



Fon2Future

- a speculative design installation using generative climate communication to educate on future eco-social sustainable systems

Fon2Future

- a speculative design installation using generative climate communication to educate on future eco-social sustainable systems

a process documentation

by Lucille hein | MA DSISF 2020/2021

LCC | University of the Arts London

Acknowledgements

big thanks to all my fans x

Table of contents

1. Introduction and motivation	5		
2. Research Proposal	6		
3. Secondary research	7		
3.1 Insights to findings	8		
3.2 PESTLE analysis	9		
3.3 System map - Climate communication	10		
3.4 System map - Barriers preventing sustainable systems	11		
3.5 Theory of Change	12		
4. Primary research	14		
4.1 Stakeholder lists	15		
4.2 Ethical research	16		
4.3 Expert interviews	18		
4.3.1 Interview 1 and findings	18		
4.3.2 Interview 2 and findings	19		
4.3.3 Interview 3 and findings	20		
4.4 Public knowledge and motivation - Questionnaire	21		
4.5 Questionnaire evaluation and findings	22		
4.6 Reflections on primary research	24		
5. Co-design: worldbuild with activists for sustainable systems	25		
5.1 Defining the format	26		
5.2 Modeling Cologne's Doughnut	29		
5.3 Workshop 1 presentation	30		
5.4 Workshop 1 results	32		
5.5 Reflection on workshop 1	36		
5.6 Ideation & workshop 2 materials	37		
5.6.1 Personas	38		
5.6.2 Speculative timeline Cologne 2050	40		
5.6.3 Worldbuilding	41		
5.6.4 Workshop 2 presentation	43		
		5.7 Reflection on workshop 2 and the co-design process	45
6. Conceptualizing and prototyping	46		
6.1 Draft non-linear dialog and persona sketches	47		
6.2 Dialog-tree persona Paul	48		
6.3 Dialog-tree persona Giulia	49		
6.4 Dialog-tree persona Meltem	50		
6.5 HTML-prototype	51		
6.6 Video-prototype	52		
6.7 Designing the physical housing	57		
7. Exhibition photos	60		
8. Evaluation	64		
8.1 Changes in attitudes	65		
8.2 Evaluating usability and use cases	66		
8.3 Additional observations	67		
9. Conclusion and Outlook	68		
10. Bibliography	69		
11. Literature	70		

1. Introduction

This process documentation shows the research, conceptualization, prototyping, testing and evaluation of a speculative design project aimed at generative climate communication, situated in Cologne, Germany.

For this, the process documentation takes on a chronological approach, in which each action committed is first introduced by an initial rationale for the conduction of the action, and lastly reflected upon once the action is deemed concluded. As such, the information portrayed throughout this document does not always directly correlate to the final design output. Instead, it is an accurate representation of the thought process and the stage of design research at that given time. Therefore, it might include concepts, ideas for further research and even conclusion that, might not be investigated further or are being reevaluated and reoriented at a later stage in the document.

Reasons for this can either be another concept promising stronger potential based on the data at hand, or additional research either already producing the desired insights and therefore making further investigation redundant. They might even disprove the earlier findings entirely, with the implications for the project as well as the research and design process being discussed in relation to that specific point.

Some content featured in this document has been deemed non-essential to understand the thought process of a specific point in time due to their obstructive lengths and details disrupting the readability, but still need to be included due to their relevancy to the design output and research process. For the sake of coherence, these are available in the appendix and referenced at the relevant places in the document.

Motivation

Combining activism for climate justice with design has been one of my primary interests since concluding my BA in media design and the main motivation behind me joining MA DSISF. During my year at the University of the Arts London, I got introduced to a plethora of knowledge about ethical design research, experimental approaches to practice like speculative design, systems thinking, storytelling and much more.

With my previous projects largely already centring around climate communication, and my latest one of Unit 04 investigating worldbuilding and storytelling through speculative design, the goal and framework set out in the beginning of the Fon2Future project felt like a natural expansion of my interests and skill-repertoire.

However, to put contrast to my previous praxis focussing mostly on communicating core issues of the climate crisis, for this project I wanted to explore what I felt has always been missing in the public discussion around eco-social sustainability: This being a vision of what could be, that puts contrast to the omnipresent eco-anxiety and crisis-induced paralyzation, by allowing to envision and hopefully create pathways to a better future.

To keep this from being pure fiction and instead root it in a reality that connects to the people in the here and now, I chose to only use materials, techniques, organizational methods and technologies that are already present today. This document shows the results of this initially ridiculously ambitious idea and both how and why I got there.

research proposal

Working Title: A speculative design visualization of an environmentally sustainable possitopian system in practice.

Main Project Proposal

Scientists (Franta, 2018) and political activists within the last 60 years have done their best to communicate the potential risks and disastrous realities of the climate crisis. However, they have yet been unable to convince major decision-makers and the general public into restructuring the socio-political and economical system in a way that ensures environmental sustainability for the present and future (Victor *et al.*, 2017). So far, most of the communicative efforts from said groups have been focused on explaining why the climate crisis needs to be mitigated at all cost (Urban *et al.*, 2018). In contrast to this, approaches that sincerely communicate the feasibility of potential systems that could guarantee both human wellbeing and environmental sustainability in an accessible manner have yet been underexplored (Holdo, 2018).

Rationale

The dangers of an unmitigated, uncontrolled climate crisis affect the livelihood of each individual on this earth and all future generations to come. Recent reports (IPCC, 2014) indicate that vulnerable minorities, especially indigenous communities and citizens of the global south are affected the most by this.

Due to the urgency of this matter, eco-political activist movements experienced a renaissance of popularity. This is evidenced (Taylor, 2019) by an estimate of 6 to 7.6 million people joining the global climate strike week of Fridays For Future in September 2019, in order to remind all governments to enact the policies within the Paris Agreement of 2015. Both indigenous activists (Conz, 2018) and scientific researchers (Wei *et al.*, 2020) advocate that current and ancient societies across the globe possess the tools and knowledge of how to bring environmental and socio-economical sustainability into reality. But instead of inspiring initiative, their communicative efforts are met with indecisiveness from politicians and corporations who as a result ever so often not only ignore but worsen the existing problems (Wei *et al.*, 2020).

Research questions

1. Investigate the tools, knowledge and opportunities of the present and intermediate future that can lead towards a socio-politically, environmentally and economically sustainable system.

2. Investigate how this system can be designed to ensure the wellbeing, safety and thriving of specially affected communities and vulnerable minorities like BIPOC, poor and disabled people, LGBTQIA+ individuals and their intersections.
3. Investigate methodology and approaches on how to communicate the feasibility and promises for this system in an accessible manner to the public and especially eco-political activists.

Planned methodology

I will investigate the fundamental mechanisms of our socio-political, economical and environmental systems. In addition to this, I will investigate currently existing and theoretical alternatives within these realms, that focus on sustainability and wellbeing rather than innovate solely for the purpose of creating profit through generating consumable goods. Potential case studies and secondary sources for this are the implementations of the GNH-Index of Bhutan, Make Rojava Green Again by the Internationalist Commune, works on Permaculture, Ecofeminism, Queer Futures and Afrofuturism, as well as economic models like the Doughnut Economy and Circular Economy. Further relevant literature for this is listed in the working bibliography down below.

As for primary research, I plan on engaging in:

1. Problem-centred interviews with experts such as climate activists, politicians and climate scientists on the methodology behind their communication on climate matters and their visions concerning the shape of environmentally sustainable systems.
2. Problem-centred interviews with stakeholders and shareholders of environmentally unsustainable industries and corporations to inquire knowledge on the motives behind their actions.
3. Questionnaires on the general public's knowledge on the risks of, and alternatives to our currently unsustainable system and how they learn best about climate matters.
4. Continuous co-creation workshops with diverse members of the previously listed vulnerable minorities to ensure their ideas and expertise is included in this project throughout different stages of the development of the project.
5. Prototyping and testing of alternative systems.
6. Co-design workshops imagining and roleplaying life within said systems as part of an iterative prototyping process.

Aims and objectives

1. Create a tangible vision of what is both achievable and desirable in the context of an environmentally and socio-economically sustainable speculative system. The goal for

this will be inspiring the public and especially political activists to adopt this vision in their rhetoric when talking about preferable pathways for the development of our current and future societies.

2. Invite stakeholders like the public, activists and politicians to actively envision and populate an alternative to both our current unsustainable system and the unfavourable, unlivable future of a climate catastrophe.
3. Spark a conversation around the value of generative activism in contrast to pure resistance against the status quo.

Proposed outcomes

A speculative design visualization of a sustainable possitopian (McKenzie, 2020) system in practice, showing the interplay of different environmental and social mechanisms, affordances and personal identities through interactive storytelling. This could take the form of a mixed-media installation, a serious game telling the story of an individual situated within this speculative possitopian system, or a more traditional approach like a webcomic, film or zine. The decision for this will be made in accordance with the acquired research and might fundamentally change depending on the project's findings.

Anticipated ethical concerns

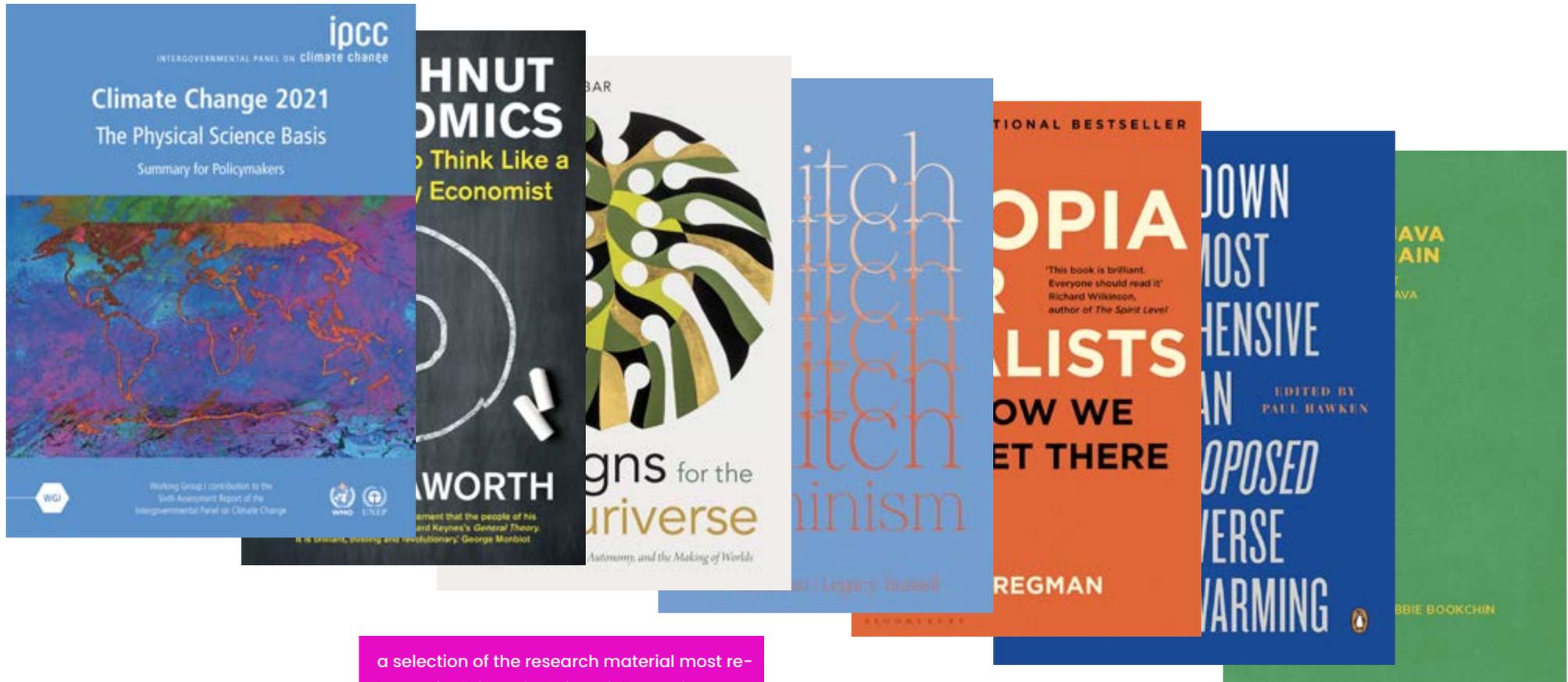
As previously mentioned, some of my research participants will be part of vulnerable minorities who might have to share information on sensitive topics with me. As a white, queer, transgender middle-class researcher from a central European country that is one of the worlds larger contributors to the climate crisis, I acknowledge that I take on an outsider role to most of these communities. I will have to be empathic, sensitive and continuously educate myself in order to conduct ethically approvable research. To achieve this, I will work closely with my supervisor, set up an ethical research consent form and enquire feedback on their individual feelings about the way the research has been conducted. Additionally, I will treat the acquired data confidentially and anonymously where possible and wanted, and credit knowledge, collaborative creations, intellectual work and intellectual property of others.

References:

Conz, BW (2018), Permaculture Demonstration Sites in Central America: Contributions to the Agroecological Transition and Implications for Educators. *Revista Geográfica De América Central*, 3 (61E), 111 - 124.

time frame: 19.05.2021 – 09.06.2021

3. secondary research



a selection of the research material most relevant for this project. for a full overview, go to the bibliography and literature section.

time frame: 01.06.2021 – 15.07.2021

3.1 Insights to findings

To answer the questions set out in the research proposal, I conducted research into eco-socially sustainable systems, public knowledge and motivation around the climate crisis, and the current climate communications trends. The project makes use of a variety of secondary research materials such as data from the IPCC, PIK and sources of indigenous knowledge. This research leads to the following insights:

1. Most technologies and methods for eco-social sustainability already exist but require specific key parameters to ensure successful implementation. As such they...

- a) need to be localized and specified in accordance with the geographic availability of resources
- b) need to be aware of the local culture and social behaviours
- c) need to be attractive to the people living there so they can be done and performed in a democratic, sustainable manner
- d) work against the ideas of immediate gratification and infinite growth that capitalism is built upon

2. Solutions target the areas with the biggest potential for change – those which contribute the most to global GHG emissions, such as...

