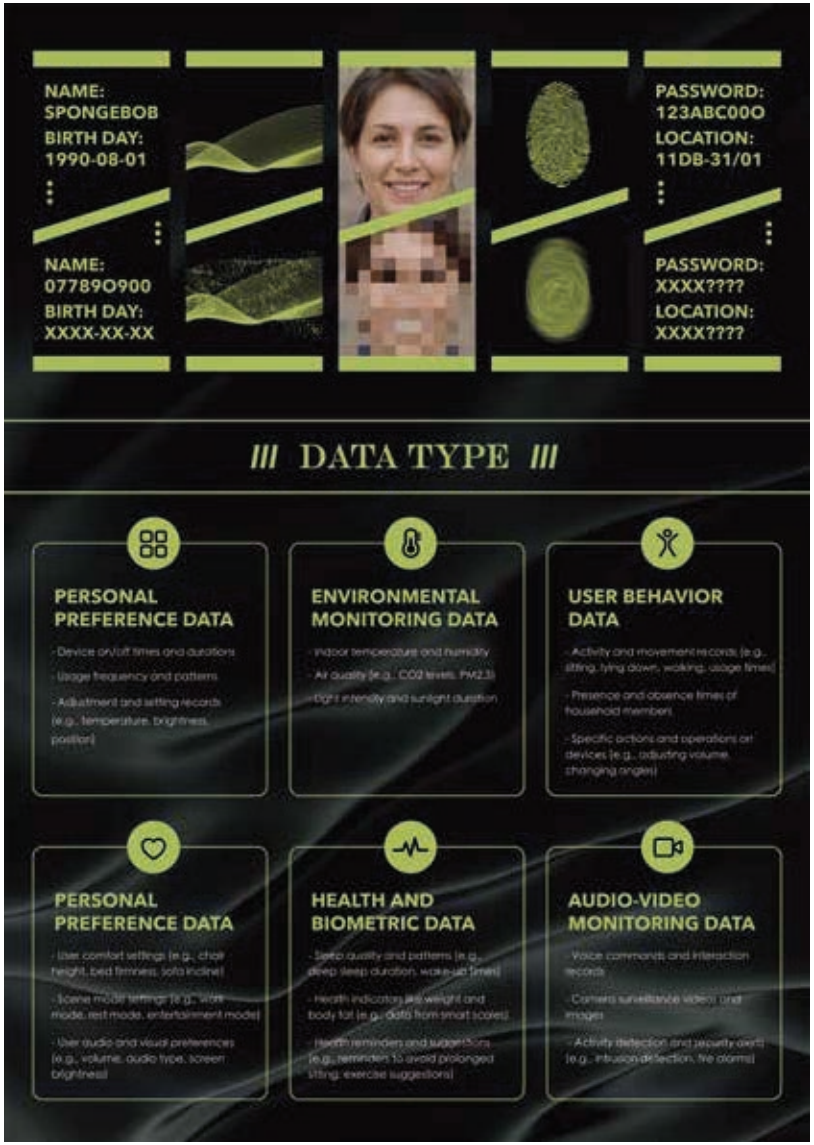
https://youtu.be/SCp9yzJ7lvY

B: Booklet



Appendix

C: Poster



Living in the ruins of a dream

researching the considerations of consumers when faced with an energy crisis

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ABSTRACT

As automation and smart home devices becomes integral to our daily lives, the energy that they consume is often overlooked. This speculative design project explores the impact of increasing reliance on automated systems, by prompting discussion on the social, cultural, and ethical implications of these emerging technologies. This study raises crucial questions about the sustainability of our current energy management in the face of growing automation. Employing speculative and critical design methods, this study engages participants in future scenarios of home automation up to 2050, highlighting potential consequences of energy consumption and starting discussions on sustainability practices.

Participants interacted with diorama designs and a timeline during an exhibition, to envision the evolution of smart home through the years. The findings revealed a preference for selective automation, valuing real-life social interactions and personal tasks while recognizing the potential of automation. The study utilized methods of speculative design to provoke thought and dialogue, showing how critical design practices can raise public awareness and provoke new thoughts and ideas. This research aims to show the necessity of balancing technological advancement with sustainable energy usage. By immersing individuals in speculative futures, the study provides insights into designing effective methods for enhancing public engagement and prepare for future everyday challenges.

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INTRODUCTION

Nowadays, people use their washing machines, voice assistants, and smart lights often without much thought about the energy they consume. Automated devices like these have become essential in our daily lives, as the tasks they perform saves much time most can't spare in their busy day to day life. However, this increasing reliance on technology raises important questions: How much energy do smart devices need? Are individuals aware of their significant energy consumption and dependence on it? The growing use of energy-intensive automation in our homes, especially with the rise of smart home innovations, presents major challenges for our current energy infrastructure. If not addressed, this sharp increase in energy demand could lead to serious supply issues, greatly impacting our future.

The development of automated systems like smart home technologies is moving forward quickly. For example, smart thermostats and automated lighting systems are becoming more common (Malekpour Koupaei et al., 2020). These innovations are designed to save energy, but they also lead to using more energy overall (Ahmad et al., 2022). Looking ahead, while we expect these technologies to keep getting better at saving energy, the growing demand for energy poses a big challenge. The problem is that as we use more technology and our economy grows, we end up needing more and more energy (Ahmad & Zhang, 2020). This situation means we have to find ways to handle this increasing demand for energy in our homes with speculating about possible consequences of this challenge.

Recognizing the crucial role of state involvement in significant issues that impacts the country, it becomes evident that raising public awareness is a critical first step toward enabling such proactive measures. In crucial situations, government intervention is imperative through the implementation of national regulations that enforce consequences for violations. These regulations must apply universally to effect meaningful change. Recognizing the crucial role of state involvement in significant issues, it becomes evident that raising public awareness is a critical first step toward enabling such proactive measures. This history suggests that government action might also be essential in addressing the growing energy crisis. This leads us to the central problem statement:

"What factors will consumers consider when choosing home appliances if their primary concern is energy consumption?"

This research aims to delve into this question by exploring the considerations and decisions consumers make in such scenarios. The goal is to provide insights that can help in designing methods to enhance public awareness about energy consumption. Additionally, the research seeks to immerse people in a speculative future through making informed choices about energy consumption.

RELATED WORKS

Speculative design

Speculative design is an approach to design that focuses on imagining future possibilities. This method is often seen as particularly effective in prompting discussions about the social, cultural, and ethical implications of emerging technologies. Pioneers in this field argue that speculative design serves as a medium for imagining and debating potential futures which fosters a more informed public discourse (Dunne & Raby, 2013). Additionally, critical and affirmative design can be seen as attitudes within speculative design, depending on whether they critique or reinforce the status quo (Dunne & Raby, 2013). Their work highlights the importance of design in addressing technoscientific politics and sustainability challenges (Tonkinwise, 2014).

Discursive design

Discursive design further expands on this by emphasizing how design can encourage users to reflect on and question existing societal norms and technologies (Tharp & Tharp, 2019). Additionally, (Kuijer & Robbins, 2022) have demonstrated the pedagogical potential of speculative design in teaching alternative paradigms. This showcases how critical design can be integrated into educational contexts to foster innovative thinking.

Automation and AI

The rise in Automation and integration of AI in households could become one of the futures or technologies that speculative design aims to prompt discussion about. Advancements in conversational AI, such as Alexa, could have the potential to transform the daily lives of people by providing proactive assistance, but there are already some ethical dilemma's around privacy and ethics (Kellner, 2022). David Chatting's paper (2023) on the historical context of domestic technologies and their impact on household labor and visibility argues that the simplification and automation of complex systems often obscure the labor and resource consumption they rely on. This could result in an exploitative relationship between users and technology. This paper provides an interesting critical perspective on the implications of automation and AI in domestic

settings, questioning the sociotechnical dynamics of these technologies. Further negative impacts of AI, such as the potential for increased energy consumption and the invisibility of labor behind automated systems, are critical areas of concern (Frasz, 2023). As (Chatting, 2023) points out, the simplifications of complex systems can lead to an exploitation of unseen labor, this raises ethical questions about the use and management of these systems in domestic environments. As automated systems become more prevalent, their energy demand can strain existing infrastructure (de Vries, 2023), with projected energy usage by AI systems as large as that of entire countries like Sweden (Main, 2023). This highlights the need for sustainable and transparent design practices. The convenience of AI and automation could lead to a decreased awareness of energy consumption of household features among users, exacerbating this issue.

Change acceptence

Daniel Kahneman's prospect theory (Kahneman, 2012) and the conce pt of loss aversion provide an explanation why people are often resistance to change, especially if it effects them personally (Kahneman & Tversky, 2013). This psychological insight is crucial 48th Law of Power" (2000), people fear change that impacts them directly, which can hinder the acceptance of innovative solutions, even when they offer long-term benefits. According to this "law", an effective approach would be to preach change, but maintain the comforting appearance of familiar institutions and features. By doing so, you would be able to propose an imaginative future, that is familiar to the user, and therefore less "threatening" than a complete innovative and unfamiliar future.

Conclusion

Our design aims to leverage these insights by immersing the users in a speculative future, where changes have already occurred. By doing so, it mitigates the fear of change by allowing users to focus on how they would adapt and personalize their environment, rather than resisting the changes themselves. Additionally, our design aims to offer familiarity in its design, offering the users additional features to hold on to. This approach helps to engage participants in the decision-making process, encouraging them to consider the potential benefits and trade-offs of adopting new technologies. By engaging them to envision and personalize their futures, and making decisions about the future as if it were the present, our design aims to prompt discussion about the future of energy management and consumption.

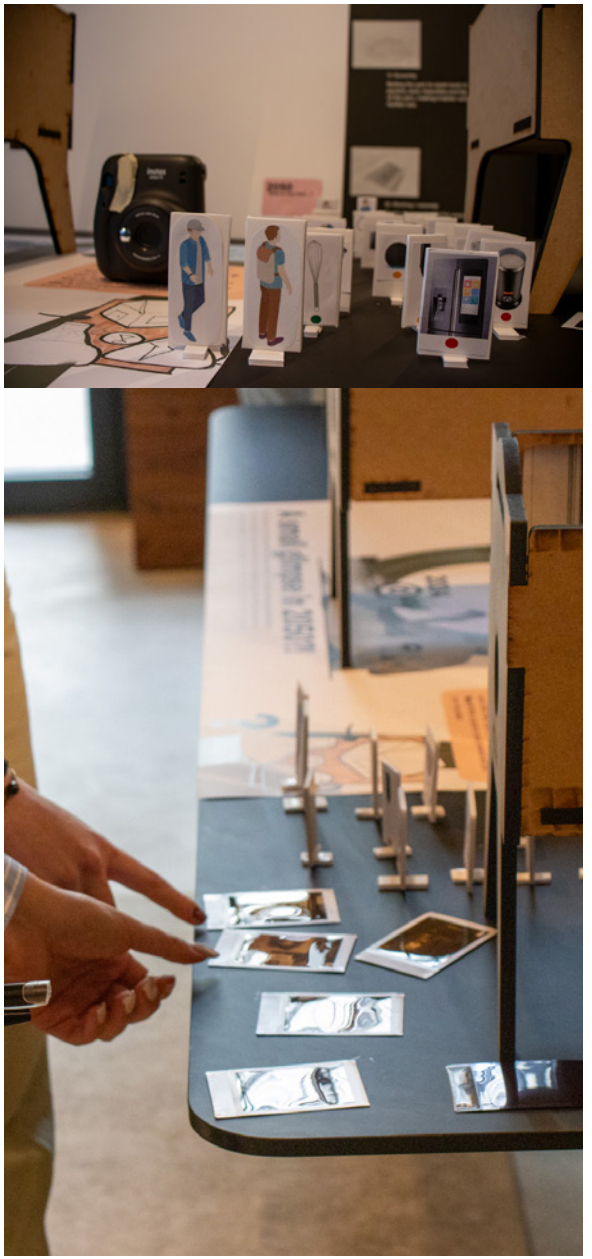

Figure 2: Exposition side-view

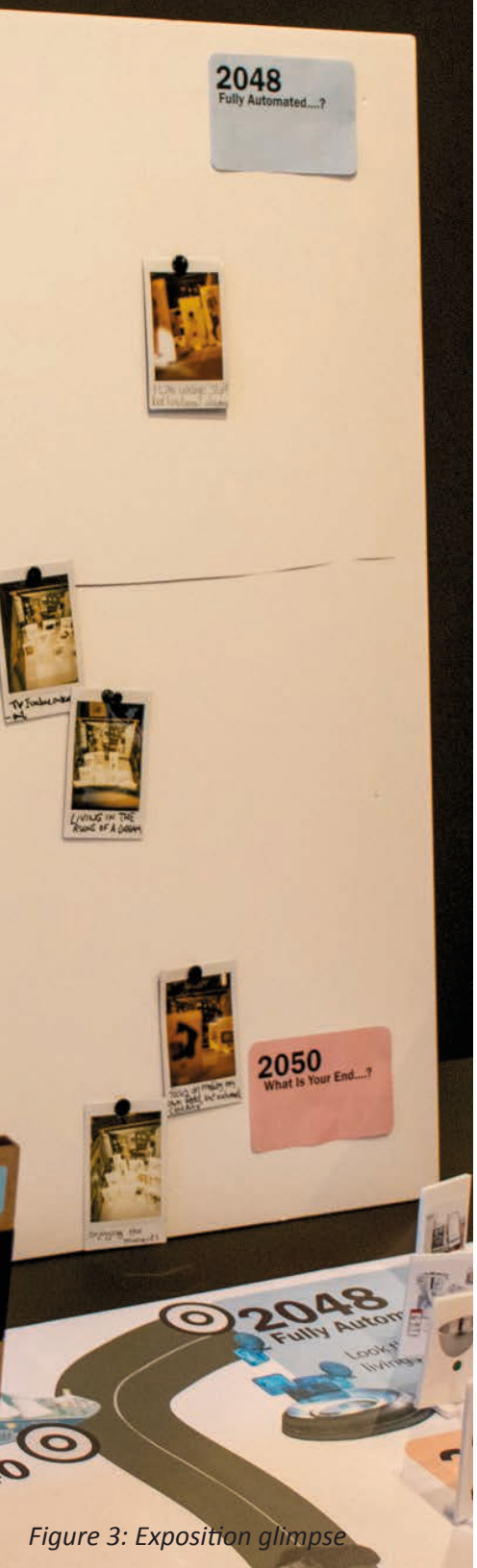

Figure 3: Exposition glimpse

RESEARCH QUESTION

Current day consumers judge the new appliances they purchase by various criteria, such as prize, quality, energy consumption, and convenience. In this, roughly two kinds of consumers seem to exist; satisfiers and maximizers (Schwartz et al., 2002). The former focuses on selecting the option that qualitatively fit the need, whereas the latter focuses on selecting the best quantity of the need (most value for money). Both groups are prone to buying devices to fulfill needs. In the context of the home, many devices are purchased for convenience in the elevation of everyday tasks. In large chunks of the population this convenience takes a higher priority than other factors, like energy consumption – not in the least because the efforts of energy production are hidden in appliances(Chatting, 2023). Although the smart appliance market has been growing for years, and is expected to grow further over the next years (Statista Market Forecast, 2024),the energy consumption in the Netherlands has stayed somewhat stable since the 1990s (Compendium voor de Leefomgeving, 2022). This leads to argue that the energy saving measures up to this point will not suffice if governments want to make the energy goals of the European Union (Menkveld, 2023).

Now that the influence of human consumption on the environment becomes increasingly clear, it is more important than ever to take a critical look at the consumption of goods and energy by everyday consumers. This research will support this critical look by investigating what behaviors, and more concretely, what objects consumers value and for what reason. This research will answer the question: “What considerations will consumers make in the selection of home appliances when they are presented with a situation where their main concern is the consumption of energy?”

In an effort to answer this question, the following paper will also look into the following sub-questions:

- How can consumers experience a future scenario of an automated home in a quick and versatile manner, and provide their thoughts on that particular future scenario?

- What events would lead up to the introduction and wide adoption of automated decision-making systems in the home?

In this, the paper will not only provide an answer to the main question, but also provide a method to show a future scenario to a broad audience that is rapid, versatile, and low-cost. The method allows researchers and designers alike to quickly explore and create an experiential future scenario to elicit a dialogue with others.

METHOD

This research project followed a backcasting (Robinson, 1990) and futures cone (Voros, 2017) approach to receive more insights towards expectations and opinions surrounding a speculative created future scenario in 2050 starting from the current days. After diving deeper in available home automation, a co-creation interactive exhibition aligning with trends and additional research in combination with back casting led to the diorama idea. In these dioramas a combination of old-fashioned, smart home elements and technology was visible. Through a timeline presentation with the dioramas on top, participants were invited to take part in this futuristic journey on the exhibition. Interaction with the prototypes was promoted and ended with benchmark research to receive opinions, wishes and needs for the future. The exhibitions led to interesting data that was collected, analyzed and summarized towards

Figure 4: Diorama box with polaroids

a conclusion on the research question. Overall, we contribute to increasing awareness surround the impact of automation in homes towards the future highlighting also the negativity surrounds it.

Backcasting

The goal of this phase was to explore expectations and opinions about a speculative future scenario in 2050 by applying the backcasting approach which is proposed for scenario analysis of changes over 20–100 years into the future c(Robinson, 1990). This approach involved defining a proposed future and from that point working backwards to identify the steps needed to achieve this future. To develop our speculative scenario back casting seemed as a useful and valuable methodology since this prioritized futuristic thinking and reflecting slowly back towards now. The focus was on creating an idealistic scenario for 2050, followed by lifting back in steps of ten years. While casting back towards the current days a more realistic speculation. It supported creating our personal structured framework (VISIBLE X) for highlighting elements of the future of home automation we had in mind and to understand the transition.

The first phase involved a desk- and literature study of current trends and developments in home automation technology. By analyzing literature, existing smart products, speculative scenarios and discussing around, an understanding of the state of in-home automation was obtained.

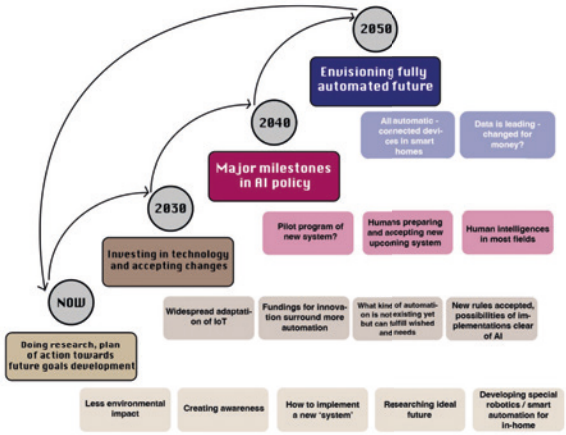

Figure 5: Back casting *(Own figure)*

Together with the insights gained from the back casting process a futures cone, highliting preposterous, possible, plausible, the ‘project’ future, probable, and preferable future scenarios were defined (Voros, 2017). This cone created a clear view of home automation in 2050, considering both technological advances and societal changes. Trends, such as increased connectivity, integration of AI and sustainability, were included in the future scenario. Based on group discussions and brainstorming sessions we made the decision to prioritize aspects in this research to investigate opinions, expectations and considerations on in home automation.

This background research resulted into a base for the development of this futures cone. To ensure that this future cone would be plausible and appealing, critical discussions were held with stakeholders, including designers and potential end-users. This joint effort aimed to align the future picture with combining trends and user needs.

Figure 6: 2024, 2048 & 2050 glimpse of Diorama

Exhibitions presentation

The designed speculative future scenario of 2050 was brought to life through a visible timeline out of which divisions per year, dioramas were built. Through an exhibition, engagement, and interaction with participants of the created future home automation scenario was observed and analyzed.

Design timeline

The exhibitions featured a timeline that visually represented the process from the present time to the envisioned future in 2050. This timeline served as part of the participants' journey of the exhibition and provided a chronological context for the dioramas and other exhibits. Our speculations were visualized and highlighted along the timeline to illustrate the steps taking towards our speculative future scenario.

Design dioramas

As a central part of the exhibition were dioramas built to show a mix of old-fashioned and smart home elements while taking visitors through the evolution of the home through time. Inspiration for these dioramas originated from existing scenarios, current smart products and help of AI tools such as Chat GPT and Firefly. These dioramas were carefully designed to provide attendees with a tangible and immersive experience to create readiness. Each diorama combined traditional home features with cutting-edge technology, illustrating the potential integration and impact of future innovations that led to the energy crises.

Through active interaction we asked the exhibitions visitors to build their own speculative future home based on the insights we gave them surrounding the scenario of the energy crisis.

Benchmark

The exhibitions ended with benchmark research to gather participants' opinions, wishes and needs regarding the speculative scenario of the energy crisis in the future of home automation. This activity consisted of an interactive session where participants could interact with the prototypes, design their own house, take a picture and place it in the benchmark matrix. Lastly, discussions and questions surrounding the interactive session led to qualitative data.

Data collection during the exhibitions focused on capturing qualitative and quantitative insights. Participants were encouraged to share their expectations, concerns and suggestions for future home automation technologies. This feedback was written down for us and analyzed to identify common themes and different perspectives.

The exhibitions resulted in new data, which was then analyzed using thematic analysis to identify key trends and insights. The findings were summarized and integrated into the overall research conclusions, providing an understanding of public perceptions and expectations regarding the future of home automation.

Figure 7: Exhibition set-up(Own picture)

DESIGN AND EXHIBITION SETUP

Our exhibition and experience prototypes were crafted to immerse the participants in a speculative future scenario and achieve our goals and answer the research questions. The prototypes and exhibition setup were designed with a link to the theories discussed in the related works and method sections, ensuring a comprehensive and engaging experience for the participants.

Designs

The exhibition featured a timeline, which aimed to immerge the participants in a future scenario, by what happened between 2024 and the proposed future in 2050. This chronological context was crucial for helping participants understand the progression and be more willing to 'accept' the changes of our speculative future. Using the back casting method, we aim to take the participants through accumulating small changes to make the step to the future 2050 more familiar and comforting (Greene, 2000).

This timeline was paired with three physical dioramas, each showing a visual representation of a possible home in an important milestone in time. These dioramas represented the interior of a family home in 2024, 2048, and 2050.

The first diorama was designed to take the participants "back" to 2024, and show them what the integration of smart products used to look like in this day and age. This diorama especially aimed to immerse the participants in our proposed futures, and ease them into the speculative design exhibition. The interior was designed by incorporating elements of the interior in the background, as well as 3d objects, together serving as an immersive representation of this time.

The second diorama was designed to immerse the participants in the year 2048, just before the energy crisis, in which automation and smart products were the norm and seamlessly limited energy was reality. By integrating a futuristic home interior in the background of the diorama, and combining this with an experiential video of a smart home in 2048, we seek to visualize this potential future and further set the picture for the last diorama.

The last diorama, represents the "present" 2050, in which the energy crisis has led to the need for compromises and choices. The participants are shown an empty diorama, with in the background a representation of an interior showing the results of the energy crisis by combining old-fashioned home elements with cutting-edge smart home technologies. The interior of this home has purposely left space for the integration of additional 3d objects for the participants themselves to place in their home.