- a) energy-production, energy-efficiency and energy-consumption
- b) land usage, food production, agriculture and alternative practices
- c) educating and giving access to women and other marginalized genders

- d) protecting the civil and legal rights of indigenous people
- e) urban infrastructure, buildings + their heating and cooling
- f) systems and methods of transport and mobility
- g) industrial production and material usage

3. The US and EU, as the wealthiest economies worldwide, are responsible for the majority of greenhouse gas (GHG) emissions since the industrial revolution, and therefore need to claim leadership to achieve climate justice. They also...

- a) have the largest financial repertoire for systemic change towards sustainability
- b) are still responsible for the majority of imperialist destabilization and exploitation
- c) need to fulfil their role as safe havens for (climate) refugees and leaders in the decarbonization of their industries
- d) need to ensure that adequate reparations for colonial and climate damage will be made.

I then went on to translate the insights and findings gathered through secondary research into maps that visualize the connections and relationships between different aspects of the acquired data. Through this, I also developed a Theory of Change which will be used as the projects central narrative around which further primary research resolves.

Political

Deconstruct
inessential pol.
Hierarchies

Encourage citizen
participation
and more direct
democracy

Stop Lobbyism &
Corruption
(partially by giving
less influence to
individuals and
parties)

Fight Rightwing-
beliefs always.

Ensure Equal
Access & Opportunity
Free Education
& media competence
training

Against Borders,
Nationalism &
Pre International
Solidarity

Power to the people

Botan GNT-Index

Economic

Economic
Sustainability

Economic
Fairness

↓
Wealth redistribution
Subsidization vs
Taxation

*Doubt Economy

Wage Gap between
Race, Gender, Class,
and Education and
Location

Alternative Models:

- Socialism
- Social Market
Democracy
- Anarchism // Moneyless
- UBI
-

Social

- End of racial,
sexual, religious,
gender, ableist,
etc.
discrimination
- Focus on mental
wellbeing
- Encourage
mutual Aid
- Appreciate Differences
- Encourage
Community
Resilience

- Ensure fair and
Useful Education
- Legalize + Protect
sexwork
- Social Well-
being and
community care
of the center
of low systems
and spaces are
designed
- make room for
expression, growth
and art
- Accessibility of
those things for all
needs to be ensured

Technology

- Technology to
serve the people
- Against high level
AI based decision
making
- Don't believe in
silverbullet techfixes
- Technology needs to
be efficient, resource-
full and productive
- Check Environmental
Footprint of Tech-
nology before
engaging.
- Renewable
Energy Generation
is a key priority
- Equal Access to
the Internet and
Media/competence
training
- Consider
Individualistic
vs Collective
solutions
- Public Transport

Legal

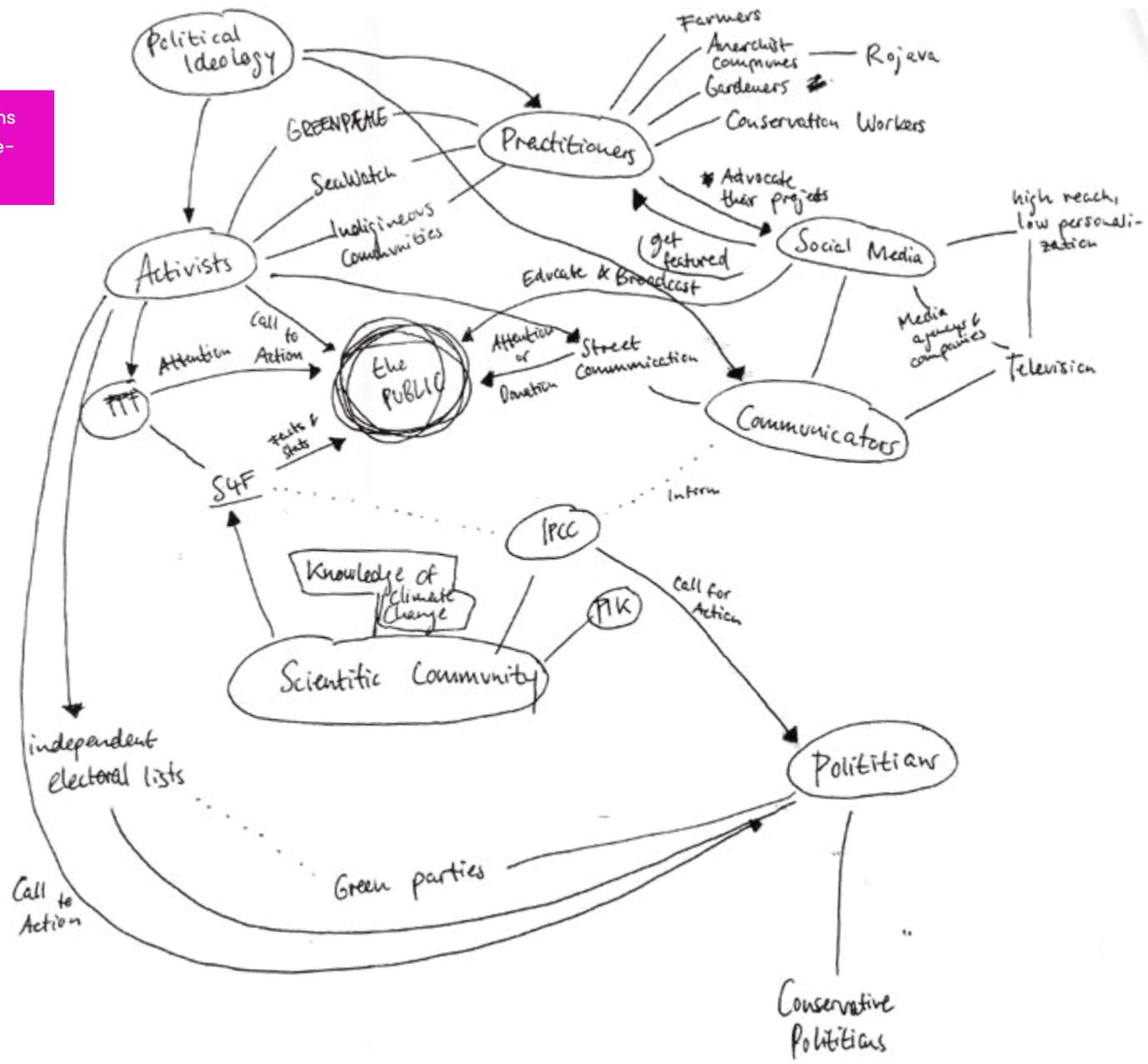
- Ban Fossil
Fuel Tech
- Provide
easy access
to legal
recognition
of minorities
- question
the concepts
of borders
and citizen-
ship
- Ban harmful
farming practices
- Decriminalize
Dumpster diving
etc.
- Reform drug
policies and
laws
- Punish Wage-
theft and
control it more
- Abolish
Police & Prison
to introduce
rehabilitation

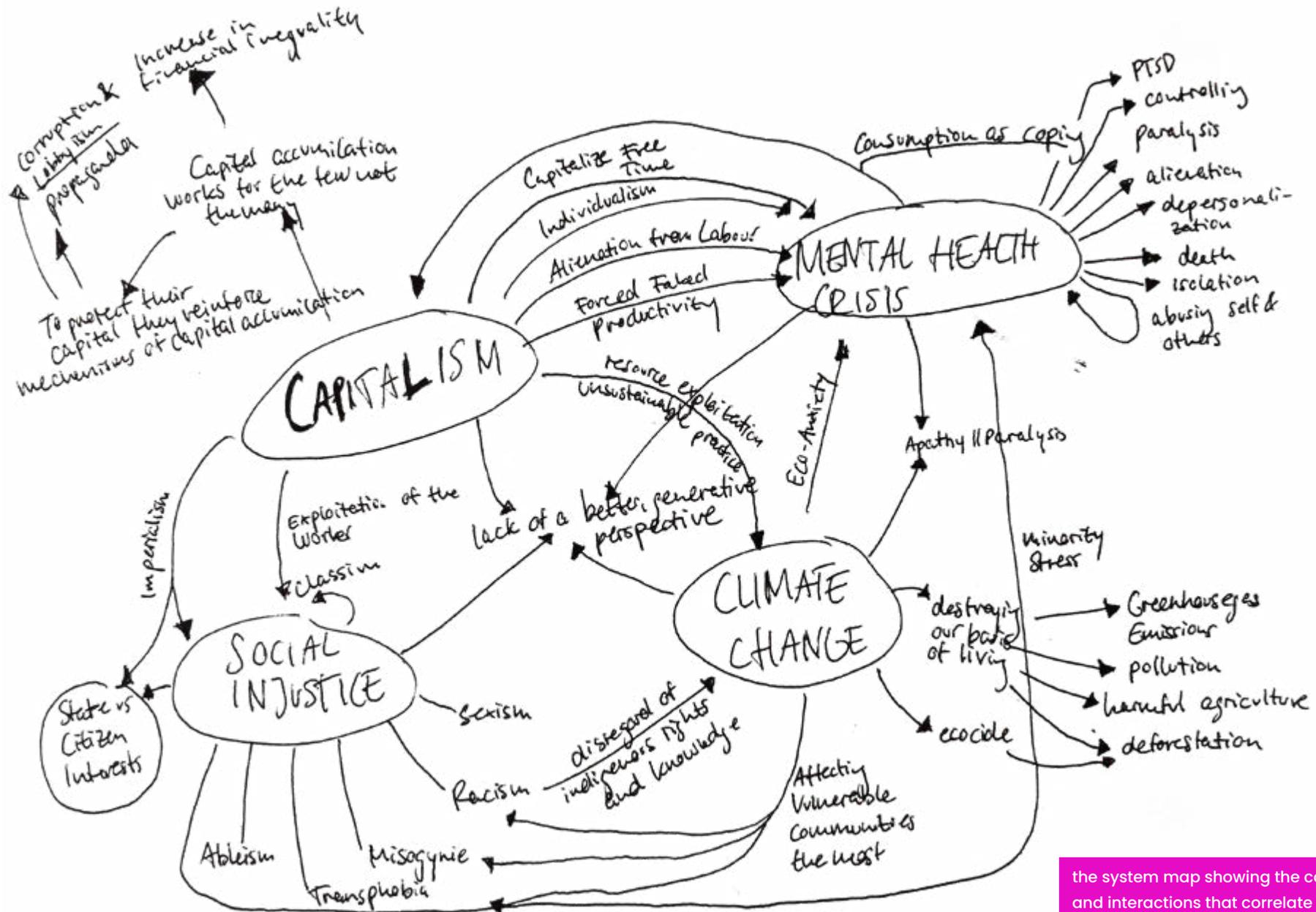
Environment

- Eco sustainability
↓
All renewables ASAP.
Specific mix will be
location specific
- Sustainable Farming;
Agroforestry, Permaculture
Sustainable Grazing;
Tree intercropping, Crop
rotation.
- No Herbicides & Pesticides
Water efficiency
- Stay within Emission
Boundaries
- Protect forests and
Ratoforest as well as
Wetlands &
Permatrest
- Make Cities dense,
Efficient AND
Liveable.
- Fight Foodwaste
Whenever possible
- Break up mega
Corps for better
Accountability
- Rethink Transport
Stop / Decrease
Meat Consumption

a PESTLE analysis gathering parameters,
tools + political decisions that aid achieving
systemic eco-social sustainability.

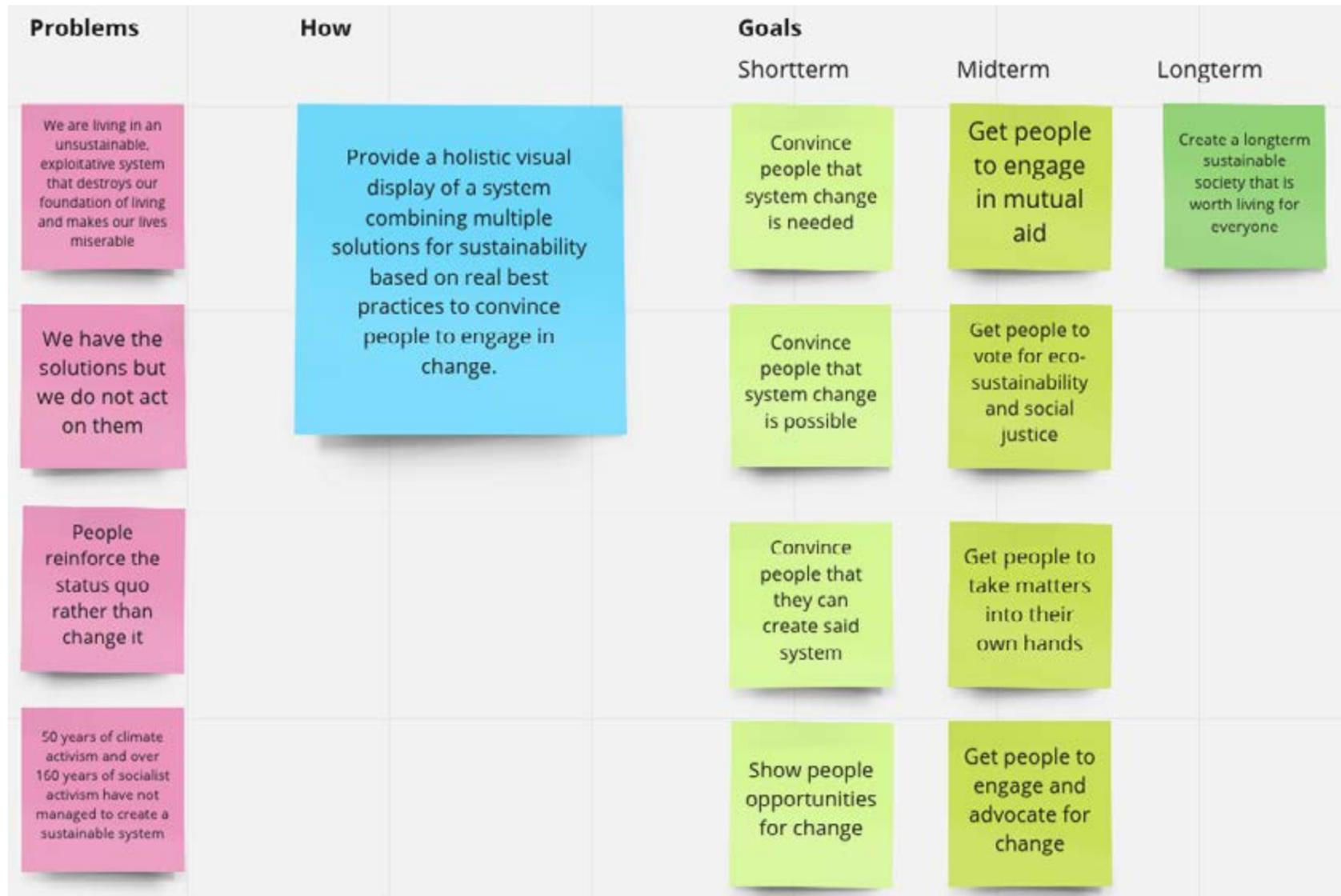
the system map showing the connections and interactions between different stakeholders in climate communication.





the system map showing the connections and interactions that correlate and cause issues with systemic eco-social sustainability.

the theory of change acts as the bridge between the problems of the presents and the goals set in the future.



Ideas for Ideation:

1. Sims-City style interactive infographic on the example of Cologne: Build your own system from a set of solutions, see how they impact each other and the system as a whole
2. Create an open source framework of how to create such a system in your specific region and how to communicate it properly.

Next Steps:

1. Critically investigate other local systems attempting eco-social sustainability like Bhutan's Gross National Happiness Index, Fejuve (Bolivia), Rebel Zapatista Autonomous Municipalities (Mexico).
2. Gather a co-creation group.
3. Create a framework in which to co-create with locals, ensure minority representation and an ethical approach.
4. Continue reading, mapping, investigating, analyzing, combining etc.

What do I need to find out now?:

1. How do you best communicate the knowledge around systemic sustainability? Is anyone doing it right now and if not, why not?
2. What exactly does the general public know about systemic sustainability? Where do they themselves see the issue in regards to decisive action against the climate crisis?
3. What would a localized sustainable system look like, and how can this be portrayed in a compelling and motivating manner?

Personal notes and review on secondary research:

While the previous work makes up for the core of secondary research, further secondary research will be needed and conducted throughout the project in preparation for and in accordance with the relevant questions that emerge from primary research.

Since the research conducted in this step indicates that sustainable systems vary highly in shape and communication depending on the specific location, I decide to localize this project in my hometown of Cologne, Germany. One reason for this is that due to the scale of the city in comparison to a metropole like London, the number of changes needed towards systemic sustainability seems easier to communicate. The other reason is, that it will be a lot easier for me to conduct further primary research since I have more personal connections to local activists in Cologne due to my previous involvement within the scene.

4. primary research



an illustration i produced in adobe illustrator and used for invitations to primary research

time frame: 16.07.2021 – 30.09.2021

4.1 Primary research and stakeholder lists

As a first step, I defined the methods through which I want to conduct primary research. Since the current goals are to investigate the do's and don'ts of climate communication, to gather insights into the general public's understanding of systemic sustainability and to develop a sustainable vision of Cologne I decide on the following methods:

1. Interviews with experts on climate communication.
2. A questionnaire aimed at the general public to ask them directly about their knowledge and attitudes.
3. A focus group with local activists for eco-social sustainability with the goal to co-design a sustainable vision of Cologne and to develop ways on how to communicate this compellingly.

To figure out who to contact for these enquiries, I created four stakeholder lists in a combined spreadsheet. These keep track of international, national and local activists and speakers around the climate crisis and social justice. The fourth list features shows and blogs that deal specifically with the climate crisis and have been able to gather a significant following through such. As experts in the field, they are highly relevant to answer the first question around the dos and don'ts of climate communication. Moving forward, I will attempt to get interviews with as many of them as possible.

screenshots of the aforementioned four lists containing relevant stakeholders. view the spreadsheet



4.2 Ethical Research

In an effort to work in accordance with UAL's standards of ethical practice and research, I created a Participant Information Sheet and a Participant Consent Form prior to conducting primary research. The basis for these is taken from UAL's guidelines for ethical research, the forms were then modified to fit the specific needs of this project and the relevant research method.

blank versions of the
participant consent
forms used for the
interviews

Investigator's signature: _____
Date: _____

Contact
Investigator: Lucille Hein, MA Design for Social Innovation and Sustainable Futures,
University of the Arts London
Email: luciehein@gmx.de

Participant Consent Form



Project Title: "A speculative design visualization of an environmentally sustainable possitopian system in practice" (*working title*)

You are being invited to take part in a research project. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the attached information sheet carefully and discuss it with others if you wish. Ask if anything is unclear or if you would like more information.

- I understand that I have given my consent to be interviewed about my thoughts on climate communication strategies and the impact and evaluation of communicative activism.
- I fully give my consent to take part.
- I understand that I have given approval for my opinions to be included in the research outputs. Anything I say, write or draw may be used in the final output, academic papers and online blogs relating to the project.
- I have read the information sheet about the research project, which I have been asked to take part in and have been given a copy of this information to keep.
- What is going to happen and why it is being done has been explained to me, and I have had the opportunity to discuss the details and ask questions.
- Having given this consent I understand that I have the right to withdraw from the research programme at any time without disadvantage to myself and without having to give any reason.
- I hereby fully and freely consent to participation in the study, which has been fully explained to me.

Participant's name
(BLOCK CAPITALS): _____

Participant's signature: _____

Date: _____

Investigator's name
(BLOCK CAPITALS): _____

Research project: “A speculative design visualization of an environmentally sustainable possitopian system in practice”
(working title)



Participant Information Sheet

About this project

This project is part of my research on the PgCert Academic Practice in Art, Design and Communication at UAL.

I am conducting an enquiry into the visualisation of eco-socially sustainable systems. I am interested in perspectives of climate communicators, practices and knowledge of sustainable societies such as indigenous societies and the motivations of the general public in relation to envisioning and populating preferable pathways for humanities future.

My research will investigate essential information for the creation of this project. The methodology will be qualitative: taking a responsive evaluation approach. This will consist of interviews and an in-depth co-creation group with stakeholders in sustainable practice, climate activism and communication. Responses will be analysed thematically in relation to this project.

What does it mean to take part?

If you take part you are consenting to taking part in a focus group. The focus group will meet two times for a duration of 90 minutes each. The cooperative work will end with a final meeting, with an anticipated duration of 30 minutes. I will record both video and audio of the work conducted by the focus group, evaluate and use it for further creation. The data will be used as the basis for academic analysis.

If you choose to take part, you will be free to withdraw your participation at any point. You will not be obliged to give any reason for deciding not to take part.

Will my participation be kept confidential?

Your anonymity is very important. The information about you will be confidential to me, as the researcher. You will not be identified individually anywhere in the research. If I quote anything you have said or produced during the focus group work, it will be anonymous. An example might be: 'Co-Creator A said 'The project is...'' This will be the case, unless you state your wish to be publically mentioned within the project outcome and documentation.

What will happen to the results of the research project?

Analysis from the focus group and other primary research methods - including quotations from you – will contribute to an academic dissertation. Your words and work may also be used in the final project outcome, academic reports, papers or conference presentations. These may appear online.

Thank you for your contribution and participation in this study.

Contact for further information:

Lucille Hein, Investigator | Email: luciehein@gmx.de

Participant Consent Form



Project Title: “A speculative design visualization of an environmentally sustainable possitopian system in practice” (working title)

You are being invited to take part in a research project. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the attached information sheet carefully and discuss it with others if you wish. Ask if anything is unclear or if you would like more information.

- I understand that I have given my consent to conduct work in cooperation with the author and other members of the focus group. I understand that the author is not responsible for the responses and statements of other members of said group, yet will try their best to create a work environment that is both inviting and safe for all participants.
- I fully give my consent to take part.
- I understand that I have given approval for my opinions to be included in the research outputs. Anything I say, write or draw may be used in the final output, academic papers and online blogs relating to the project, although these quotations will be anonymous.
- I have read the information sheet about the research project, which I have been asked to take part in and have been given a copy of this information to keep.
- What is going to happen and why it is being done has been explained to me, and I have had the opportunity to discuss the details and ask questions.
- Having given this consent I understand that I have the right to withdraw from the research programme at any time without disadvantage to myself and without having to give any reason.
- I hereby fully and freely consent to participation in the study, which has been fully explained to me.

Participant's name
(BLOCK CAPITALS): _____

Participant's signature: _____

Date: _____

participant information sheet and participant consent form used for the focus group research

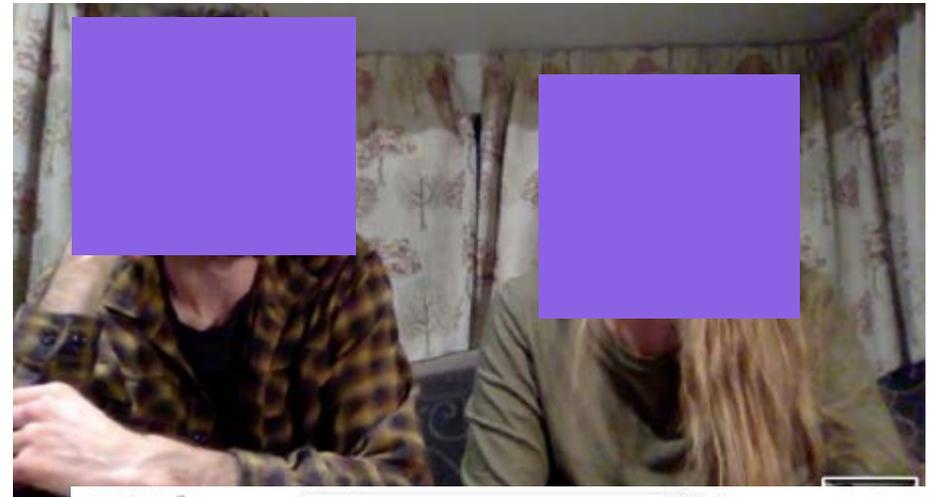
4.3 Climate communication - Interviews:

To gain further insights into the mechanisms and rationale of climate communication, I conducted three interviews with YouTube channels that deal with climate communication in three different styles, in addition to reading secondary research material. The insights are as follows:

4.3.1 [Redacted]

[Redacted] Their works focus on documentaries around sustainability through individual solutions and examples like permaculture, buildings and farming. Their releases usually take the form of 8-15 minute long videos, with occasional 30-minute long documentaries and podcasts and interviews around an hour in duration, for a total of 360,000 subscribers and 30.8 million views on their content. Through the 50 minutes long interview, the following key information was acquired:

- A. Offer inviting perspectives and exploration rather than impossible targets and prescribed solutions (Transcript A, 20:06).
- B. Look for easy entry points into the topic. Then snowball from there, keep their attention (Transcript A, 18:18).
- C. Some essential topics are emotionally difficult to digest due to privilege. The right framing is key to successful communication (Transcript A, 10:01; 12:36). The wrong title can ruin all engagement (Transcript A, 12:36).
- D. The general understanding of sustainability can be incredibly shallow. But we all used to be there at one point. Try to relate (Transcript A, 16:19).



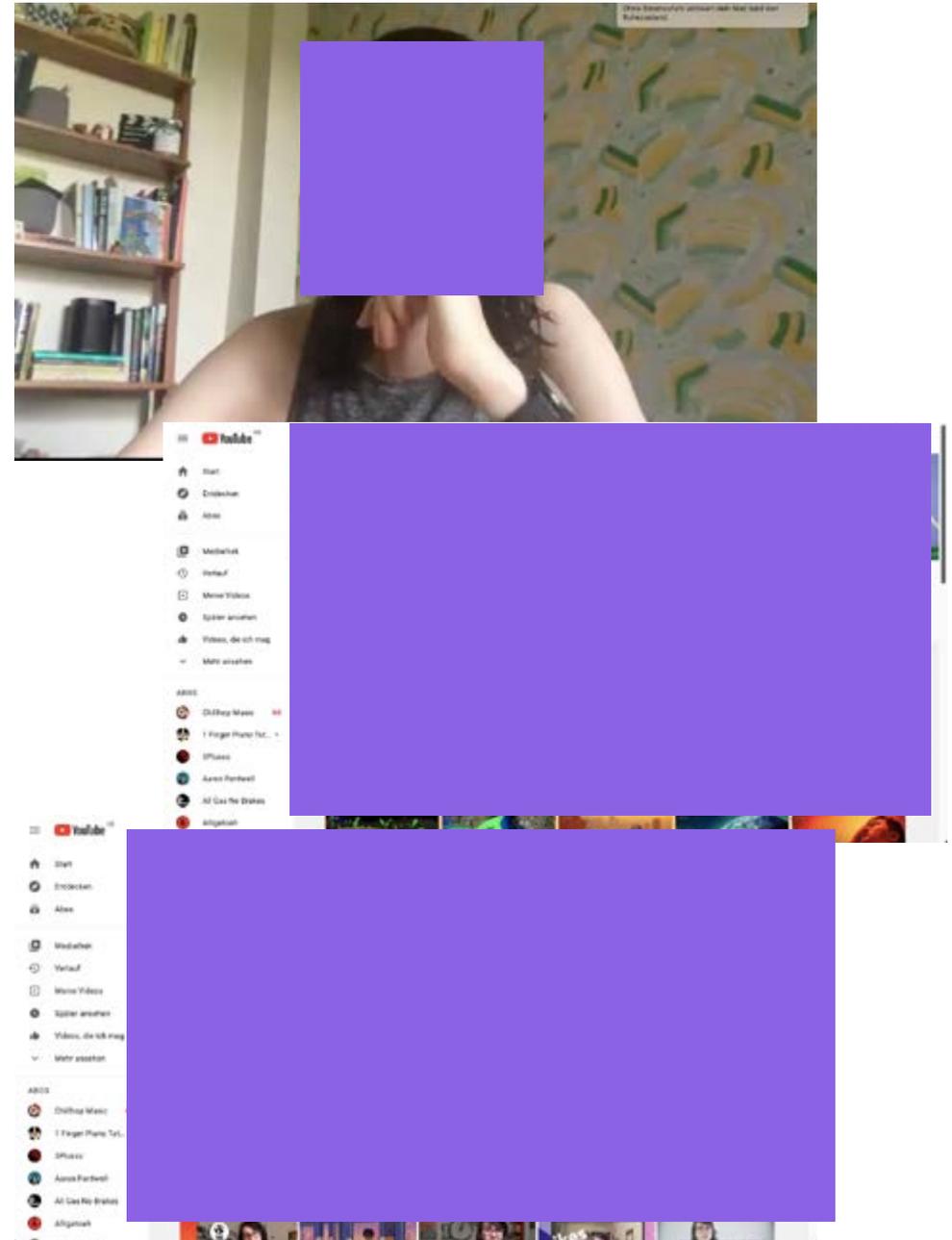
screenshots from the [Redacted] interview (top) and of [Redacted] YouTube landing page (bottom)

4.3.2

She posts on her own YouTube channel that combines a breakdown of climate and environmental science with climate justice and direct action, through 5-10 minute long videos. which focuses on explaining phenomena around the climate crisis via 5-15 minute long videos. The channels have a respective 15,000 subscribers with 385,000 views, and 100,000 subscribers with 3.5 million views. The interview with allowed for the following insights:

- A. Know your target audience and their level of knowledge. Pick the information density accordingly (Transcript B, 21:48).
- B. Do not fall into the trap of treating sustainability as a series of consumer choices. Highlight how it is systemic instead (Transcript B, 23:17; 25:16).
- C. Involving a performing person keeps the audience's attention longer than visually appealing information alone (Transcript B, 8:00).
- D. Keep information concise and on topic, offer more if people are interested, following a hierarchy of information (Transcript B, 26:12).