Experiential exhibition setup

Following the methods of backcasting and proposing small chronological changes, we encouraged the participants to go through our timeline with the integration of the dioramas. Through this approach, we aimed to effectively create a visualization and understanding of the transition to a future dominated by automation and AI. Interaction throughout the different milestones within the timeline where a key component of our exhibition. By having the participants experience a time in which automation and smart products are integrated in their lives in the second diorama, and taking this partially away in the last diorama was expected to provoke loss aversion (Kahneman, 2012). Rather than enabling the possibility of participants choosing for the "current" state, the exhibition was set up to have the participants make these choices similarly as how they would have to do it in the proposed future

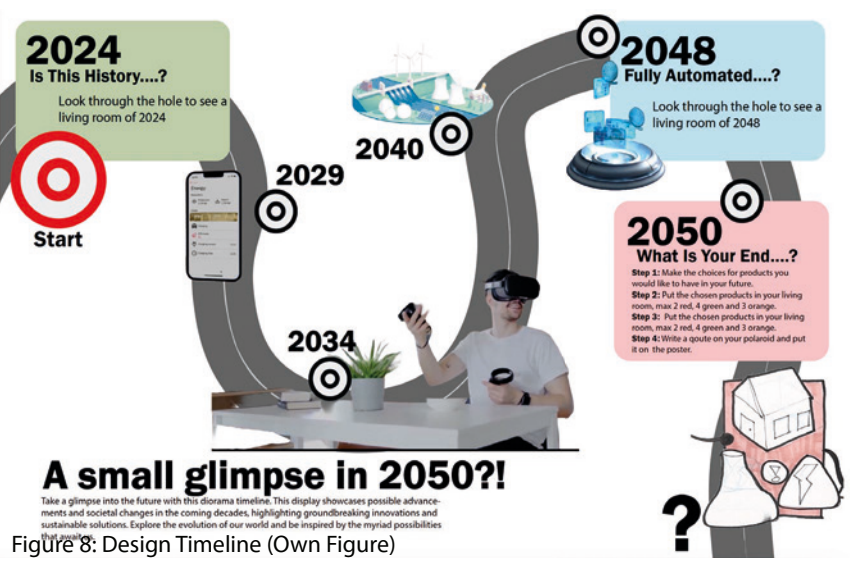

Figure 8: Design Timeline (Own Figure)

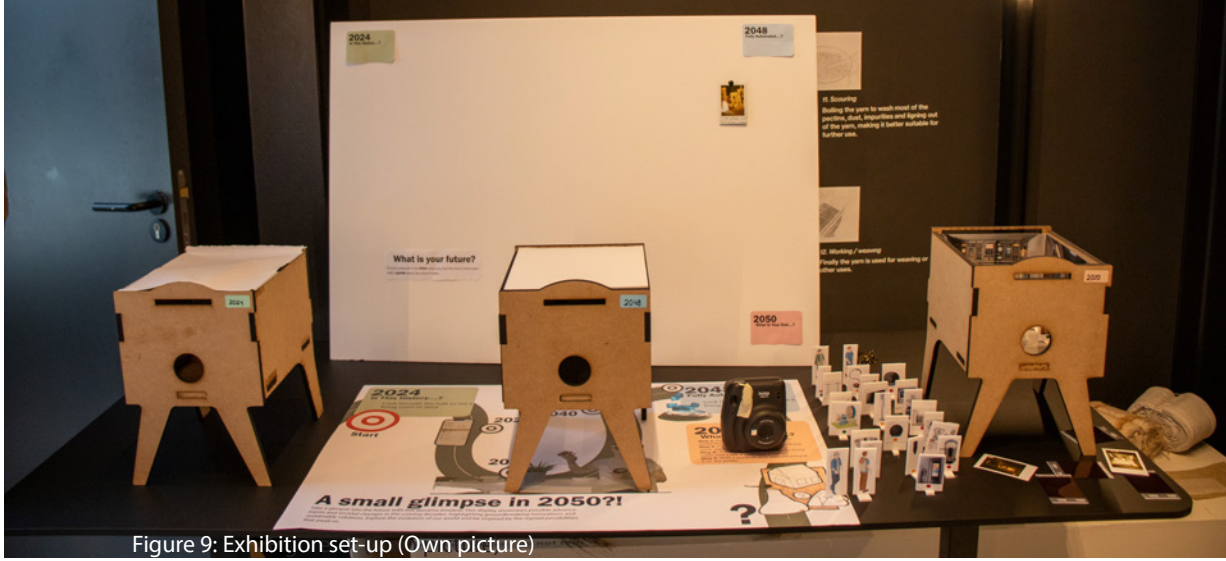

Figure 9: Exhibition set-up (Own picture)

scenario, and making them make compromises and choose between features they already "possessed" in the previous stage. Through this approach, we aimed to get a more realistic answer to our main research question on the choices people would make in this scenario.

Towards the end of the experience, the participants were invited to furnish their own diorama in the year 2050, by choosing a combination of low, medium and high automation level products for their future home. Participants had to think about the past, present, and future after 2050 and decide what their priorities would be in this scenario. After arranging their future home, this benchmark research concluded with the collection of qualitative data on the participants' opinions, wishes and needs regarding the future of home automation. The participants were invited to take a polaroid picture of their future home, and explain their decision-making process. After writing a short statement on their polaroid picture, the participants were asked to place their picture on a desired position in time they felt most comfortable and excited with.

Achieving Research Goals

Through this exhibition, our primary aim was to provoke thought and discussion about the future consequences of automation and AI in the home, and to understand how speculative futures influence public perceptions. By immersing the participants in a carefully designed future scenarios, we provided a platform for them to engage with and reflect on the impacts of their current behavior and choices. Additionally, the diorama and timeline setting explored how we could let participants experience a speculative future in a quick and versatile manner to provoke thought and discussion, as well as valuable insights about their decision-making.

RESULTS AND DISCUSSION

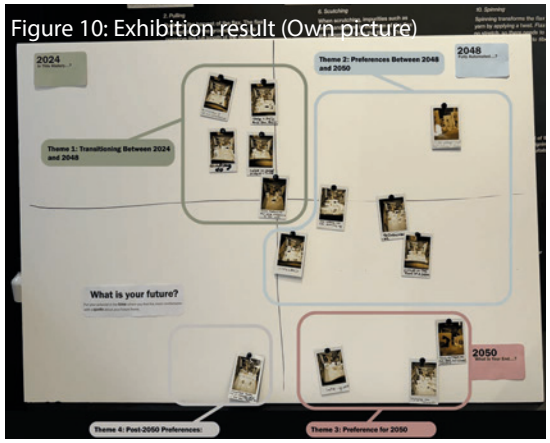

Figure 10: Exhibition result (Own picture)

By the end of the exposition 14 participants had participated in the creation of images of their homes in the year 2050. Of these 14, 4 placed their preference closes to the year 2024, 5 where closer to 2048 (moving towards 2050), 3 placed their polaroid near the year 2050 and one participant placed the polaroid after 2050. Below, we discuss for each of the four groups what we can learn form their results. After looking at these 4 groups we will briefly go into the method that we used, and discuss the strongpoints and weaknesses.

Theme 1: transition between 2024 and 2048

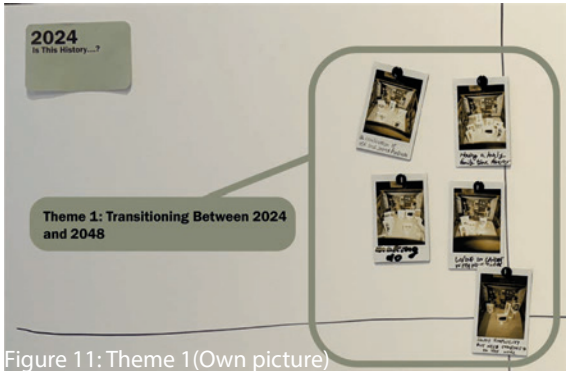

Figure 11: Theme 1(Own picture)

Of the participants that had placed their images closest to 2024, 2 trends can be observed. First, participants noted that the automation of the home would be a good thing, as long as the tasks were centered around completing tasks that were found to be annoying. This is reflected in one participant writing on the polaroid: “Enjoy simplicity, but need someone to do the work”, showing both a wish not to further complicate life with hard to work with devices, but at the same time acknowledging the benefits of the work. This drive can also be seen in the mention of a second participant that picked for their home “A combination of old and smart products” (as written by the participant), where a final one favored the automation of all cleaning due to the major aversion from the task.

Second, and perhaps most interestingly, was that one participant not that the main concern was: “Having a lovely family time forever”. This home again showed most appliances used for functional tasks like cleaning, but no smart systems were selected that can be used socially (e.g., a Google Home system). From this instance we learned that it seems that automation seems to be, at least in the mind of some of the participants, opposed to social interaction.

Theme 2: between 2048 and 2050

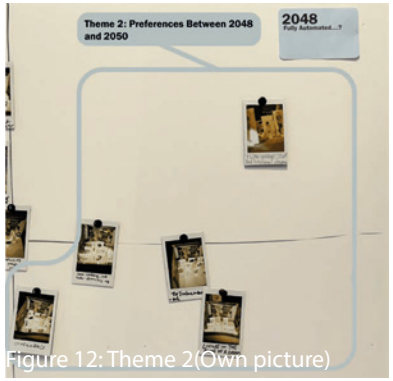

Figure 12: Theme 2(Own picture)

From the participants placing themselves in between 2048 and 2050 we see that there is an interest in the progress of such an energy crisis and the impact on their lives. One participant poetically named it: “Living in the ruins of a dream”. Again, most participants valued convenience, where they valued appliances that take over unbeloved household tasks. They also recon that there will be flaws in the fully automated routines of 2048 and are curious to see what will break down in the transformation towards a more energy-focused society.

Theme 3: 2050

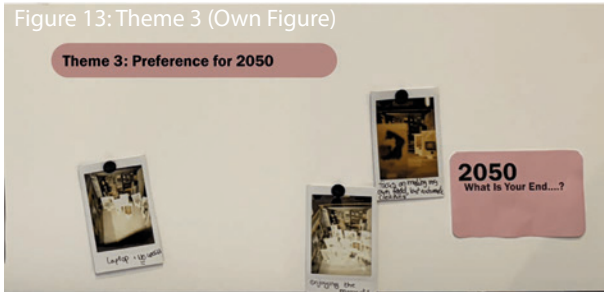

Figure 13: Theme 3 (Own Figure)

Here, again, we see that participants were intrigued by the challenges that would be posed by the energy crisis. The participants opted to select fewer devices for tasks that they wouldn’t really need (read; devices that they did not have in the year 2024), where they would place focus on tasks that must be done, but that are still enjoyed “I would focus on making my own food, but automatic cleaning”. In that way they seem to have an urge to get back to “enjoying the moment”. We also see a preparedness to return to some less loved tasks in order to be able to perform jobs that are necessary, where one participant chose to take a laptop, but also preferred a broom over a vacuum. In this theme, much alike that of 2024, some participants

mentioned that they hoped that the post-energy crisis era would return people to a more communal way of living. In this we recognize the assumption that an increased amount of automation in the home will also result in a decreased amount of social interaction. Especially the image of multiple people sitting together in an online call via VR-glasses, which was part of the video in the 2048 diorama, seemed to trigger this response.

Theme 4: Living beyond 2050

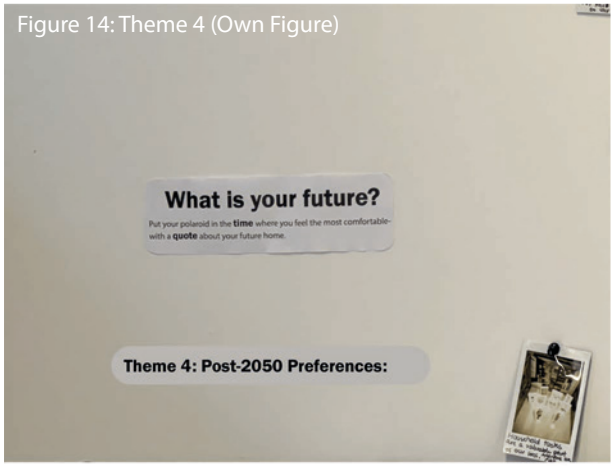

Figure 14: Theme 4 (Own Figure)

Only one individual desired to live in the future beyond 2050, stating the belief that there would most likely be positive outcomes to the crisis. Rather than giving up household tasks, this participant chose to give away administrative tasks. The polaroid of this participant stated: “Household tasks are a valuable part of our lives, agendas are not”. Therefore her home consisted of mostly rudimentary cleaning agents, outside of a washing machine, and opted for the smarter home assistants to take over planning tasks.

Answer to the research question

All in all, we can see that consumers are mostly looking at convenience, even if the main factor to select an appliance is not the economic costs, but rather the energy consumption. Although it must be noted that one participant opted to keep control of most of the housework, all others preferred giving away tasks they didn’t enjoy if they had the change. In this the outcomes seem to support the initial hypothesis. However, the outcomes also suggest that this preference for convenience is partially based on the idea that an increase in automation coincides with a decrease in social contact. Although further research will have to be conducted to understand the underlying cause and implications of this assumption, it does pose an interesting insight. On a more philosophical level, it raises the question if social interactions mediated by far stretching technology can be considered social interactions at all. In a more practical sense it might be interesting to look further into the question to what extent humans perceive social interactions via digital means to be social.

The research method

As discussed, we made use of three dioramas to explain the future scenario, as well as make it more engaging. Participants were asked to imagine the future and act upon this by creating a selection of appliances and services to fit the energy ration they were aloud to use. In this the timeline of how society got to the energy crisis functioned as the backbone to make the full story believable. It is also our answer to the sub-research question: “What events would lead up to the introduction and wide adoption of automated decision-making systems in the home?” However, it must be noted that the build up to such an event is depended on a multitude of factors. In our research we base our choices for the start date of the crisis as well as the way the energy transition goes, on current plans of the Dutch government about the transition. It is yet unclear how these plans will be executed in the future, and how successful they will be. Nor can we be certain of the introduction and adoption rates of new technologies over the common years.

Although we cannot be sure how convincing the timeline was for each participant, as this is also highly influenced by personal beliefs and visions of the current day, we did see that those that participated were invested in the story line. As the main function of the timeline was to make the whole experience more immersive, we do see that this goal was met. We see this in the rigor and enthusiasm in which the diorama of 2050 was filled and the readiness of the participants to provide their ideas.

In the creation of the content of the dioramas we were guided by our personal ideas about what the future might look like. The making of the materials, especially those in the 2048 diorama, was supported by AI programs, which created parts of the video and the images based on text, as well as through the use of stock images and videos. This means that the current vision of the future is influenced by the inherent vision that is part of the training data of these AI algorithms. This means that the outcome of the research will be different for each group of researchers that uses this method.

Nevertheless, this method functions as a conversation tool. Although it seems unlikely that the results will be fully reproducible, the method helps researchers and designers in engaging in conversations with participants of interest quickly and with low costs. This would make this method

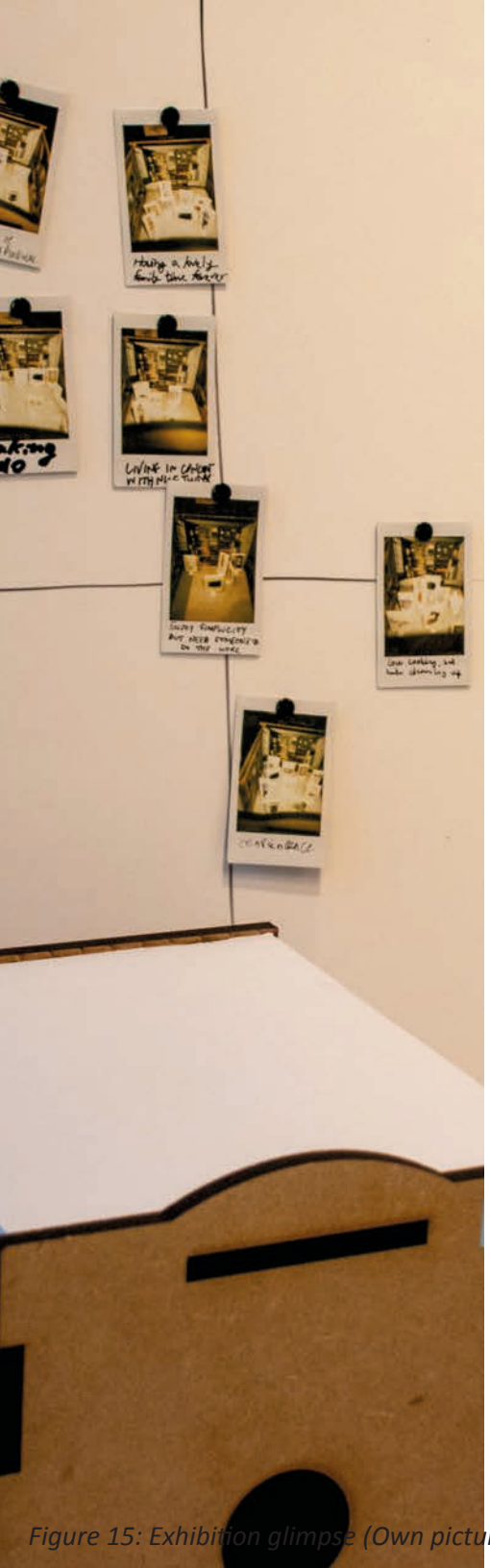

Figure 15: Exhibition glimpse (Own picture)

ideal for situations where there is little time to take participants through an extensive scenario and ask for opinions. It is also quicker than performing interviews, without loosing the freedom that comes in the collection of qualitative data, like would happen if merely a survey would have been applied. Small alterations to the boxes containing the dioramas will have to be made, as to increase the visibility of the selected pieces on the polaroid. We suggest that future researchers use fixed places for furniture, so that they are in clear view when takin the picture.

Finally, we wish to highlight the influence that background might have had on the outcomes of this method. We saw that most participants had a utilitarian approach to appliances, where the main function of those appliances would be to provide convenience. This is in line with the way appliances are marketed and seen now. Therefore, the wish for appliances to be limited to performing only tasks that are perceived as being useful and convenient might result from this idea. It is not to say that consumers of the future have a different view of appliances, but the succes of conversational systems powered by AI suggests that there is more interest than just for functional means. Although this research provides a suggestion to the role current consumers would prefer their appliances to have, further research would be needed to investigate other preferences as well to provide a better understanding of the full population.

CONCLUSION

This study investigates a preference for a balanced approach to future home automation out of a speculative developed scenario in 2050. It highlights the complex relationship between advancing technology, energy consumption and awareness surrounding the increase of smart products in households. As our reliance on smart devices and automated systems is investigated increases, it also creates more demand for energy, what causes challenges for our infrastructure. While applying back casting and creating a future cone, a speculative future scenario is designed. The scenario is visualized on a timeline combined with three dioramas; one for 2024, 2048 and one of 2050 to be filled with the appliances picked by participants. During an exhibition, 14 participants filled the diorama, took a picture and positioned themselves on the timeline in the place where they would want to live.

We conclude that current day consumers see a link between the increase of automated decision making (and therefore smart) systems and the decrease of social interaction. When presented with a situation where the main concern in selecting a device is the power consumption of said device, all participants of this research selected devices that fulfill a functional need to them. Most focus on taking over tedious and laborious housework.

This research also details a novel way of performing research, by designing dioramas to guide research subjects through a future scenario. This way the subject can emerge in the scenario, in a way functioning as an expert, rather than being asked to merely imagine a possibility. The method is quick and cost-effective, and can easily be applied to a broad scala of research subjects. In this we provide designers a new way to guide and initiate discussion with participants in a research setting.

ACKNOWLEDGEMENTS

At the end of this article, we would like to take some space to acknowledge the use of generative AI throughout the process of this research through design project. We have used images and videos created by AI

systems in the dioramas that were shown to the participants. We also used it during the ideation about what the future would look, where it helped answer questions about the timeline towards the proposed energy crisis. Next, we would also like to acknowledge that the team consisted of solely native Dutch people. This means that the research focused on, and was influenced by, Western ideas and practices. We also want to thank Merel van Lieshout for the pictures she made with her camera that can be seen through the paper. Although we did not aim to be certain the research could be generalized towards other populations, we recognize the influence our backgrounds might have had on the outcome of the project.

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Challenging consumerism by design
RELAXOMETER 3000

NAOMI AFENKHENA **TESS GEERTS** **SIMON NIEUWEBOER** **STERRE WOUTERS**

ABSTRACT

This paper presents the design and evaluation of the RELAXOMETER 3000, a prototype developed to engage designers in reflecting on the future of relaxation, the impact of information overload, and their role in shaping this future. The RELAXOMETER 3000 provides an immersive experience that serves as an extended alternative problem space, illustrating a potential future where increasing cognitive information input affects relaxation practices. By confronting participants with this scenario, the prototype aims to allow critical thinking about the trajectory of current trends and the implications for design practice. Our findings suggest that increasing automation, designers' overestimation of their innovations' importance, and profit-driven feature additions contribute to cognitive overload, and we advocate for designers to critically assess the cognitive demands their designs place on users.

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INTRODUCTION

Over the years we have seen an increase in technology in our everyday lives that provides us with more and more information and produces constant levels of dopamine. With many physical tasks being taken over by technology, more of the tasks have become cognitive and a mental chore (Kuijer, 2018). Dopamine is a chemical messenger (neurotransmitter) in our brain. It has multiple functions, including providing you with feelings of pleasure, satisfaction and motivation. It creates a good feeling after you have done something enjoyable, which makes you want to do it again (Healthdirect Australia, 2023).

Because of the great feeling of reward dopamine produces it is very easy to get addicted. We are constantly seeking more and more boosts to fill our stimuli levels. Through signals, sounds, smells and physical triggers we are constantly given options for dopamine endorsing sensations. This dopamine addiction is very common and visible in our everyday life. We put on the tv as background noise in the house, play music while biking to work and watch someone play Minecraft online while listening to a story. We are constantly seeking more and more dopamine boosts and almost can't imagine moments without it.

Our time of relaxation is meant to take a break from the constant pressure and triggers of life and provide us with a moment of rest. Ironically however, our dopamine addiction highly affects our relaxation in which we continue our search for more dopamine. Our walk around the park must come hand in hand with listening to a podcast and endlessly scrolling on our phone is considered a break. Why is it that our moments of peace and relaxation are still being filled with a search for more and more dopamine?

The tale of the boiling frog explains a valuable lesson of human psychology. The myth says that when you put a frog in boiling water, it will instantly jump out. But, if you gradually increase the heat and let the temperature of the water slowly rise, the frog will not detect the change and stay in the water until it boils to death. This metaphor shows how we as humans are likely to accept thing that slowly and steadily creep up on us, even though it is taking control of our lives. But in the end, one day we will wake up and realize that we are in boiling water, and there is no point of return. ("The Tale Of The Boiling Frog", 2004)

As the frog in the metaphor, we are sitting in a pot where the supply of information and dopamine is slowly and steadily increased. We are happily enjoying the spot we are in with entertaining games, apps, music, podcasts, series and much more. This feeds our addiction and makes us eager to search for more. However, there

appears to be a boiling point in the end where we realize that this is not what we want for ourselves, but how far along this path are we already?

With the ongoing trend of more cognitive information around us, we are being fed with more dopamine to consume. If this trend continues, we might have to question ourselves how we handle all these stimuli and how it might affect our relaxing time. Therefore, this paper aims to research the future of relaxation, the information overload that is involved with this, and the role of designers in this future.

BACKGROUND

New technologies and formats increase the availability of information. This brings us a lot of opportunities but can also lead to a feeling of information overload. There is a lot of information presented to us and all these sources are competing for our limited attention. This can cause an overwhelming feeling and a perceived lack of control over the huge flow of stimulus, contributing to this information overload (Bawden & Robinson, 2020).

Nowadays, we take in about 20 times more information each day than we did 20 years ago. We are confronted with most of this information during moments that used to be peaceful and quiet, for example when we're waiting at the train station or in line at the supermarket. Our brains are constantly bombarded with millions of stimuli without a break. Therefore, psychiatrists advise us to give our brains a little more rest when relaxing and use our bodies a bit more instead (Oostra, 2017).

In our brain, information engages the dopamine-producing reward system in the same way as money or food. As human beings we are curious and anticipate the possible pleasure we might receive from that information. This explains why we react so strongly to an alert saying that we've been tagged in a photo (Technology Networks, 2019).