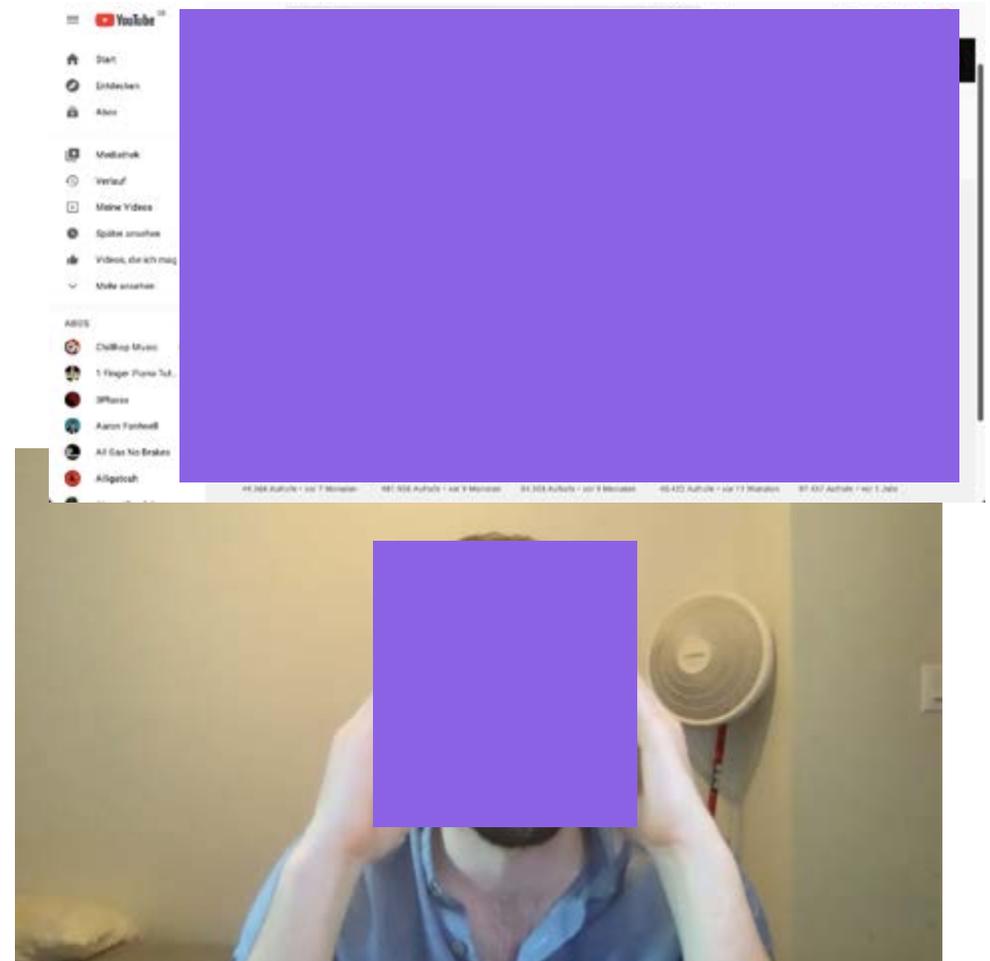
screenshots from the interview with (top), the YouTube page (middle) and the YouTube page (bottom)



4.3.3

The show takes on a 'Last Week Tonight'-style approach towards education on climate policy and corporate scandals via political satire and investigative journalism. Since the interview, the number of followers of [redacted] channel has quadrupled and now has 180,000 subscribers and 4.36 million views. During the interview [redacted] communicated the following insights:

- A. Climate change is complex and needs a lot of nuances. Define and enhance the entertainment value in the story you are creating to its maximum to keep the attention of your audience (Transcript C, 21:44).
- B. The first metric is 'what interests me?' If you're not interested in what you are talking about, it will be even harder to translate that to other people (Transcript C, 06:50).
- C. Tell your story first, place a call to action at the end. Otherwise, you appear like a missionary. That turns people off (Transcript C, 13:04).
- D. Lay comedy and entertainment on top of the present argument, so that it anchors in the audience's minds as a punchline (Transcript C, 04:18).



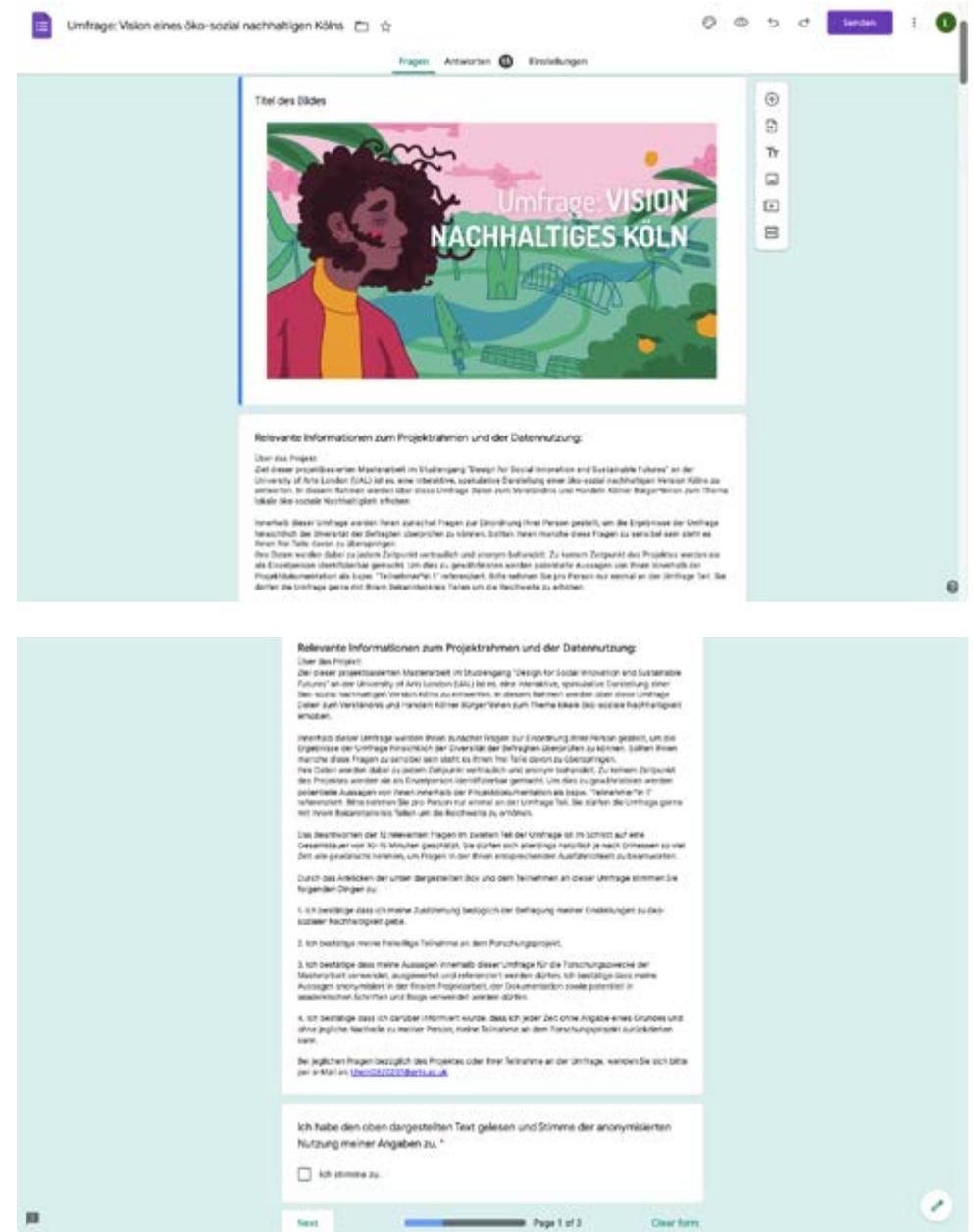
screenshots from the interview with [redacted] (bottom) and of the YouTube landing page (top)

4.4 Public knowledge and motivation – Questionnaire:

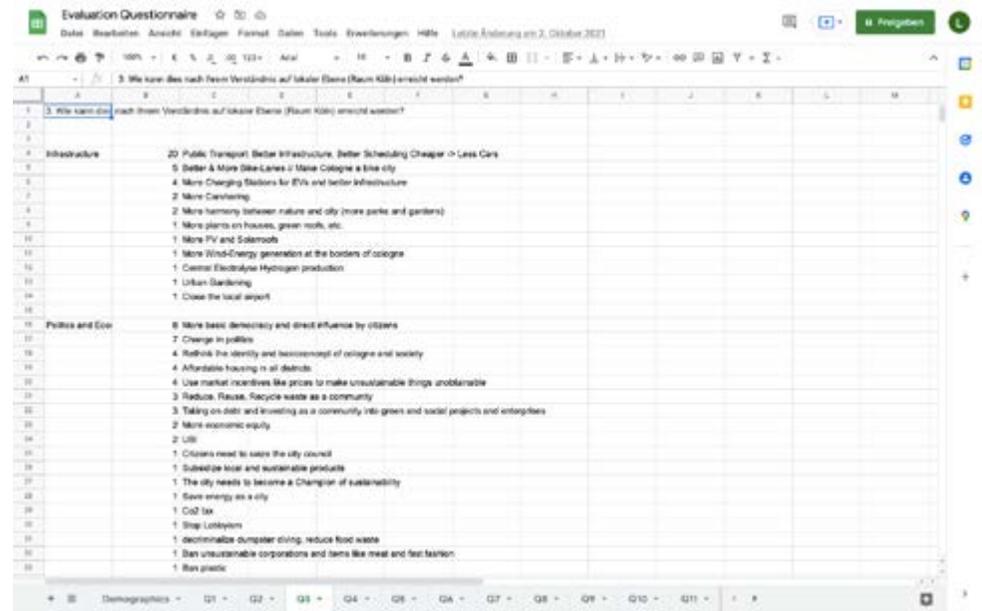
To compare the previously acquired findings around eco-social systemic sustainability and climate communication with public knowledge, I conducted a questionnaire with citizens of Cologne, Germany, where this project is located. The questionnaire contains twelve mostly open-answer-style questions on their understanding of eco-social sustainability and their perception of the communication around that topic.

Due to the extensive duration of 30 to 45 minutes per questionnaire and the geographical distance between myself as researcher in London and participants in Cologne, it was only possible to gather 55 responses which usually would be insufficient for a quantitative analysis. However, due to the qualitative nature of the questionnaire and its questions, they proved successful in gaining deep rather than broad insights into the understanding of Colognians regarding eco-social sustainability, that amount to useful findings:

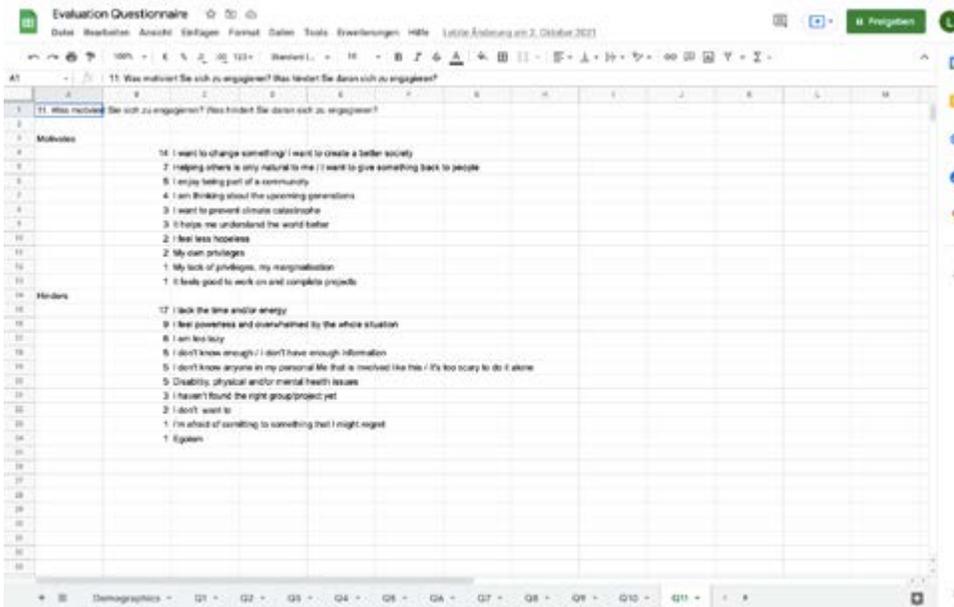
screenshots from the questionnaire's landing page showing the consent form people need to check before filling out the questionnaire



screenshots of the spreadsheet used to evaluate the questionnaire



to access the entire spreadsheet visit https://docs.google.com/spreadsheets/d/1YCEo9UmUHEGie_XhL59NNN8Jhcw7m2le-Maoy_Jr0ys/edit?usp=sharing



4.5 Questionnaire evaluation and findings

communicate in regards to systemic relevancy to systemic sustainability, not just based on media trends



A. People tend to be more aware of the things discussed in the media like transport and pollution, and a lot less aware of less prominent factors like buildings, agriculture and energy production.