During the Brainswash Festival Stanford-Psychiatris Anna Lembke talks about the negative effects that a constant stimulus has on our dopamine balance. According to her a worldwide increase in depression, anxiety and suicide can be linked with the bombarding of our brain with feel-good drugs and behavior like dopamine. When our dopamine levels get too high, the production and transmission of dopamine is lowered in our brain. However, this does not set the level back to baseline, but to an even lower level which creates a dopamine deficiency. Our current modern ecosystem also fuels this abundance, Anna explains: "We have developed technology that gives us almost endless access to addictive drugs and behaviors. The smartphone is like a hypodermic needle that administers digital dopamine to a generation that is always connected." It feels like we're using it to make us feel good and ease our suffering, but we're really just trying to restore the balance (Redactie Brainwash, 2021).

The practice of relaxing can also be seen as escaping our stressful reality, also known as escapism (Ugolini, z.d.). In psychological literature, this is seen as an act of cognitive distraction or reality detachment, where we try to mentally remove ourselves from the uneasiness of daily life. Often consumers use consumption to escape from their distress. It allows them to compensate for the underlying causes and distract themselves from the undesired situation. Although escapism does not solve the source of distress, it can sometimes still offer a moment of relief (Orazi et al., 2023).

METHODOLOGY

To make people aware of the trend of dopamine addiction caused by technology, we chose to create an extended alternative problem space with excelerational tendance. To simulate this future vision, an act was performed. We created the brand RELAXOMETER and developed a highly efficient relaxation machine named the RELAXOMETER 3000. The RELAXOMETER 3000 would be a dystopian product in this extreme vision of the future, designed for people who want to become relaxed in a very efficient way, reflecting how everything will be in the future due to technology. Relaxation then would be focused on consumerism.

To answer the design question, people can learn what our envisioned future might be like through this experience. Experiencing this might help people realize and become aware of the current trend in technology. Participants who are designers might become aware of their contributions to this trend. We aim to create awareness among people and designers about this issue, emphasizing that it is already happening.

EXPERIENCE

To attract people to participate and convince them of the performance, branding was created around the RELAXOMETER. The group members were dressed formally with name tags. The machine made a “Beep Boup” sound and looked very futuristic. As can been seen in figure 1.

Figure 1: The presentation setup

First, the participant had to conduct a survey to create their relaxation profile and give consent to our company for participating. This was done by one of our group members in the role of “Intake.”

Secondly, the participant was directed to the next group member, “Operations,” who explained the procedure to the participant and controlled the machine. The goal of the machine was to create an experience in which participants would become overstimulated, as this is the opposite of relaxation. To do so, all the participant’s nerves needed to be triggered, and the overall experience should be considered uncomfortable. This way, the participant would experience the boiling frog methodology, starting off calm and finishing very intensely.

Figure 2: Seating in the RELAXOMETER 3000

Figure 3: The RELAXOMETER 3000 from the inside

The door was completely shut, making it dark inside except for a red light on the ceiling of the machine. Inside the machine, the participant needed to wear noise-canceling headphones to be completely isolated from the environment. The noise-canceling headphones also functioned to ensure the people in the surroundings couldn’t hear the sounds of the video, and only the “Beep Boup” sounds, and vice versa. To trigger all the participant’s nerves, a lavender scent was added to the machine and a massage pillow was placed at their lower back. The movie would start automatically after seating, showing a welcome message and countdown to the start of a nature documentary by David Attenborough. After a few seconds, the video would change to different fragments of entertainment videos. After a few seconds, the screen would split into more fragments, continuing this process, with all the sounds playing simultaneously. (figure 4) Eventually, the speed of the played fragments would also increase, causing complete overstimulation. The end of the video displayed the text, “You are now fully relaxed. Please leave the machine.”

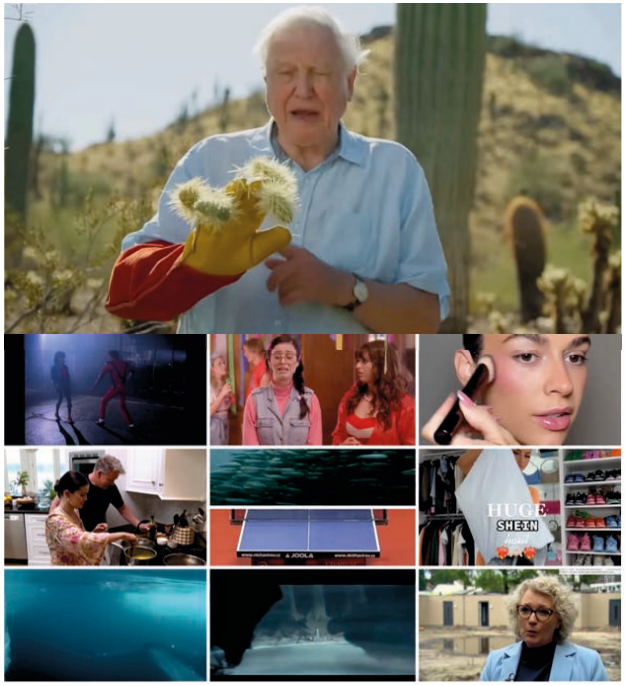

Figure 4: The first fragment (above) vs the last fragment (below)

INTERVIEW

Lastly, the participant was directed to the two group members called “Researchers” to sit down at a table for a semi-structured interview. The questions focused on how they experienced it and if the feeling was already recognizable from their daily life. The questions included:

- How did the RELAXOMETER 3000 experience make you feel?

- Did you recognize this feeling from other experiences?

- How does the method of relaxation provide by the RELAXOMETER 3000 compare to your current personal relaxation techniques? Are there any similarities or differences?

After this, our future vision and the concept were explained to the participant: “We see a trend where tasks and relaxation methods are becoming more cognitive and efficient. We are getting overloaded with information and are addicted to the dopamine it provides. With this machine, we sketched a future where this trend has increased.”

Some more questions were asked regarding their view on this envisioned future. These insights and collective qualitative data would help answer the research question:

- Do you think the RELAXOMETER 3000 experiencewould be a realistic future?

- How far do you think we are on our way to this future? And our western society in general?

We expected most participants to be designers or affiliated with design. We wanted to ask some questions about their design vision in relation to this topic. These questions will be adapted according to the background of each participant.

- Have you ever considered the consequences of adding cognitive tasks within your design process?

- Has your view on design changed after this experience?

PARTICIPANTS

Eventually, eleven participants conducted the experience, seven male participants and four female participants. We did not ask for any personal information like name or age; however, the professional background of the participants was often part of the conversation during the interview. All participants were design teachers, researchers, students, or designers by profession.

RESULTS

ANALYSIS METHOD

All interviews were transcribed during the conversation and later analyzed using thematic analysis. The interview topics were grouped into three main categories: people's experiences with the RELAXOMETER 3000 compared to their own lives, their future prospects concerning cognitive overload, and a reflection on their design practices, as all participants were affiliated with designers. Within these categories, similar answers were grouped into themes. Each participant was assigned an individual color in the analysis to maintain the context of their responses. A description of the common or interesting answers follows.

EXPERIENCE

RELAXOMETER EXPERIENCE

One participant described the RELAXOMETER 3000 experience as pleasant due to the massage and the aroma. Five participants felt stressed or restless, while five others did not feel relaxed but did not necessarily feel bad either. The massage was generally appreciated, but the audiovisual stimulation was the main cause of stress.

Given the initial expectation that participants would relax in the machine, some reflected on their hopes for relaxing activities or realized only later in the process that it wasn't relaxing.

EVERYDAY-LIFE EXPERIENCES

Six participants recognized stimulus-intensive situations from their own lives, such as multiple TVs on at once in a space, working in noisy environments, or multitasking. Two participants did not recognize the RELAXOMETER experience.

Four participants described their relaxation methods as very non-stimulating, preferring to focus on one thing at a time. However, many participants also noted behaviors involving a lot of stimuli, such as working with multiple screens, having a series playing in the background, constantly checking their phones during breaks, and watching short videos on platforms like YouTube, Instagram, or TikTok. Some even mentioned feeling anxious without enough stimuli.

SURPRISING RELAXOMETER 3000 EXPERIENCES

Some participants reported unexpected experiences that we as designers had not anticipated. For example, three participants mentioned that they liked or recognized the need to be alone in an isolated space for relaxation. While the isolation was meant to obscure the machine's workings from outside view and making it more, it inadvertently contributed positively to the relaxation experience.

Additionally, two participants found the overwhelming audiovisual stimulation eventually became a kind of white noise, which helped them relax. As they couldn't focus on everything and thus focused on nothing.

One participant was unaware of our intention and commented, "If I could give you a tip, it will feel less anxious if you keep the relaxation a bit simpler." We had expected people to believe they would relax at the beginning, but it was surprising that this belief did hold until the end.

Two participants noted that this form of relaxation felt passive, expressing a desire to engage their hands in some activity. Although the designers considered adding a task to increase stimulation, they hadn't realized that many relaxing activities, like cooking while listening to a podcast or crocheting while watching Netflix, involve a hands-on component that contributes to the relaxation.

FUTURE PROSPECTS

All participants acknowledged the trend of cognitive overload and the pursuit of efficient relaxation. However, two participants believed that technology could eventually filter out information to prevent cognitive overload. Notably, these two participants were not affiliated with TU/e, which might explain their different perspective compared to the other participants.

Many participants observed the impact of cognitive overload in their own lives, as described in everyday-life experiences. Even those who currently do not relax with a lot of stimuli recognized the societal trend towards increased stimulation. Participants expressed concerns about this trend with comments like, "I feel a pressure to relax 'fast,'" "I think we can handle a lot, but a limit is in sight," "You think you relax, but you don't," "Although the form and shape you presented this in is not realistic, the concept is," and "Media is getting really good at grabbing your attention."

Two participants described how they think our design is already reality. 'This device is an embodiment of a peak that is actually already present, I am wondering with we will recover from this or if we keep going.'

DESIGN PRACTICES

Not all participants had considered this topic before. Three participants felt that their perspective on this issue in relation to design would not change significantly. However, there were many interesting individual reflections worth discussing.

DESIGN CONTEXT

Because one participant designed often for people who are especially sensitive to stimuli, removing unnecessary stimuli was a big focus in their work. We discussed that one of the ways to do this is to make interactions more rudimentary.

BROADER VIEW OF THE HUMAN ATTENTION SPAN

Participants designing automation systems reflected on how automation doesn't eliminate tasks but replaces interactions with new ones. Four participants stressed the need for designers to consider the broader context of a user's life. Designers often have the tendency to think it's 'worth it' that users pay attention to their design, not keeping into account that their design plays only one role in a possible hectic life with more things that require attention. They emphasized the importance of accounting for human attention in design, with one participant suggesting that this should be included more in TU/e's design education.

SOLUTION DIFFICULTIES

One participant highlighted the challenges designers face in addressing cognitive overload, noting that while designers may be open to removing elements and look at the way things were in the past, companies often prefer to add features for profitability. The participant also pointed out the difficulty in estimating the cognitive impact of designs on others. Many participants acknowledged the influence of companies seeking attention but mainly focused on the responsibility of the designer.

Another participant presented their own design that leveraged the shorter attention spans of users. Although initially seen as a solution, upon reflection, it became clear that it was addressing the symptom rather than preventing the problem.

DISCUSSION

METHODOLOGY IMPLICATIONS

The experience shows extreme possible consequences instead of a solution. As described in the introduction, we compare this research to a boiling frog that jumps out of boiling water, unless the water slowly heats up. We wanted to show people the boiling water situation, so the changes are bigger that they jump out of the water.

Comparing the study approach to different design methodologies highlights the diversity design research. Our approach allowed for open insights and interpretations, creating various perspectives on a topic present in daily life. Unlike more traditional research methods, our approach did not have a specific hypothesis or outcome in mind but sought to evoke and create disturbance, encouraging deeper reflection from both researchers and participants.

While this approach has its strengths in promoting diverse perspectives, it also acknowledges the limitations of interpretive research, such as the potential for subjective interpretations.

To ensure the adaptability and validity of the methodology developed during this process for other topics and design fields, further testing is necessary. The subjective nature of the results and the specific context in which they were obtained make it challenging to generalize our method as a reliable approach for obtaining results across different research areas.

DIVERSE PERSPECTIVES

The experience was interpreted diversely among participants, in contrast to our team's more unified expectations toward cognitive overload. Two possible reasons could explain this difference:

PERCEPTION OF DESIGN PRACTICE

Participants might have been less critical of the experience due to an inherent belief that design always provides value and progress. This emphasizes the significant role designers play in shaping perceptions and the importance of framing design "solutions." In our case, the RELAXOMETER's name was reminiscent of inventions from TV series like Phineas and Ferb. Also, we purposely presented the experience with a business-like act around it. This was intended to highlight the more critical note of the projects towards the participants.

INFLUENCE OF EXISTING CRITICAL DESIGN PERSPECTIVES

Participants' varying interpretations could also stem from the differing degrees to which our problem statement is already integrated into their daily lives. This demonstrates how designing for future scenarios can reveal current patterns and perspectives, potentially challenging the perceived critical nature of our design.

Despite the varying perspectives among participants, it is essential to acknowledge that almost all recognized the pattern of overstimulating our cognitive systems. Each participant could identify elements within their daily environment that contribute to cognitive overload, emphasizing the widespread impact of this issue. This observation highlights the potential for design interventions to address and mitigate the effects of cognitive overload in our daily lives.

UNEXPECTED EXPERIENCES

Upon analyzing the unexpected outcomes of participants' interactions with the RELAXOMETER 3000, we observed that individuals compared various aspects of the experience to their personal relaxation methods. These surprising results are highlighted, as they reveal three elements:

1. The appeal of isolation and solitude
2. The perception of white noise as a result of cognitive overload
3. The preference for hands-on activities

These findings demonstrate that participants engaged with the RELAXOMETER 3000 in ways we did not initially anticipate, reflecting on and providing insights even before the reflective interview. Our initial expectation was a more linear progression of insight throughout the experience; however, these results underscore the highly personal nature of each individual's engagement. This shows the importance of considering subjective experiences and personal preferences when designing for relaxation and cognitive wellbeing.

ANALYZING THE ROLE OF TECHNOLOGY AND THE RESPONSIBILITY OF DESIGNERS

A recurring theme during the interviews was reasons for why designers can overlook this problem. First, when designing for a specific problem or context, designers tend to dive deeply into the topic, often finding their design context very important compared to other factors in someone's life. This can lead to the belief that their design is "worth" the user's attention. It's important to consider how much attention one's design truly warrants. Is the design necessary as an additional element in the user's life? Another common designer tendency discussed was the belief that automation will reduce stimuli in one's life. However, physical activities often get replaced by cognitive tasks.

Both issues require designers to refrain from constantly innovating and instead consider maintaining the status quo. This perspective aligns with anti-techno hedonism. The TU/e course that teaches this viewpoint organized the exhibition where this research was conducted and therefore is a familiar perspective for most participants.

Maintaining the status quo, however, is not profitable, and most companies benefit from adding new features and capturing the user's active attention. Therefore, the capitalistic consumerist system does not help in addressing this problem.

Solving this problem from a techno hedonist perspective involves using even more technology. Interestingly, two participants not involved with the TU/e Industrial Design department, or this course described this perspective, believing that technology would eventually help filter information. One of them presented a design for people with limited attention spans, focusing on quick decisions and many visualizations. This approach contrasts with the view that sometimes maintaining the status quo might be better than continually adding new technological innovations to one's life, to prevent this problem.

CONCLUSION

We designed the RELAXOMETER 3000 to engage designers in reflecting on the future of relaxation, the impact of information overload, and their role in shaping this future. The prototype presents an experience that serves as an extended alternative problem space to show people how the future could be when the trend that we see will continue: increasing cognitive information input in relaxing practice.

Based on interviews with participants who experienced the RELAXOMETER 3000, we conclude that many people recognize this societal trend and feel we are already approaching our cognitive limits. We identify three challenges in the design field that make this problem worse:

1. Automation: Automation replaces less cognitive, hands-on activities with cognitive, button- or screen-based interactions.
2. Design Perception: Designers often believe their innovations are worthy of users' attention, potentially overestimating the significance of their designs in users' lives.
3. Profit-Driven Features: Adding new features to designs and providing information to users is profitable for companies, but this increases cognitive load on users.

Designers have a significant responsibility in shaping the future through their contributions. We advocate for designers to consider the trend of cognitive overload and reflect on how their designs contribute to this issue. While the context of your design may seem crucial during the design process, it is likely only a small part of a user's life filled with other attention-demanding elements. Consider whether your design is worth the cognitive attention required for interaction. Moreover, explore opportunities to increase hands-on interactions instead of cognitive-based interactions that demand information processing.

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For some parts, ChatGPT is used to improve grammar. No text is generated by AI.

Nimbus: Discovering the future of inequality and water shortage through speculative design

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ABSTRACT

In this design fiction project, we envision a future that represents a culture of consumption that has extended into the commodification of vital resources such as water. The aim is to open the discussion about the disparity between lower and high wealth classes, usage of resources and discuss the underlying effects of consumerism that drive modern day economies. By using speculative design, we used future predictions of these topics to shape a scenario that would be presented at an exhibition. The exhibition hosted a new product, a personal cloud that would be used as a means of showing off your wealth. To display the disparity there would also be a knock-off product highlighting the wish for the lower class to strive towards luxury goods. From this exhibition discussions were made that highlighted the social, economic and sustainability aspect on this topic and the role of designers within this context.

Authors Keywords

Inequality; speculative design; Hyperconsumerism, water scarcity, cloud seeding.

INTRODUCTION

Our contemporary lifestyles rely extensively on a diverse range of technologies that have undergone substantial revolution in the past century, significantly increasing the demand for resources in daily activities [1]. This technological advancement has led to solidifying societal dependence on resource-intensive practices [2,3]. This has created a consumption-focused society, where the individual's self-worth is measured by their buying power [4]. Moreover, industry is molding our consumption habits so our 'needs' will hardly be accomplished [4].

This overconsumption culture has brought big amounts of material waste and pollution, negatively impacting the environment. A major consequence we are experiencing is water scarcity. The extensive use of water in industrial productions and unsustainable farming practices have intensified this problem [5]. Moreover, pollution from waste materials and products contaminates freshwater, reducing even more the availability of clean water [6].

However, not only environmental problems have arisen from capitalistic culture: there has also been a notable increase in class division and inequalities [7]. This trend suggests a future with a significant gap between classes, potentially leading to the disappearance of the middle class, leaving a disproportionate number of the global population in the lower class, while the upper-class remains small Industries shape our consumption patterns in ways that make fulfilling our 'needs' increasingly challenging [4]. When our actual basic needs are not met, people often turn to alternative sources of satisfaction, which typically involve increased consumption [8]. Nevertheless, only the upper class can afford luxurious lifestyles due to their economic advantages, perpetuating consumer trends are reinforcing the division between classes. The reason why the minimum standards are not usually provided is partly because capitalism thrives on the vulnerability and exploitation of the weak and unprotected [8].

This pictorial uses a speculative design approach to envision the implications of capitalism and overconsumption in 2050, exploring the impact on water scarcity and its transformation into a profit-driven enterprise. Examining the unequal distribution of resources among social classes and profound effects on them.

Our main research question is; In a future with limited resources, how would water be used as a status symbol to highlight the wealth disparity between the lower and higher classes?". Followed by the sub-questions: "What will water consumption patterns looks like across different economic groups?" and, "What will the new designers' role be and what design practices will be needed to navigate and mitigate these future challenges?". The aim of this work is to provoke thoughtful discourse on the implications of overconsumption on scarcity, inequality, and innovative design in shaping future societies.

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RELATED WORK

Speculative design

Speculative design is defined by Dunne & Raby [9] as, "an activity where conjecture is as good as knowledge, where futuristic and alternative scenarios convey ideas, and where the goal is to emphasize implications of "mindless" decisions for mankind." This approach is used to explore and question possibilities in the future with the hope of creating discourse around current topics. In this pictorial we aim to use speculative design in the approach of design fiction. Design fiction [10] is a part of the greater field of speculative design specifically focusing more on creating a future narrative and accompanying artefacts to tell a story about the future. Through this approach we aim to create a narrative of the future to let participants experience and create a discussion on the themes of consumerism and water scarcity.

To help envision this future we researched the cone of plausibility seen in figure 1 used by Taylor [11] to look at the possibilities that the future might hold for our topics. We chose to create a believable environmental and economic world by doing research on future outcomes related to water scarcity and consumerism. To create an intriguing stand, we opted for a less plausible technological world where personal clouds are able to provide shade and water. This approach is based on the notion that powered portable air conditioning had been designed and implemented on great scale between 1945 and 1960 [12]. Based on our research we envision the future to be bleak in regards to water scarcity and increased gap between wealth classes and want to display this throughout the exhibition.

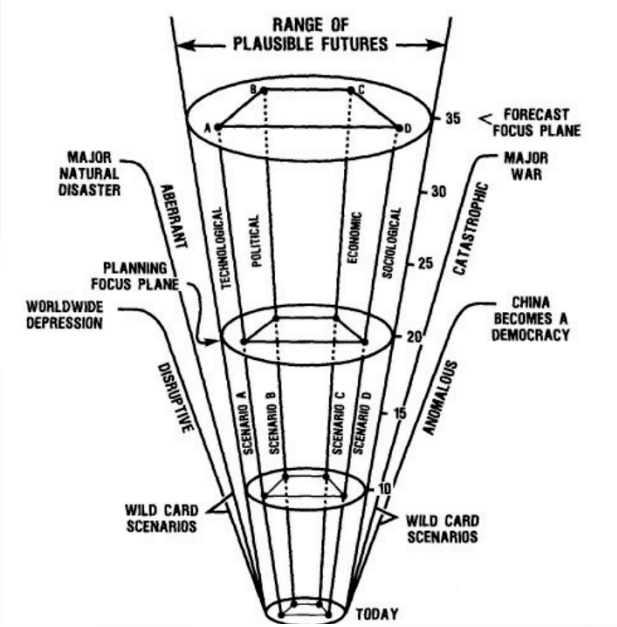

Figure 1: "The cone of plausibility" [11]

Hyper consumerism

Consumerism is defined by the Oxford Dictionary [13] as: "the state of an advanced industrial society in which a lot of goods are bought and sold". This term refers to the economic system of capitalism where members of society buy goods to increase the economic growth for both the company and the consumer. It has societal impact by viewing the acquisition of consumer goods as a sign of wealth and prosperity and creates an atmosphere of competition between companies to sell more. In the future we envision consumerism if unchecked to change the current dynamic between consumer and company by increasing pressure towards consumers to buy non-functional goods to dictate their social standing and personal happiness. This is defined as hyper consumerism [14].

Hyper consumerism aims to make the line between consumer and companies shorter by easy access to online shopping and affiliate marketing promoting excessive and impulsive buying behaviors [15]. This increases the risk of debt, anxiety and materialism with consumers and goes against the main right of consumers highlighted by [16] that aims to balance the power balance between companies and consumers. We envision this version of consumerism to have a worse effect on the environment with unsustainable production leading to a decrease in natural resources and an increase in global warming. The focus on materialism also has an adverse effect on wealth equality. Promoting a lifestyle based on goods and placing less value on individuals who do not have access to the same products.

Inequality

Karl Marx and Frederick Engels [17] already stated in 1848 how society was splitting into two greater classes facing each other, bourgeoisie and proletariat, or, in other words, oppressor and oppressed [17]. These groups have existed throughout history, however, the growth of imperial capitals in the colonies turned people into wage workers instead of developing local industries. The stated aided in accumulating local capital while destroying traditional production systems, forcing independent producers, artisans, and farmers into poverty, and creating an exploitable labor force [18]. Moreover, the middle class gradually falls into the proletariat. This happens because their small capital cannot compete with large-scale industries and their specialized skills become obsolete due to new production methods [17]. This resulted in big multinationals being established as the only truly international organization exerting power of command on a global scale [18].

As society embraces a consumption-driven culture, wealthier groups gain access to a broader array of goods and services, while the proletariat struggles to fulfill their basic needs. Income inequality within the countries has been increasing, 71% of the world's population is living in countries where this inequality has risen [7]. In 2021, the bottom 50% of the global population owned just 2% of the world's wealth, while the richest top 10% owned a staggering 76% of the wealth [19].