B. People feel like politicians and corporations are not ensuring sustainability but still possess the most power to ensure it.

offer solutions and opportunities for involvement. this reaffirms the theory of change!!



C. Negative phrasing leads to people feeling urgency, but simultaneously feeling powerless, overwhelmed and paralyzed, thus preventing action.

D. People think political action and local community development are needed, but lack resources, opportunities and knowledge for engagement outside of elections.



show people how they can influence politics

“(…)It’s not just enough to stop that oil pipeline (…). If you don’t know what you’re building afterwards, then we’re just going to go around in circles and nothing is going to change. (…) And I think that that vision (….)has to (….) embody (….) a more beautiful world.”

–

4.6 Reflections on primary research

1. Show the audience a lot more things and areas our society can and needs to change for sustainable living.

-> Localized sustainable agriculture

-> Localized, decentralized energy grid

-> Energy-efficient buildings and infrastructure

2. Give them examples of how they could get involved more, from direct democracy to mutual aid.

-> International solidarity: Become an example for global change while redirecting some resources to partners in previously and currently exploited parts of the world. we can do more than just capsule ourselves off.

3. Introduce the idea of a localized, circular industry in which resources are being used to their fullest potential and redistributed to those in need. sharing over individual ownership while ensuring room for privacy and individual fulfilment.

4. Emphasise systems of social wellbeing within these areas.

-> For example, community gardens produce food AND social networks.

5. Make clear through communication that this is only one model and other communities obviously also need to enact sustainability for global change to take place, but this is what we can do right now.

When relating the insights gained from the interviews and the questionnaire back to the original Theory of Change, they do not change the concept, but instead, reinforce it. This means that the logical next step for this project is the worldbuilding exercise, in order to develop a vision to communicate towards the general public.

Ideas for prototyping and portrayal of a sustainable system

1. Spatial installation: Walk around a flat designed for sustainable living in 2050 Cologne

2. VR exhibition: build game like environment of a neighborhood for people to explore

3. AR exhibition: let people walk around and see holograms of what could develop in their neighborhood.

4. POV documentary?

5. -> Video call with a friend from the future. Go into a phone booth and dial one of your friends, they will show you around living in 2050

-> YOU COULD ACTUALLY PLACE THIS SOMEWHERE IN TOWN! thats so cool

6. Card or board game

7. Street game with multiple participants of the public

8. Projection-mapping + roleplaying?

9. Create a sustainability pop up lab in public space?

10. Create the plenum of the future?

5. co-design: worldbuilding with activists for sustainable systems



time frame: 30.09.2021 – 31.10.2021

5.1 Defining the format

To use the expertise of local experts in activism for eco-social sustainability for the worldbuilding of the vision for Cologne 2050, I decided to conduct co-design workshops with activists from the Cologne urban area. For this, I went back to the stakeholder document and e-mailed fitting individuals and groups.

Since sufficient overview of the complex topic is required to motivate people to engage, I wrote an outline for the workshop's goals and conceptions, which were attached to the e-Mail as a PDF. I then used the digital organizing tool 'nuudl. digitalcourage.de' to figure out the dates most suited. The two workshops were conducted on 08.10.2021 and 26.10.2021.



Projektplan: Fokusgruppen-Arbeit

Masterarbeit "Eine spekulative Design-Visualisierung eines ökosozial nachhaltigen Systems in Praxis" von Lucille Hein

1. Motivation und Ziel des Projektes

In aktivistischen Bemühungen um eine bessere, nachhaltige Welt, kommt das Anbieten von positiven Perspektiven oft zu kurz. Das ist nachvollziehbar, denn beim Widerstand gegen die Interessen von Kohle- und Automobilkonzernen sowie konservativer Entscheidungsträger*innen scheint oft jede Sekunde der Kommunikation um die Gefahr einer ungezügelten Klimakrise gewidmet werden zu müssen.

So wichtig all diese Ansätze auch sind, bin ich dennoch der Überzeugung, dass sich die Menschen nicht nur durch Angst vor schrecklichen Ereignissen zu nachhaltigem Handeln, der richtigen Wahl und Beteiligung an Aktivismus motivieren lassen. Deswegen möchte ich in dieser Arbeit gemeinsam mit Ihnen einen alternativen, noch wenig betretenen Weg erkunden: den des generativen Aktivismus.

Gemeinsam werden wir anhand des Beispiels der Stadt Köln nachhaltige Visionen und Konzepte zum Leben im Jahr 2050 erdenken. Das Ziel meiner Masterarbeit wird es sein, am Ende diese Visionen durch mein Handwerk als Gestalterin in ein überzeugendes, positives und ganzheitliches Kommunikationsmittel für Aktivist*innen und Menschen mit grünen Überzeugungen zu formen. Eine Welt zu erhalten, in der wir alle gut und dauerhaft leben können ist im Interesse eines jeden Menschen - ganz losgelöst von partei-politischem Interesse.

Denn wie es auf so vielen Klimademos immer wieder heißt:

"We are unstoppable, another world is possible."

Also warum Sinnen wir sie nicht bereits jetzt und hier herbei?

2. Umfang und Voraussetzungen

Der Umfang der Fokusgruppenarbeit beläuft sich auf jeweils **zwei anderthalbstündige Treffen im Workshop-Format** über die digitale Plattform Zoom. Diese finden innerhalb des Zeitraums vom 27.09 bis 17.10.2021 (Kalenderwoche 39 - 41) und **einem abschließenden Treffen** im Zeitraum vom 25.10 - 31.10.2021 (Kalenderwoche 43) statt.

Für die Teilnahme an der Gruppenarbeit brauchen Sie **ein funktionales Zoom-Setup** (Computer mit Kamera und Mikrofon, stabile Internetverbindung) und eventuell **Stift und Papier** für Notizen und Skizzen. Relevant ist nur Ihr persönlicher Input zu den Themen die Ihnen präsentiert werden. Im Falle einer Zusage hoffe ich auf eine verbindliche Teilnahme an den Treffen der Fokusgruppe während des Projektzeitraums.

Für spontane Zwischenfälle, die sich nicht aufschieben lassen und daher die Teilnahme an einem der Treffen verhindern, gibt es natürlich vollstes Verständnis. Grundsätzlich wäre es allerdings von Vorteil wenn Sie sich den Termin des Treffens von anderen planbaren Aktivitäten freihalten. Sollten Sie einmal zeitlich verhindert, aber dennoch motiviert sein die Arbeit fortzuführen, vereinbare ich gerne mit Ihnen einen zweiten, privaten Termin. Dann können wir gerne die verpassten Inhalte einzeln nachzuholen.

3. Die anderen Teilnehmenden

Für potentielle Gruppenmitglieder habe ich Menschen und Organisationen mit unterschiedlichen Herangehensweisen an das Thema öko-soziale Nachhaltigkeit kontaktiert. Diese spalten sich in die Bereiche Aktivismus, Lokalpolitik, Städteplanung, Urban Gardening, Kommunikation, Wirtschaft und viele andere auf. Natürlich haben Sie alle unterschiedliche Perspektiven und Kompetenzen. Durch die Zusammensetzung dieser erhoffe ich gemeinsam einen möglichst ganzheitlichen, gut durchdachten und intersektional fairen Output schaffen zu können.

Insgesamt möchte ich für die Gruppenarbeit **zwischen 5 und 10 Mitschaffende** finden.

4. Ablauf der Fokusgruppen-Arbeit

Die Arbeit innerhalb der Fokusgruppe ist **in drei Phasen** unterteilt, die sich nach dem jeweiligen Stand des Projektes richten.

Phase 1 (Kalenderwoche 39/40)

Innerhalb des ersten Treffens werden Sie zunächst in den konkreten Arbeitsablauf eingeführt und bekommen die Chance sich kurz einander vorzustellen. Anschließend entwickeln wir anhand unterschiedlicher Nachhaltigkeitsmodelle und Kreativmethoden gemeinsame Modelle einer öko-sozial nachhaltigen Gesellschaft und Lebens in der Stadt Köln des Jahres 2050.

Abschließend bekommen Sie die Gelegenheit in einer Gruppendiskussion Ihre individuellen Gedanken, Überschneidungen und Differenzen zum Erarbeiteten zu äußern. Außerdem dürfen Sie Verbesserungsvorschläge nach Ihrem eigenen Verständnis zur Bildung einer öko-sozial nachhaltigen Gesellschaft machen.

Phase 2 (Kalenderwoche 40/41)

Innerhalb des zweiten Treffens werde ich Ihnen zunächst eine überarbeitete und vereinheitlichte Version des zuvor erarbeiteten Gesellschaftsmodells präsentieren, sowie erste Entwürfe des Kommunikationstools.
Anschließend geht es darum, diese Welt erlebbar zu machen. Konkret bedeutet das, dass wir durch das Anwenden verschiedener Kreativmethoden uns das reelle Leben in diesem System vorzustellen. Dies tun wir, um es durch die Augen der Einzelperson im Jahr 2050 auf Stärken, Schwächen und persönliche Bedeutsamkeit zu überprüfen.

Der Zweck davon ist es, den Zukunftsvorschlag später für Menschen im hier und jetzt, mit all Ihren unterschiedlich gelebten Realitäten mittelbar machen zu können. Denn meiner bisherigen Forschung nach, ist für Menschen vor allem das überzeugend, was sie in ihrem persönlichen Leben anspricht und/oder direkt erlebbar ist.

In einer abschließenden Feedbackrunde sammeln wir gemeinsam Gedanken, Kritik und Vorschläge zum erarbeiten Szenario und der dafür verwendeten Methodik.

Phase 3 (Kalenderwoche 43)

In der letzten Veranstaltung präsentiere ich Ihnen meinen Prototyp des Kommunikationstools. Anschließend diskutieren und erimmen wir gemeinsam, ob und inwiefern das Projekt von Nutzen in klimaaktivistischer Kommunikation sein kann. Spannend ist, was Ihrer Meinung nach daran zu verbessern ist, um dies zu gewährleisten.

5. Organisatorisches

Um Ihre Gedanken und Ideen innerhalb meiner Masterarbeit berücksichtigen zu dürfen, muss ich Sie bitten eine Einwilligungserklärung zum Teilen der erarbeiteten Informationen zu unterschreiben. Dieses und ein weiteres, erklärendes Dokument zum Projektrahmen finden Sie im Anhang an diese Mail.

Sobald sich genug Teilnehmende für die Fokusgruppenarbeit gefunden haben, werde ich in einer Mail eine Übersicht zur Terminabsprache teilen. Damit werden wir einen Zeitpunkt festlegen können, an dem alle Teilnehmenden bestmöglich verfügbar sind. Bei jeglichen Fragen und Unsicherheiten zum Projekt, dem Ablauf oder der Zusammenarbeit, schreiben Sie mir bitte eine e-Mail via luciehein@gmx.de, oder kontaktieren Sie mich telefonisch über **+4915756082750**. Ich werde mich dann umgehend damit auseinandersetzen.

Ich freue mich auf die Zusammenarbeit an diesem Projekt und hoffe mit Ihrer Hilfe eine tolle, ermutigende und inspirierende Arbeit zu schaffen.

Lucie Hein

University of the Arts London | London College of Communication
mail: luciehein@gmx.de, mobil: +4915756082750

6. Inspiration spekulativer Design-Projekte zum Thema erlebbarer Klimawandel

“Mitigation of Shock” - Studio Superflux (UK, India)