The class inequality rise due to capitalism and overconsumption does not only affect the unequal distribution of power, but also of natural resources. An example of this can be seen in the degradation of Nicaragua explained by Hawkesworth [20]: Nicaragua's environmental degradation was driven by unequal distribution of resources and power among classes. The Somoza regime's extensive control over economic and political infrastructure enabled the Somoza family and the agrarian bourgeoisie to exploit the environment and accumulate resources and land. Social and economic pressures led many poor peasants to sell their land in distress. The state and banking system consistently favored large producers over small ones, allowing large landowners to use credit for extensive cattle ranching and cotton production, worsening environment issues and increasing gap between economic classes.

Water scarcity

Water scarcity can be a problem even in a country with adequate water resources. This can be caused by several factors: from collapsed infrastructure, to contamination, to excessive consumption and climate change [21]. The future looks bleak as demand for water is increasing by 1% every year, with water shortages now occurring not only in the poorest countries, but also in many high-income countries. By 2050, many European countries could be affected by water shortages [22]. As climate change continues extreme weather will be more prevalent and the sea level will keep rising. This will lead to more floods and storms, but also heat waves, droughts and wildfires [23], which contribute to water stress. This means that in 2050, countries like Italy, France and Spain are projected to deal with high water stress, see figure 2.

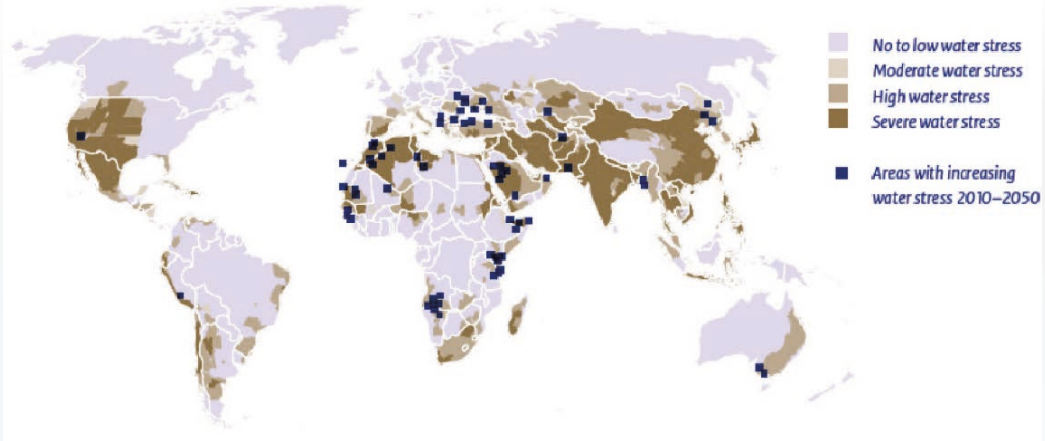

Figure 2: Water stress by 2050 in the world [24].

Figure 3: Overview of climate consequences [23].

These extreme weather events will also lead to landscape changes such as soil degradation and infrastructure damage. Which in turn will bring immigration, the loss of livelihood and more health problems, see figure 3 [23]. All this water stress can also lead to conflict. As local conflicts can be accelerated, due to conflicts about the remaining water and food resources. But it also has the potential to impact international conflicts, as water scarcity will lead to migration [24].

Cloud generating

Clouds seeding is a way of changing the precipitation falling from clouds, manipulating existing clouds to produce more rain. This can be done through the dispersion of substances like silver iodide, potassium iodide or dry ice into the air that cause cloud condensation and ice nuclei [25]. It can be used as a method to improve weather conditions in large cities, for example through the creation of shadows [26].

Cloud seeding has been applied in several situations worldwide. In the United Arab Emirates, the National Center of Meteorology's operational has a cloud seeding program with the goal to increase the annual surface rainfall, which can help alleviate water scarcity issues and support various water-dependent sectors such as agriculture, industry, and domestic use [27]. Another example of a cloud seeding application is Operation Cirrus performed in the 1950's. The goal of this operation was to explore and develop techniques for modifying weather through the investigation of the effect of seeding various types of clouds like cirrus clouds, supercooled stratus clouds, cumulus clouds and hurricanes [28].

Regarding cloud generation on a smaller scale in a less environmental setting, Dutch artist Berndnaut Milde sculpts clouds in museums through the use of smoke and mist machines, see figure 4. With this, he wants to simultaneously emphasize that clouds are very simple and infinitely complex [29].

Figure 4: "Himalayas," Nimbus series. PHOTOGRAPH BY NINA CHEN [29].

Another small-scale cloud generation is the project of Tempescope, developed by Ken Kawamoto and his team, see figure 5. This is an ambient physical display located in the home, that visualizes various weather conditions based on the forecast for the next day [30].

Figure 5: Tempescope by Ken Kawamoto [30]

METHODS

Preparation & tools

There needed to be a clear dichotomy between the luxury and knock-off product whilst maintaining the same overarching themes. For the luxury product a fictitious company was chosen with the luxury stemming from the presentation and bold prototype. The presentation of the knock-off product is inspired by the imagery of street sellers that sell knock-off products. A representation of both stands is seen in figure 6 and 7.

Figure 6: Streets sellers [31]

Figure 7: luxury sales booth [32].

Figure 8: Drone cloud

The prototype for the luxury cloud should make an impression on participants either by flying or playing with water simulating properties of a real cloud. The first idea centered around fixating a sprinkler system simulating falling rain. However, the location of the exhibition did not permit the use of these devices indoors. The second idea looked more on the flying aspect of the cloud, see figure 8. This was thought to be solved by tying a cloud-looking object to a drone and flying it over if a participant ordered a cloud via the app. Prototyping was done by finding out how much the drone could carry and still be able to maneuvre.

The app to order clouds was created to give participants the choice to buy a cloud with the ability to customize a cloud to their needs, see figure 9 and appendix A. In this way it also gives participants a difference in pricing that would be used as a contrast with the knock-off product. The participants' opinion on the of the clouds pricing would also be questioned in the interview. The price itself was set high in accordance with premium pricing [33].

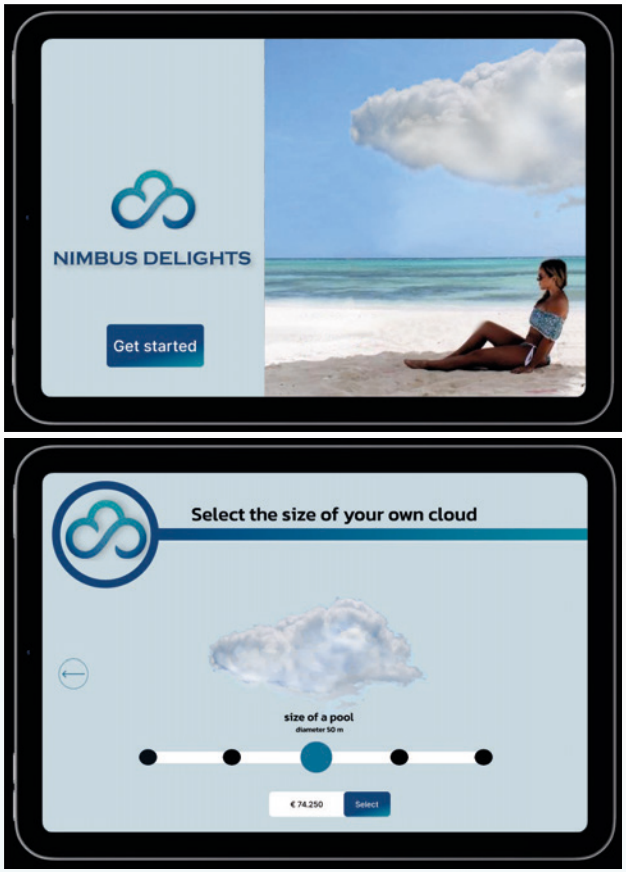

Figure 9: App screen

Figure 10: Business cards

The visual style of the company makes use of simple logos and slogans reminiscent of lifestyle companies such as Voss, see figure 11. The name and motto imitate these companies with the name Nimbus Delights . The User interface of the app complimented this and added simple features so that participants could understand the function of the app in a short interaction. Furthermore, business cards and contracts were made to enrich the experience and presentation of Nimbus Delights, see figure 10 for business cards and appendix B for the contract.

Figure 11: Design style of Voss [34].

The knock-off clouds are inspired by "cloud lamps" seen in figure 12. These clouds only needed to resemble a cloud and would be fixed to a pole similar to a balloon seller. To create the prototypes aquarium filter stuffing was glued on paper lamps giving them the fluffiness and general shape of a cloud.

Figure 12: Cloud lamp [35].

Presentation at the exhibition

To help transport the participants to our imagined future we opted for a performance, in which each researcher would take one role. These were the luxury product seller or the legal seller, the shady knock-off seller or the illegal seller and two researchers, one who would explain the concept and the future behind it and the other who would conduct the interviews. The two sellers would both dress up according to what product they sell. So, the legal seller would wear a nice blouse with a blazer or jacket with nice shoes, while the illegal seller would be wearing all knock-off clothing and look a bit shady, see figure 13. The legal seller would stand at their company's booth with a poster, business cards and a tablet, see figure 14. The illegal seller would walk around the exhibition with their clouds in a bag.

Figure 13: The illegal seller.

Figure 14: The legal seller's stand

To start the performance, the legal seller would initiate the conversation with the participants by presenting them with the luxury product. Using the tablet to show them the different options they have. If the participant was willing to select a cloud from the options and had selected the follow me option or the staying one place option, the seller would pull out a contract for them to sign and explain the different payment options. This is when the illegal seller would interrupt and try to sell their clouds. Telling the participants that they can buy clouds for way less money and they know the guy who makes them. After the participants could ask bought some question and the seller would go back and forth on who has the better product. After which the researcher would step in.

Discussions during exhibition

After the visitors experienced the exhibition act, the context behind it was explained, followed by an interview. The aim of this was to: first, engage the visitors in meaningful conversations about the ethical implications of profiting from a basic need like water; second, encourage them to reflect on how capitalism and consumerism can create scenarios where access to quality resources, like water, is unequal - benefiting the wealthy while disadvantaging lower income communities: and third, provoke thoughts on the potential roles designers can play in such context and explore possible alternative systems that could mitigate these inequalities.

The questions used during the interview were open-ended, designed to foster thought and conversation. Semi-structured format allowed for flexibility, enabling to adapt questions based on the flow of conversation while ensuring the core topics are covered. Examples of questions included: "What ethical implications do you associate with the commodification of water?", How do you perceive the relationship between capitalism and the profit making from a basic need like water?", What roles can designers and design practices play to create alternative systems or solutions?". The questions can be found in Appendix C.

During the interview, the responses were noted down, aiming to capture their words and perspectives accurately. Qualitative data was later analyzed to identify common themes, patterns, and unique insights.

RESULTS

During the exhibition, a handful of visitors and participants joined the role-playing experience. This led to interesting discussions and different perspectives on this future everyday scenario and its consequences.

Opinions on the future scenario

The visitors recognized the consequences that using water as a luxury product can cause. They considered the topic from multiple perspectives, including social, sustainability, and economic aspects.

Regarding the social aspect, the participants were in agreement in the increase in wealth gap between high and low class like was imagined . However, the middle class would also be affected by this. Additionally, the status gap would increase even more because being able to own a personal cloud could result in becoming a status symbol.

Economically, climate engineering could profit significantly from this concept and become a potential market in the future. While most participants considered the clouds to be extremely expensive, others thought that the high value of water could lead to even higher prices. Regarding the marketability of water, one participant compared it to bottled water: “The only reason people do not sell it right now is because it is not possible yet; people want to sell everything possible.”

Other participants mentioned their concern towards the manipulation of weather. This concept of artificial clouds might even affect the environment even more, especially when there are no regulations in place like in the exhibition.

Perspective towards luxury legal seller

Some visitors were surprised by the high price of the clouds, others were less surprised since water could already be considered a luxury product at this moment. While our goal was to present a future in which water is considered as a luxury product, we were reminded of our luxurious position in our western society by one of the participants. Our abundant daily use of water is considered a luxury compared to the situation in less fortunate parts of the world. People are only talking about it when it hits home, while this scenario already happens to millions of people.

Participants tried to link this luxury seller to today’s situation by comparing it to health, less affordable, food being a luxury. People with low monetary sources are forced to purchase bad quality and unhealth foods since it is more affordable.

Another interesting result is that most buyers who ordered the luxury cloud through the app automatically added the extra option the cloud of it following the buyer, while this did cost extra.

Perspective towards illegal seller

Two participants acted defensive towards the illegal seller. One cause for this is the intruding nature of the illegal seller into the conversation, resulting in a form of discomfort for the participant. The physical appearance and behavior reminiscent of a scammer compounded to this behavior. On the product side the lack of clear terms and conditions and cheaper-looking products was in stark contrast to the legal seller. A lot of participants did first want to hear about the benefits of both types of clouds before making a decision on which they prefer to purchase. However, some participants role-played that they actually wanted to buy the illegal cloud as it was more of a quick solution and wanted to walk around the expo carrying around this illegal cloud.

The role of the designer

Participants with a design background acknowledged the difficult position future designers have, given that their main role is based on a consumerist society.

A visible proposed shift in the context of water shortage in design, instead of addressing more minor problems that designers are currently trying to solve, is system design. Ideas were proposed, such as a sharing system that triggers the conscious use of water through social pressure. Additionally, water could create connectedness by ensuring an equitable share for everyone.

Another aspect addressing this consciousness is the need for designers to consider the worst-case scenarios of their products, such as the corruption of product systems, and therefore take into account the unintended consequences of their designs.

DISCUSSION

After the exhibition took place, it became clear to us that the audience was primarily university staff and students at the technical university of Eindhoven. Who are aware of the current and future technology innovations and live and or work in the Netherlands. Which might have impacted their answers, as they might have been less surprised by the concept of personal clouds. Also, the Netherlands is historically quite an entrepreneurial country. So might be the other reason that not many people were surprised that water would be commodified in such a way. Therefore, this same performance in different countries and cultures could lead to drastically different reactions. We also noticed that a few people did not get why you would need your own personal cloud. This also might have to do with the current cultural perspective, as Dutch people love the sun. When it is sunny outside you will see lots of people enjoying the weather. Therefore, the idea of blocking the sun with a cloud is not yet seen as a nice or even necessary thing to do.

The setting of an exhibition also impacted people’s behavior, as they were verry willing to play along with the performance. For example, two participants were joking about mortgaging their home so that they could afford to buy a cloud. But as soon as the discussion started it became clear that they were verry critical of commodifying water. The other behavior we were surprised by was that all were very willing to interact with the illegal seller. We assume this is because they knew it was an exhibition and had already gone through other projects before interacting with ours. Multiple participants even “bought” a cloud from the illegal seller and walked around the exhibition with it.

However, this also helped our performance as all participants saw and talked to both the legal and illegal seller, most even join in on the performance. Allowing the two sellers to go back and forth about why their product is better than the others, this then naturally let into the discussion.

Limitations

Lastly, we want to acknowledge the limitations we face while performing this research. As already mentioned in methods, the venue had limitations on water usage and use of space. As the next-door courtyard was not available to us. We had hoped we could use it to fly the drone cloud. However, due to unpredictable weather conditions on the day, it was not meant to be. This meant that we were limited in creating our experience and could not provide a multisensorial experience. Another limitation we had is the visitors. During the exhibition we conducted individual interviews with visitors, who were almost aways alone. Therefore, we could not organize group discussions due to how the visitors came to the exhibition.

CONCLUSION

In this pictorial we asked the question: how water would be used as a status symbol to highlight the wealth disparity between the lower and higher classes. To answer this question, we looked at speculative design and research about speculation of this topic to envision a future where clouds providing shade and water represent a luxury item that was used by both the higher and lower class. This idea was showcased at an exhibition with a company selling real personal clouds for a high price and a street vendor selling a knock-off version. Through this exhibition we aimed to open a discussion about the commodification of essential resources and the effects it has on consumer culture.

From research into this topic, we found that there are already areas in the world that suffer from water scarcity and that the effects of climate change if unchecked would spread this problem to European countries around 2050. Inequality in wealth is in history often caused by the splitting of society into classes. This divide is made worse by a class having capital and resources more readily available and using that wealth to strengthen themselves. This creates a cycle where the rich become richer, and the lower class become poorer. The use of clouds as a product has been inspired by the technology of cloud seeding and the usage of clouds in a personal setting.

To answer the research question: The use of water as a status symbol would increase the wealth disparity between lower and higher classes by creating a cycle of consumption to maintain high status in society. By having the lower-class buying clouds at high rates, they risk overspending and not having capital left to invest in other areas. The higher class remains unscathed and show their wealth through the use of this product. This has potential side effects in the neglect of the environmental impact to satisfy consumers wishes. Designers are often seen as proprietors of this cycle by creating new products to feed the economic machine. However, a shift is proposed that focusses on designing for specific contexts of issues such as water scarcity promoting values of sharing and social connectedness. There is also the creation of awareness within consciousness of designers to understand the impact their designs can have on environmental, social and economic scale. We hope that this research helps future designers in addressing complex topics through speculative design and becoming aware of the impact their designs have.

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APPENDICES

Appendix A

To experience the app, use the following link.

https://www.figma.com/proto/cFmNXoAKZj6q2O1QaqXIFg/Cloud?node-id=15-6&t=GNRIuTsPaaMnvToQ-1&scaling=contain&page-id=0%3A1&starting-point-node-id=15%3A6

In the following figure 15, 16 and 17 you can see the three sections of the app. The loading section, see figure 15, in which the user gets the see example pictures of what they could do with their own cloud. The option section, see figure 16, in which they get to see the option for the size of the cloud. As well as the follow me option and staying in a certain place option are shown. The finalizing section, see figure 17, in which the user is asked to finalize their purchase by talking to the legal seller. Who will direct them to the contract, see appendix B.

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Figure 15: Loading section

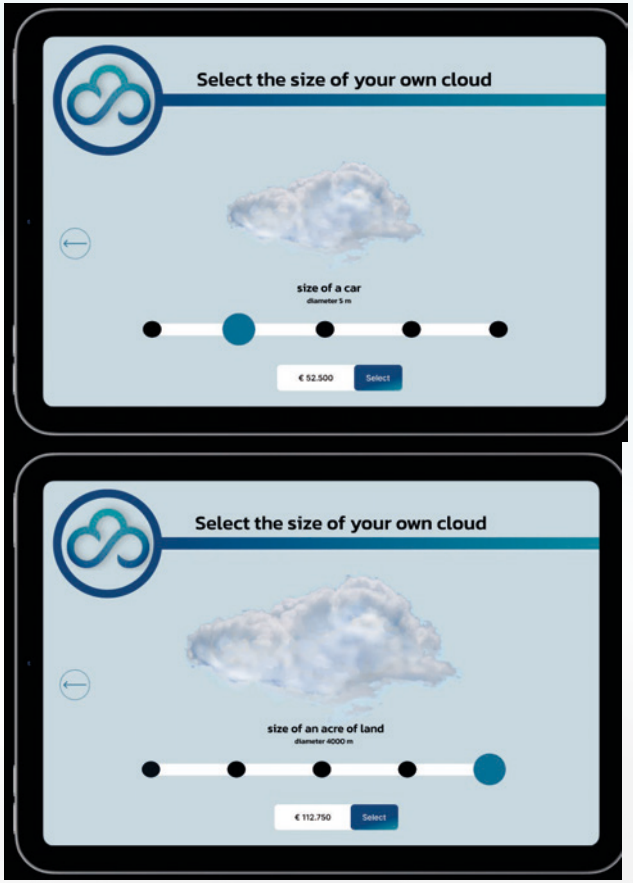

Figure 16: Option section

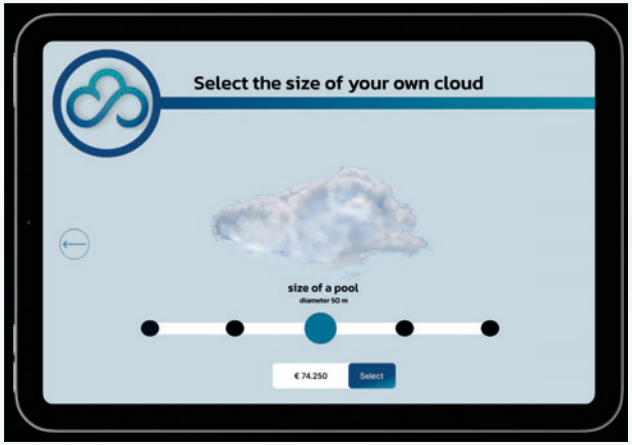

Figure 17: Finalizing section

Appendix B
Personal Cloud Purchase Agreement

This Personal Cloud Purchase Agreement is entered into as of 11-06-2024, by and between Nimbus ("Seller") and ("Buyer").

1. Definitions

1.1 Personal Cloud: A customized, technologically advanced system that generates and supplies fresh, clean water for the Buyer's personal use.

2. Purchase and Sale

2.1 Product: Buyer agrees to purchase from Seller, and Seller agrees to sell to Buyer, a Personal Cloud system.

2.3 Price: The total purchase price for the Personal Cloud is €50.000,-.

3. Payment Terms

3.1 Deposit: A non-refundable deposit of €10.000,- is due upon signing this Agreement.

3.2 Final Payment: The remaining balance of €40.000,- is due upon installation of the Personal Cloud.

4. Delivery and Installation

4.1 Delivery Date: The expected delivery date is 18-06-2024.

4.2 Installation: Seller will install the Personal Cloud at the Buyer's specified location. Buyer must ensure the installation site meets the requirements specified by Seller.

5. Warranties and Maintenance

5.1 Warranty: The Personal Cloud is warranted against defects in materials and workmanship for a period of 2 years from the date of installation.

5.2 Maintenance: Buyer agrees to adhere to the maintenance schedule provided by Seller to ensure optimal performance of the Personal Cloud.

6. Buyer's Responsibilities

6.1 Site Preparation: Buyer is responsible for preparing the installation site according to Seller's specifications.

6.2 Maintenance Compliance: Buyer must follow the prescribed maintenance schedule and use only approved materials and services for maintenance.

6.3 Usage: Buyer agrees to use the Personal Cloud solely for personal, non-commercial purposes.

7. Liability and Indemnification

7.1 Limitation of Liability: Seller's liability for any claims arising from this Agreement shall be limited to the purchase price of the Personal Cloud.

7.2 Indemnification: Buyer agrees to indemnify and hold Seller harmless from any claims, damages, or liabilities arising from Buyer's use of the Personal Cloud.

8. Termination

8.1 Termination by Buyer: Buyer may terminate this Agreement prior to installation, but the deposit will not be refunded.

8.2 Termination by Seller: Seller may terminate this Agreement if Buyer fails to comply with the payment terms or site preparation requirements.

9. Governing Law

This Agreement shall be governed by and construed in accordance with the laws of the Netherlands and the European Union regulations.

10. Entire Agreement

This Agreement constitutes the entire understanding between the parties and supersedes all prior agreements, understandings, and representations.

11. Signatures

IN WITNESS WHEREOF, the parties hereto have executed this Personal Cloud Purchase Agreement as of the date first written above.

Seller: Nimbus

By: _____

Name: _____

Title: _____

Date: _____

Buyer:

By: _____

Name: _____

Date: _____

Appendix C

The next questions were used as guides for the discussions conducted at the end of the exhibition:

1. After going through the exhibition, how do you perceive the relationship between capitalism and the commodification of water? How do you think capitalism contributes to the profit-driven approach towards a basic need like water?
2. What ethical implications do you associate with the commodification of water? How does it make you feel to think about water being treated as a luxury product?
3. In your opinion, what are some of the potential consequences of water commodification on social dynamics? How do you think it might affect communities, relationships, and access to resources?
4. Considering the potential impact of water scarcity and its commodification, what alternative systems do you envision that could address these challenges? How can we move towards a more sustainable and equitable approach?
5. What role do you think designers and design practices can play in addressing water scarcity and challenging the profit-driven approach to water? How can design contribute to creating alternative systems or solutions?
6. Any other comments