<https://superflux.in/index.php/work/mitigation-of-shock/#>

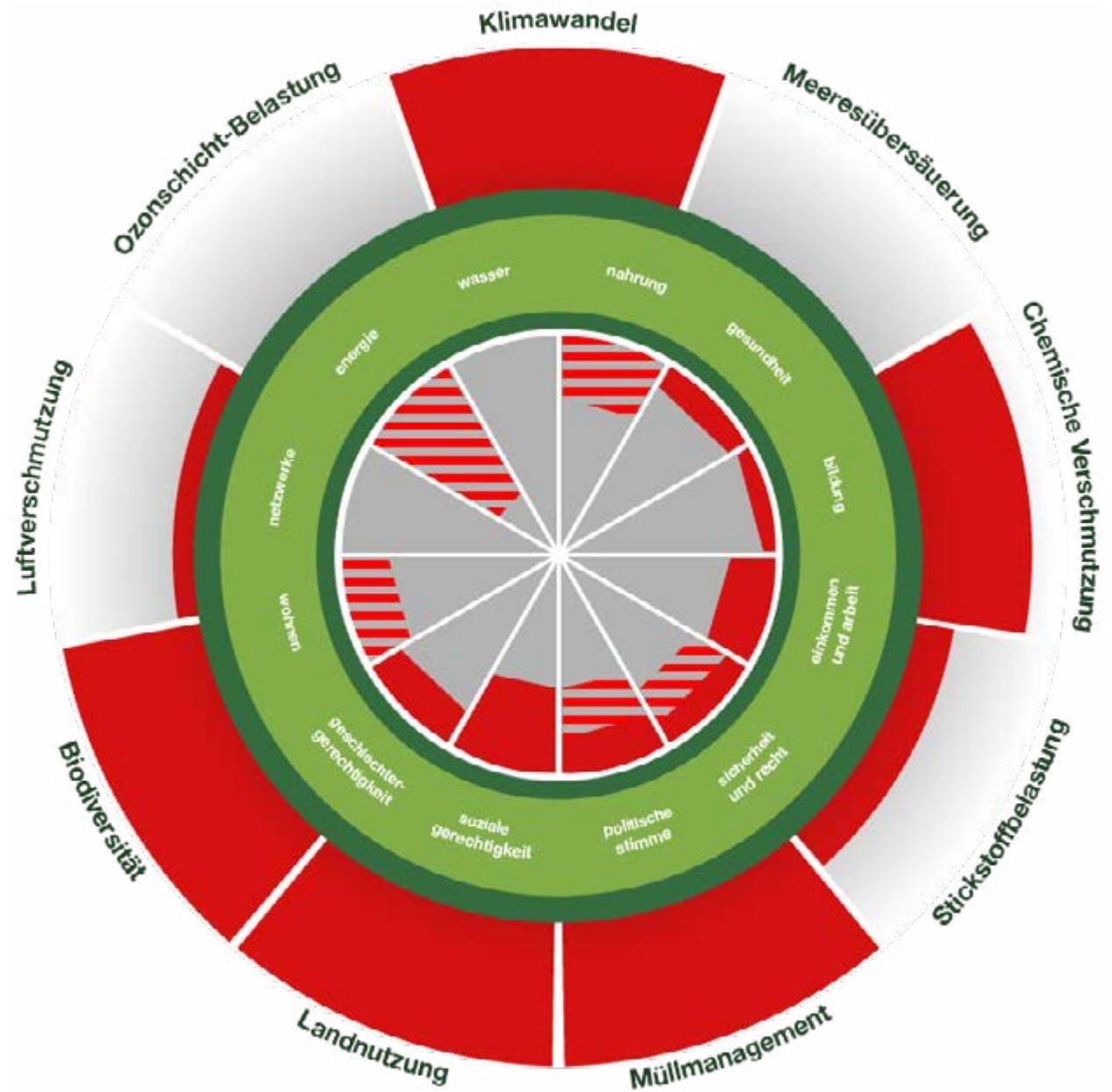
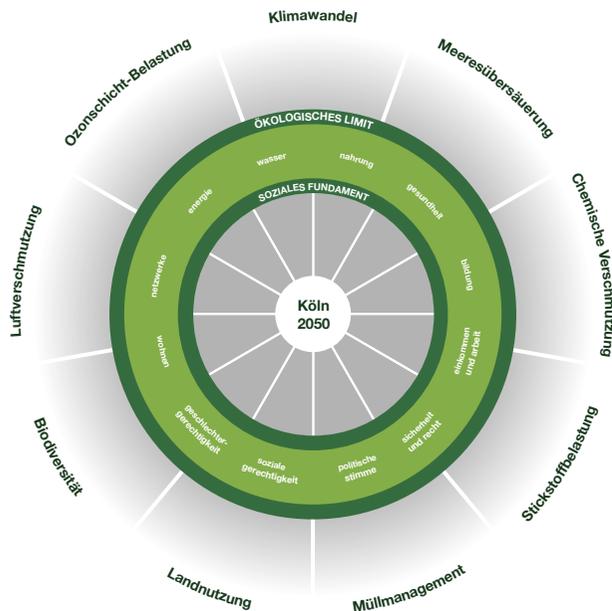
“Design for an Overpopulated Planet: Foragers” - Dunne & Raby (UK)

<http://dunneandraby.co.uk/content/projects/510/0>

5.2 Modeling Cologne's Doughnut

To display the present state of eco-social sustainability in Cologne, I used Raworth's model of the Doughnut Economy as a mapping tool.

This localized version makes use of statistics from the City of Cologne and the German Environment Agency. The hatched elements within the Doughnut indicate that there is an indirect issue related to the topic. For example, Cologne is able to meet its demand for energy without problems, however, the energy stems mainly from fossil fuels and is thereby deemed unsustainable. Some areas like 'ocean acidification' and 'ozone depletion' are deliberately left blank since it is impossible to calculate the exact amount in which Cologne contributes to the problem.



Workshop: ClimateFutures2050



Der Stand der Dinge: Handlungsbereiche (10 Minuten Wissen auffrischen)

- Energieproduktion
- Landwirtschaft und Distribution
- Gebäudetechnologie und Energieeffizienz
- Bürger*innen-Partizipation: Direkte Demokratie, Mutual Aid, Ehrenamt, etc.
- Personen und Güterverkehr
- Industrie-Standards (Verzicht auf Stahl & Beton, etc.) und Abfall-Management
- Konsumverhalten hin zur Nachhaltigkeit
- Ressourcenverteilung und Gewährleistung von Teilhabe an allen Gesellschaftsbereichen für alle Menschen

(Quellen: Project Drawdown, IPCC, Bundesumweltamt, uvm.)

Lokale Herzerwärmung (Kennen Lernen) (10 Minuten)

- Ich bin (x), ich tue (y). Mich inspiriert (z).
- Ich bin Lucie und ich versuche mich über Design im Klimaaktivismus zu engagieren und coole Zukunftsszenarien erlebbar zu machen. Mich inspiriert vor allem die Kunstbewegung Solarpunk.
- Und du?

Der Stand der Dinge: Was wissen wir? (10 Minuten Wissen auffrischen)

- Wandel auf systemischer & lokale Ebene > individuelles Handeln. **Optionen für Nachhaltigkeit anbieten**, Alternativen schwächen & verhindern.
- Nachhaltiges Leben beinhaltet auch soziales. **Zugang zu Ressourcen**, Sozialfürsorge und öffentlichen Räumen ist zu gewährleisten.
- **Klimarelevante Sektoren** thematisieren. Für Köln heißt das: **Stromgenerierung, Industrie, der Transportsektor und das Wohnen und Konsumieren** von Privathaushalten. Nur durch ganzheitliches Denken entsteht systemischer Wandel.

(Quellen: Project Drawdown, IPCC, Bundesumweltamt, uvm.)

Der Stand der Dinge: Was wissen Kölner*innen? (10 Minuten Wissen auffrischen)

- Bewusstsein der Menschen richtet sich nach Themen im Mediendiskurs. So bleiben wenig besprochene Themen unentdeckt.
- Negative Erzählweisen sorgen neben Verständnis der Dringlichkeit für Demotivation und Gefühle der Machtlosigkeit. Das verhindert nachhaltig Einsatz für Klimagerechtigkeit.
- Menschen wollen mehr Mitbestimmungsrecht, haben aber das Gefühl nicht genug Zeit, Information und Ressourcen für Engagement zu haben.

(Quellen: Qualitative Umfrage mit 55 Teilnehmenden)

Der Stand der Dinge: Was brauchen wir? (10 Minuten Wissen auffrischen)

- Zeigen was sich alles für nachhaltiges Leben verändern muss, und das auf Kölner Ebene erlebbar machen.
- Gelegenheiten beispielhaft darbieten, wie sie sich stärker engagieren können, von direkter Demokratie bis zu gegenseitiger Hilfe.
- Die Idee einer lokalisierten, zirkulären Industrie und von Teilen über Besitz stärken. Weiterhin Raum für Privatsphäre und individuelle Entfaltung gewährleisten.
- Systeme des sozialen, nachhaltigen Wohlergehens in diesen Gebieten stärken. -> Gemeinschaftsgärten produzieren Lebensmittel UND soziale Netzwerke.
- Klar machen, dass dies nur ein Modell zum Anstoß der Diskussion ist. Den Wandel müssen wir zusammen angehen.

(Quellen: Interviews mit Klima-Kommunikator*innen, qualitative Umfrage mit 55 Teilnehmenden, +Sekundärquellen)

Doughnut-Economy (Ein Modell für nachhaltige Entwicklung)



- Der Bereich für eine nachhaltige Gesellschaft wird als Doughnut bzw. Ring dargestellt.
- Der Spielraum für nachhaltiges Leben ist nach außen vom „ökologischen Limit“, und von unten vom „sozialem Fundament“ begrenzt.
- Werden diese Grenzen überschritten, wird die Umwelt oder die Lebensqualität der Menschen belastet. In diesen Fällen kann nicht mehr von Nachhaltigkeit die Rede sein.
- Einzelne Bereiche wie „Luftverschmutzung“ oder „Soziale Gerechtigkeit“ helfen dabei bestimmte Auswirkungen des gesellschaftlichen Handelns zu veranschaulichen. Anschließend werden daraus Handlungsbereiche deutlich.
- Der sich daraus ergebende Gedanke ist: Wie schaffen wir als Gesellschaft es uns wieder in den grünen Bereich des Doughnuts zu begeben?

Quelle: Kate Raworth, „Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist“ (2017)

Der Kölner Doughnut (Eine Visualisierung des aktuellen Nachhaltigkeitsstatus)



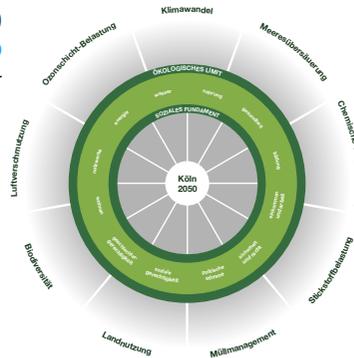
- Anhand verschiedener Daten habe ich mittels des Doughnut Economy Modells die aktuelle Nachhaltigkeit Kölns visualisiert.
- Graue Bereiche stellen dar das entweder kein Problem vorliegt, oder keine eindeutigen Daten über Kölns Status in dem Bereich gefunden werden konnten.
- Rote Bereiche markieren Überschreitungen des Doughnuts. Je größer der rote Bereich, desto stärker wird das Limit überschritten.
- Schraffierte Bereiche zeigen indirekte Probleme auf. Beispiel: Köln hat eine stabile Energie-Versorgung, aber der Großteil davon kommt aus nicht nachhaltigen Quellen.

Quellen: Stadt Köln, Umweltamt, TAZ, Statista, uvm. Genauere Angaben gerne auf Anfrage <3

Das System Köln in 2050

(Ein Wunsch-Modell für nachhaltige Entwicklung)

- Die Darstellung links zeigt, wie die Kölner Gesellschaft im Jahr 2050 leben sollte um Nachhaltigkeit zu gewährleisten.
- Aufgabe: Schreibe in die jeweiligen Teilbereiche, welche Lösungen/Materialien/Netzwerke/Gesetze, Philosophien etc. Es braucht um Nachhaltigkeit für den Bereich zu gewährleisten.
- [Klick hier um zu unserem gemeinsamen Doughnut auf Miro-Board zu gelangen!](#) Ergänze ihn mit deine Ideen. (Du musst nicht allen angegebenen Aussagen zustimmen)



Bausteine nachhaltiges Köln 2050

(10 + 15 Minuten)

- Entwickelt zunächst innerhalb von 10 Minuten die Parameter die nach eurem Verständnis für ein Leben innerhalb der ökologischen Decke und der sozialen Basis sorgen.
- Vergleicht eure Matrix mit der von anderen Gruppenmitgliedern. Formuliert zusammen eine gemeinsame Matrix, die eure einzelnen Erkenntnisse kombiniert und ergänzt.



Orte und Dinge entwickeln

(30 Minuten)



Orte und Dinge entwickeln

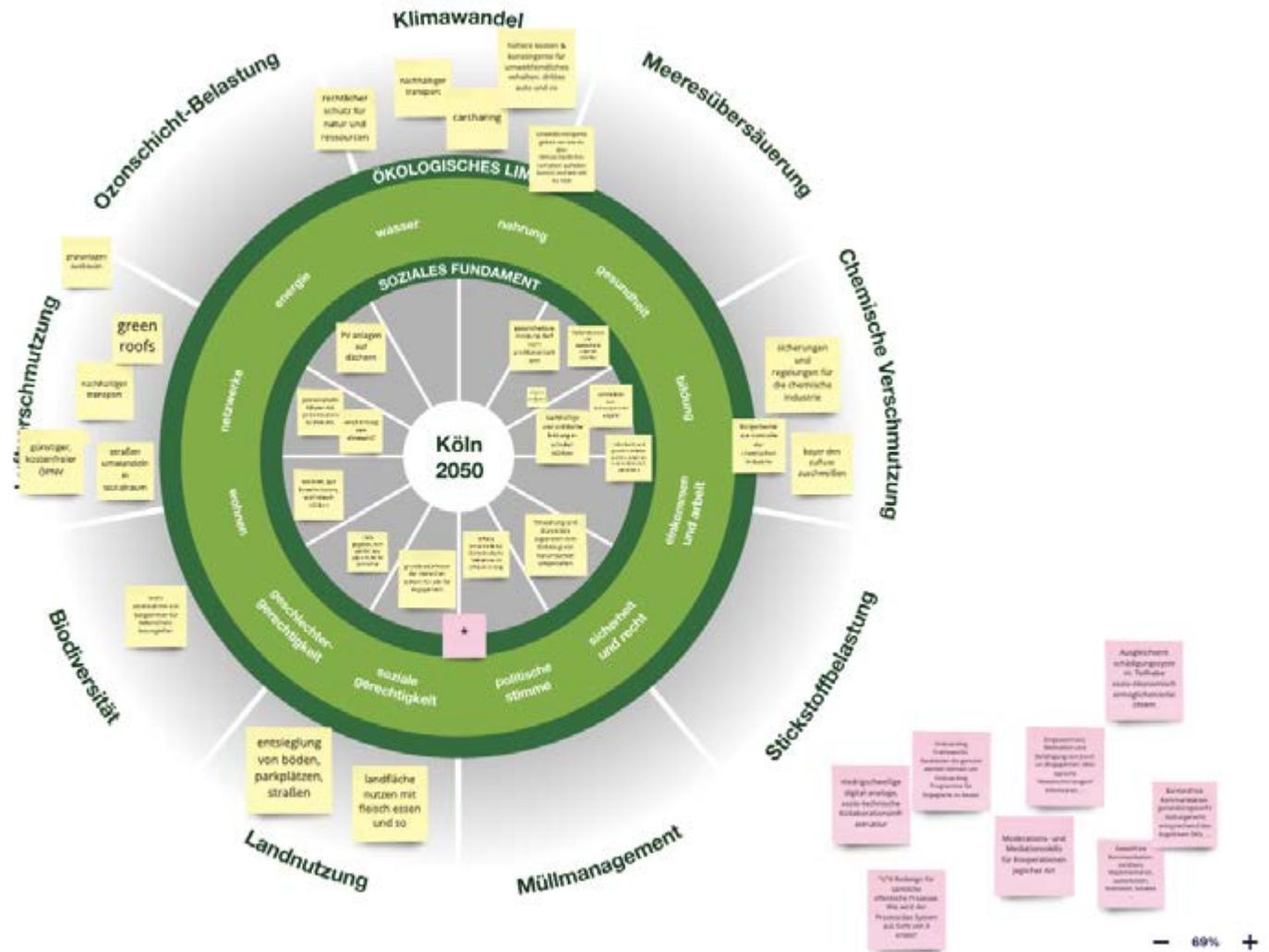
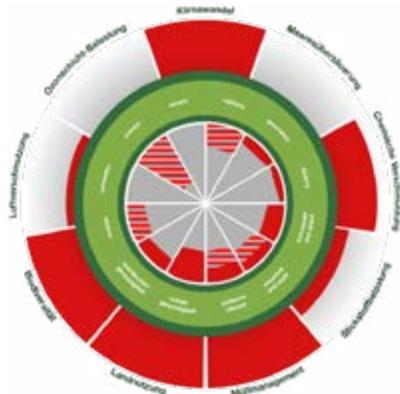
(Lass uns unsere Vision von Köln2050 nahbar machen)

- Mach einen alltäglichen Ort oder Gegenstand nach deinem Verständnis nachhaltig. Zeichne, Schreibe, Modelliere, mach eine Collage aus Google-Bildern, alles was hilft um deine Idee zu vermitteln.
- Mach den Ort/Gegenstand auf allen Ebenen erlebbar! Wie sieht es dort aus, was kannst du hören und wie fühlt es sich an? Welche Leute sind dort noch so? Wieviel Zeit verbringst du hier und wie oft? Bist du allein oder zusammen hier? Welche persönliche/gemeinschaftliche/spirituelle/uvvm Bedeutung hat der Ort? Welche Implikationen hat dieser Ort für die Gesellschaft und wie verändern sich die Bezüge/Lieferketten/Auswirkungen?
- Vorschläge zu möglichen Bereichen und die Arbeiten der anderen findest du auch auf Miro! Bitte teil deine Ergebnisse [in dem du hierauf klickst um zu Miro zu gelangen.](#)

Feedback, Gedanken, Diskussionen...

(15 Minuten)

5.4 Workshop 1 results



During a collective mapping exercise the participants of workshop 1 attached notes containing elements of sustainability to the corresponding areas of the Doughnut Model. Through this, a first draft of an eco-socially sustainable version of Cologne was created.

Ngoc-Anh

Nachhaltige Demokratie & Bürger*innen Beteiligung

The slide features a large hand-drawn mind map with the central theme 'EINE KITA JOURNEY'. The map branches out into various concepts such as 'KITA', 'GEMEINSCHAFT', 'LERNEN', 'SPAZIERGÄNGE', 'FESTIVALE', 'KUNST', 'MUSIK', 'SPORT', 'GARTEN', 'WISSEN', 'KOMMUNIKATION', 'NETZWERKE', 'RÖHMISCHES KÖNIGREICH', 'KUNSTWERKE', 'MUSIKWERKE', 'SPORTWERKE', 'GARTENWERKE', 'WISSENWERKE', 'KOMMUNIKATIONWERKE', 'NETZWERKEWERKE', 'RÖHMISCHES KÖNIGREICHWERKE', 'KUNSTWERKEWERKE', 'MUSIKWERKEWERKE', 'SPORTWERKEWERKE', 'GARTENWERKEWERKE', 'WISSENWERKEWERKE', 'KOMMUNIKATIONWERKEWERKE', 'NETZWERKEWERKEWERKE', 'RÖHMISCHES KÖNIGREICHWERKEWERKE'. There are also two photographs: one showing a person pointing at a board and another showing a group of people sitting on the ground in a park-like setting.

Person 4

Nachhaltiger Lebensmittelanbau (im urbanen Raum?)

Zur Beheizung der Schule werden Palletts eingesetzt, die zu Kohlestückchen werden. In der Schulküche fallen org. Abfälle an,



die zusammen mit Urin/Mist und effektiven Mikroorganismen Terra Preta für den Schulgarten ergeben könnten

Annika

Person 11

Nachhaltige Pflegeeinrichtungen/ Krankenhäuser

The slide shows a photograph of a care facility interior. A central feature is a water-saving device with a blue water drop icon and a red exclamation mark. Text above the device reads: 'Fördern statt beschimpfen! Effektive Mikroorganismen für die Stärkung unseres Mikrobioms'. The name 'Annika' is visible in the bottom right corner of the photo.

Person 8

Nachhaltiger Konsum

Durch die Pflege von zu Flusenbildung/Pilling neigenden Textilien, können evtl. Neuanschaffungen reduziert werden.



Einzelhändler könnten einen Leihservice einrichten!

Annika

Harald

Nachhaltige öffentliche Grünflächen

1. Recht auf Mitgestaltung öffentlichen Grünflächen im Sinn von Allmende
2. Beteiligungsmöglichkeit für Bürger
3. Weg von der Wir-gehen-im-Park-spazieren-Mentalität
4. Obstbäume in der Stadt
5. Unterstützung von Urban Garden Initiativen durch die Stadtverwaltung
6. Weg mit unsinnigen Rodungsaufgaben, die konträr zu städtisch geförderten Begrünungsinitiativen stehen

- 80% +

Jana

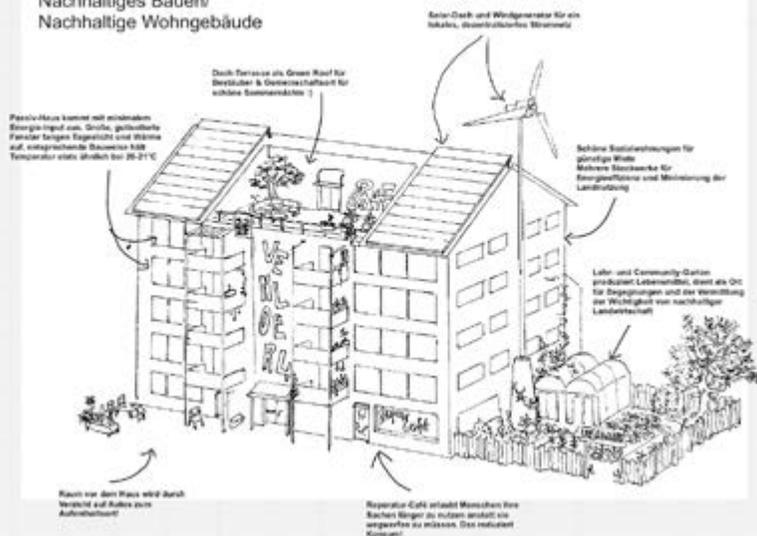
Nachhaltige Transportsysteme & Infrastruktur



- 70% +

Lucie:

Nachhaltiges Bauen/ Nachhaltige Wohngebäude

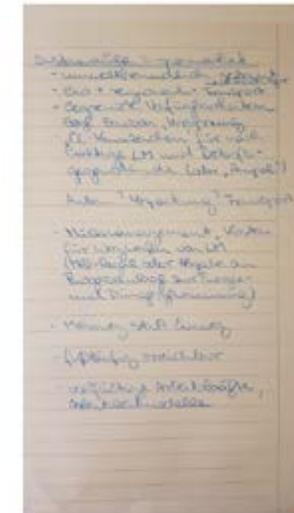


- 70% +

Anna

Nachhaltiger Lebensmittelhandel

1. Umweltfreundlich gebaut
2. Angebot: Bio + Regional + Nachhaltiger Transport
3. Angebot: Begrenzte Verfügbarkeit bzgl. Saison & Ursprung
4. "CE Kennzeichen" für nachhaltige Lebensmittel und Bedarfsgegenstände (oder auch eine "Ampel")
-> Faktoren wie: Anbau? Verpackung? Transport?
5. Müllmanagement & Kosten für Wegwerfen von Lebensmitteln (MHD-Regal oder Abgabe an Biogasanlage zur Energie & Düngergewinnung)
6. Mehrweg statt Einweg
7. Fußläufig erreichbar
8. Diverse Arbeitskräfte + Arbeitszeitmodelle.



- 80% +

5.5 Reflection on workshop 1

Participant feedback on workshop 1:

Participant 1:

- Cooles Thema, was auch gut „verstetigt“ werden kann
- Gerne nachhaltigere Digitale Tools benutzen:
- Vision 2050 Köln ist so ein breites Thema, dass es mir schwer fällt substanzielles beizutragen, was sich nicht so abstrakt und generisch anfühlt.
- Donut Ökonomie als Ausgangspunkt für die erste Aufgabe kommt evtl. zu kurz? Andere Ressorts kämen zu kurz, Klimaschutz muss ja ganzheitlich/intersektional gedacht werden, ..."

Participant 2:

"Hallo Lucie, ich wollte mich auf diesem Wege nochmal bei dir für den für mich sehr interessanten und bereichernden Workshop bedanken. Ich bin ohne Erwartungen in den Zoom-Call gegangen und hätte nicht gedacht, dass ich für mich so viel mitnehmen könnte. Ich wollte in der Videokonferenz selbst keine Diskussion fortsetzen, dir aber nochmal die Rückmeldung geben, dass ich deinen Ansatz für unglaublich sinnvoll halte - sich eine Utopie oder einen Gegenentwurf zu überlegen zu dem, wie die die Gesellschaft momentan funktioniert. Psychologisch betrachtet funktioniert es besser, Menschen zu überzeugen, indem man ihnen ein positives Bild von einer möglichen Zukunft aufzeichnet, anstatt über Weltuntergangsszenarien zu sprechen. Aber da erzähle ich dir bestimmt nichts Neues. :)"

Personal notes and review on workshop 1.

Due to only three of the original seven participants attending the session, the results of the workshop differed significantly from the intended outcome. Nonetheless, I learned some other valuable lessons through this situation, mostly about how to plan and conduct workshops and the difficulties that might arise through such.

1. Spend extra care aligning the workshop tasks with peoples competencies. Do not expect them to execute tasks that are foreign to them on the spot. Doing so might result in significant delays due to requirements for further explanation and guidance, or even halt the workshop entirely.

2. Develop fallback strategies ahead of time, likewise plan in extra time, especially if other people are involved. Try to anticipate what and how things could go wrong and have a backup plan that might still allow you to capture the required results. Likewise, do not shy away from stopping something dysfunctional in its tracks and try out a different method instead. In this instance I used e-Mail correspondence to get people who did not attend to complete the tasks of the workshop afterwards.

3. Be flexible when conducting workshops and do not shy away from moderating harshly to keep up the flow of the workshop. At some points, individuals might experience a cognitive dissonance towards certain tasks and block the group from performing the exercise. Find ways to deal with their thoughts and emotions that do not allow them to take up everyone else's opportunity to speak. Workshops are usually a one-time-only opportunity and everything you do not hear the first time you will not hear ever again.

5.6 Ideation and workshop 2 materials

During the ideation stage I developed a concept for a pop-up phone booth that would appear in multiple neighborhoods in Cologne and allow locals to engage in conversation with people from an eco-socially sustainable version of their neighborhood. Through methods of dialogue-based, interactive storytelling, participants can learn about the future citizens lives within a sustainable system, and what changes to their lived experiences emerge from the change in system.

When interacting, participants get to chose from multiple personas, allowing everyone to learn from someone that relates best to their own experience and moral values.

The phone booth is designed in an appealing manner that draws members of the general public in due to its novelty. For this I draw on the aesthetics of the solar-punk art movement, which places a focus on the display of a eco-sustainable futures through DIY-style solutions based on natural principles and renewable energies.

The concept of the phonebooth is intended to be presented during the workshop and up for the participants criticism. For the workshop, participants are supposed to roleplay as the personas represented in the phone booth interaction. Through this, I hope to identify compelling storylines and conversational topics that can be used for further development of the prototype.

Since this is the first testing stage of the idea, the concept might need to be reworked in its entirety if the participants heavily disagree with the phone booth concept or the persona based story-telling.



5.6.1 Personas

For the upcoming workshop I developed seven personas that represent key features of the demographics of Cologne in 2050. They are based on research around the current demographics of Cologne, and general prognostics for the development of the population and social trends for the future defined by Zukunftsinstitut (Appendix). I intend to have a few hero personas and then additional personas to make sure relevant stories are told in case not enough workshop people show up. These hero personas are represented by Paul, Meltem and Giulia.

PERSONA 1: KAIS

Name: Kais **Age:** 45
Gender: Trans masculine **Race:** North African / Arab
Religion: Muslim **Disability:** Mental health problems
Sexual Orientation: Heterosexual **Financial status:** Middle class
Occupation(s): Event & youth group organizer **District:** Kalk
Relationships: Fled home country. Now has a new family here. Connected to Meltem (past) and Frey (youth group).
Hobbies: Music, clubbing, DJ-ing
Motivations & Frustrations: Motivated by others around him. Social butterfly. Is not as good at accepting help as he is at giving it. Extremely loyal to those around him. Deep appreciation for life, difficult to frustrate.
Political affiliation & ideals: Social democrat, believes in solidarity and working together.

PERSONA 2: MALTE

Name: Malte **Age:** 57
Gender: Cis male **Race:** White, German-Bosnian
Religion: Non-practising Christian **Disability:** recovering alcoholic
Sexual Orientation: Heterosexual **Financial Status:** Upper Class
Occupation(s): Manages sustainable transport systems,
District: Junkersdorf
Relationship(s): Divorced, father of Giulia, lives alone
Hobbies: Sports, football, kung-fu, car racing, walking with dog
Motivations & Frustrations: Success and recognition for his work are important to him. He has firmly rooted principles and does not like them to be challenged.
Political affiliations & ideals: Liberal-conservative attitude (FDP/CDU), believes in self-reliance and self-empowerment.

PERSONA 3: FREY

Name: Frey **Age:** 14
Gender: Non-binary **Race:** White
Occupation(s): School, youth group with Kais **Disability:** None
Sexual Orientation: undefined **District:** Longerich
Financial status: Middle class parents **Religion:** None
Relationships: Lives in a multi-generational house, with parents + older sibling.
Hobbies: Theatre, video games and pop culture.
Motivations & Frustrations: Has a strong urge for self-expression. Fears being ignored. At the same time, needs their own space and gets irritated when others overstep their boundaries.
Political affiliation & deals: Green, not super involved in politics, but has some strong stances on queer issues

PERSONA 4: MELTEM

Name: Meltem
Gender: Cis female
Religion: Non-practising Muslim
Sexual orientation: heterosexual
Occupation(s): Professor of Environmental Energy Sciences **Age:** 66
Relationships: In a long-term relationship, lives with her partner. No children, connected to Kais through previous community work
Hobbies: Reading, philosophical discussions, art, music
Motivations & frustrations: Cares deeply about her partner and the people in her community, but also values her privacy. she is frustrated by narrow-mindedness.
Political affiliation & ideals: Affinity with socialism & die Linke. Thinks very systemically, is a die-hard feminist.

PERSONA 5: GIULIA

Name: Giulia
Gender: Cis woman
Religion: Catholic but not practising
Sexual Orientation: Queer, Poly
Hobbies: Racing bike, running
Occupation(s): Apprenticeship draughtswoman, activism, cares for elderly in the neighbourhood
Relationships: Parents divorced, father is Malte, not too much contact,
Motivations & frustrations: Her emotions are an open book. Feels deep connections with other people who motivate her. Gets frustrated by selfishness.
Political affiliation & ideals: Green. Believes that treating each other and the environment is very important, believes in the rewards of honest work.

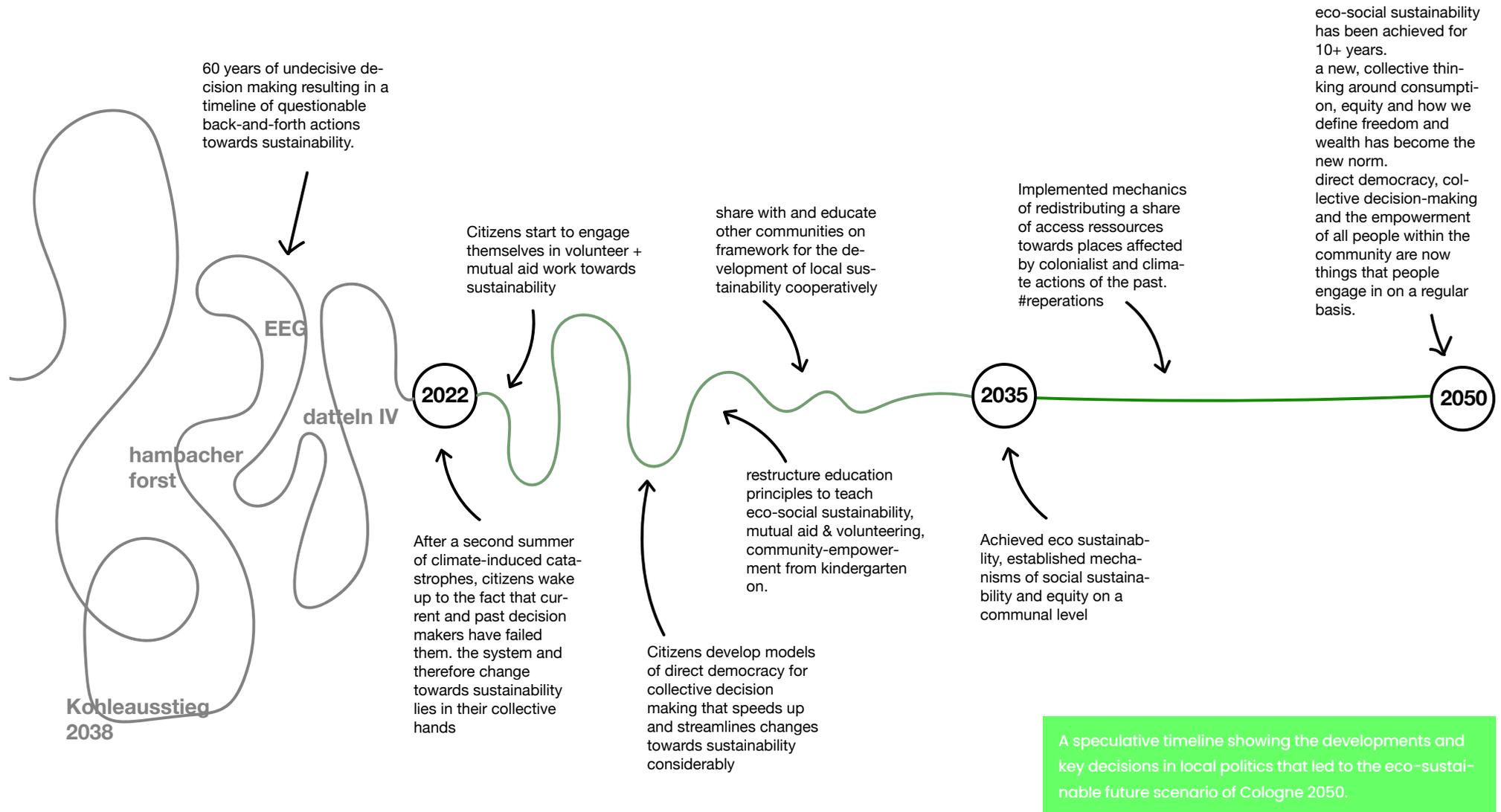
PERSONA 6: PAUL

Name: Paul
Gender: Cis male
Religion: None
Sexual Orientation: Bisexual, Single
Occupation(s): Community care
Relationships: Parents in another state, were farmers, considers his collective his family. Has little contact with Giulia, lives with one of her partners.
Hobbies: Makes art, DIY repair workshops, etc.
Motivations & frustrations: He is a fundamentalist, values practice over theory. He is annoyed when people discuss for too long instead of just helping and sharing.
Political affiliations & ideals: anarchist, direct action, only engages in direct democracy, doesn't believe in representatives

PERSONA 7: Petra

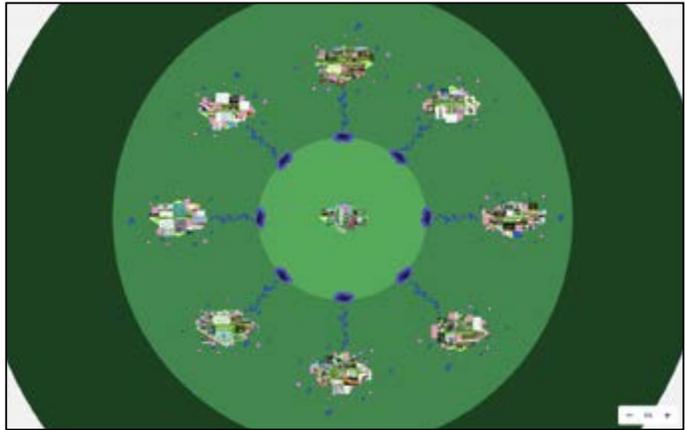
Name: Petra
Gender: Female
Religion: Christian-Evangelical,
Sexual orientation: Hetero, widowed
Occupation(s): Pensioner
Relationships: Widowed for 3 years, has 2 children + 3 grandchildren
Hobbies: Listening to the radio, family visits, carnival club. Worked for a long time in city administration, donates to the needy, looks at old holiday pictures from Italy.
Motivations & Frustrations: Family, faith, community, sense of security. Her place is important to her. Reacts insecurely and defensively when she sees herself, her loved ones, her values threatened.
Political affiliation & ideals: CDU, Christian-conservative, community is important.

5.6.2 Speculative timeline for Cologne 2050



5.6.3 Worldbuilding

screenshots showing each segment of the world building exercise. since not enough people showed up to the workshop, the work presented was conducted by me. visit: https://miro.com/app/board/o9J_lpFXvQo=?invite_link_id=321755115609 to access the entire graphic.





Workshop: ClimateFutures2050

Letztes mal:



Idee des Prototyps:

(Pop-Up Telefonhäuschen nach 2050)

- Die Telefonzelle erscheint in unterschiedlichen Kölner Vierteln und erlaubt es Menschen aus der Nachbarschaft im Jahr 2050 anzurufen.
- Die Unterhaltungen sind über interaktive Dialoge vorher gescrriptet. Die Personas so konzipiert, dass sie über besonders relevante Bereiche für systematische Nachhaltigkeit berichten können.
- Die Unterhaltungen verlaufen je nach Person aus 2050 anders, und bieten unterschiedliche Meinungen aus diversen und intersektionalen Perspektiven.



(Quellen: Qualitative Umfrage mit 55 Teilnehmenden)

Lokale Herzerwärmung (Kennen Lernen)

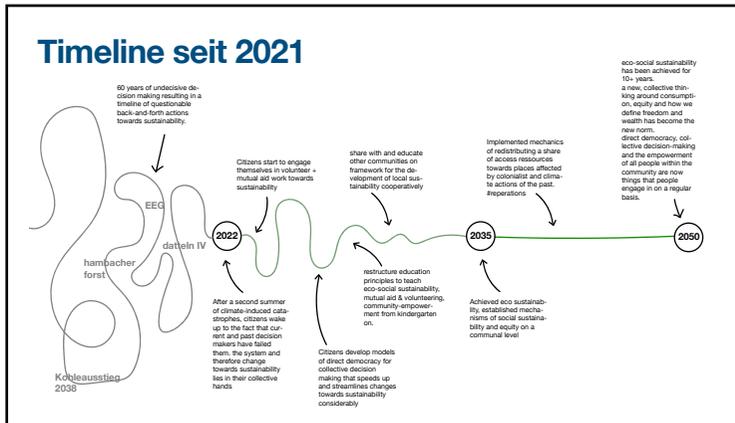
(10 Minuten)

- Ich bin (x), ich tue (y). Mich inspiriert (z).
- Ich bin Lucie und ich versuche mich über Design im Klimaaktivismus zu engagieren und coole Zukunftszszenarien erlebbar zu machen. Mich inspiriert vor allem die Kunstbewegung Solarpunk.
- Und du?

Heute

- Idee des Prototypen
- Köln in 2050
- Aufgabe 1
- Pause
- Aufgabe 2
- Abschließendes Feedback und Diskussion





Macht 2050 bewohnbar!

(Lass uns unsere Vision von Köln 2050 nahbar machen)

- Erkunde die Bereiche des Lebens in Köln 2050 für 15-20 Minuten.
- Stelle dir deinen Tagesablauf innerhalb dieses neuen Systems vor. *Was hat sich im Gegensatz zu heute verändert? Bewegst du dich anders durch die Stadt? Hat sich dein Bezug zum öffentlichen Raum verändert? Wie geht dein zukünftiges Ich mit der Philosophie und dem gesellschaftlichen Selbstverständnis in 2050 um? Wie sieht deine Freizeitgestaltung aus? Existiert dein Beruf noch? Was frustriert dich, was ist ungerecht, was findest du total super? (20 Minuten)*
- Zweier-Gespräch: Interviewt einander abwechselnd zu euren Gedanken und Erfahrungen über euer Leben und euren Alltag in 2050. Dabei nimmt Person 1 die fragende Perspektive der Gegenwart, und Person 2 die erzählende Perspektive der Zukunft von 2050 ein.



Rollenspiel: Die Menschen von 2050

(Lass uns unsere Vision von Köln 2050 nahbar machen)

- Macht euch mit den euch zugewiesenen Personas vertraut.
- Wiederholt das Eintauchen in das Jahr 2050, diesmal durch die Augen des euch zugewiesenen Personas. Wo sind die Unterschiede zu deiner vorherigen Eintauchen? Welche Gemeinsamkeiten gibt es? Wie wird diese Person von System beeinflusst, welche Stärken und Schwachstellen gibt es für sie?
- Findet einen neuen Partner für das Zweier-Gespräch und wiederholt den Austausch zwischen den Jahren 2021 und 2050 aus der Perspektive des Zukunftspersonas.

Feedback, Gedanken, Diskussionen...

(15 Minuten)

6. conceptualizing and prototyping

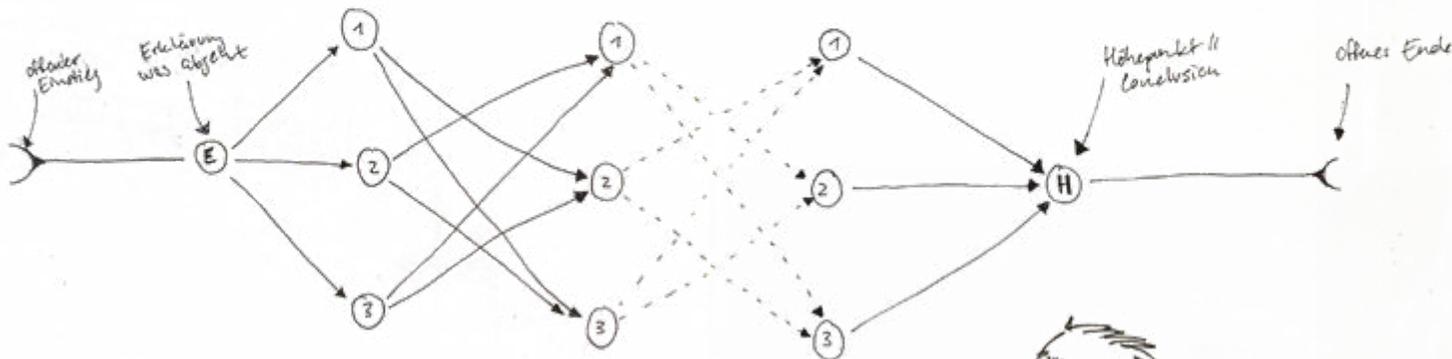


time frame: 16.10.2021 – 07.12.2021

6.1 Draft non-linear dialog and persona sketches

Gesprächsverlauf:

① ② ③ = Erzählelemente (Touchpoints)
 ... = Optionen in Abhängigkeit des
 bisherigen Gesprächsverlaufs.



a sketch portraying the first iteration of the narrative structure for the dialogue-based storytelling.

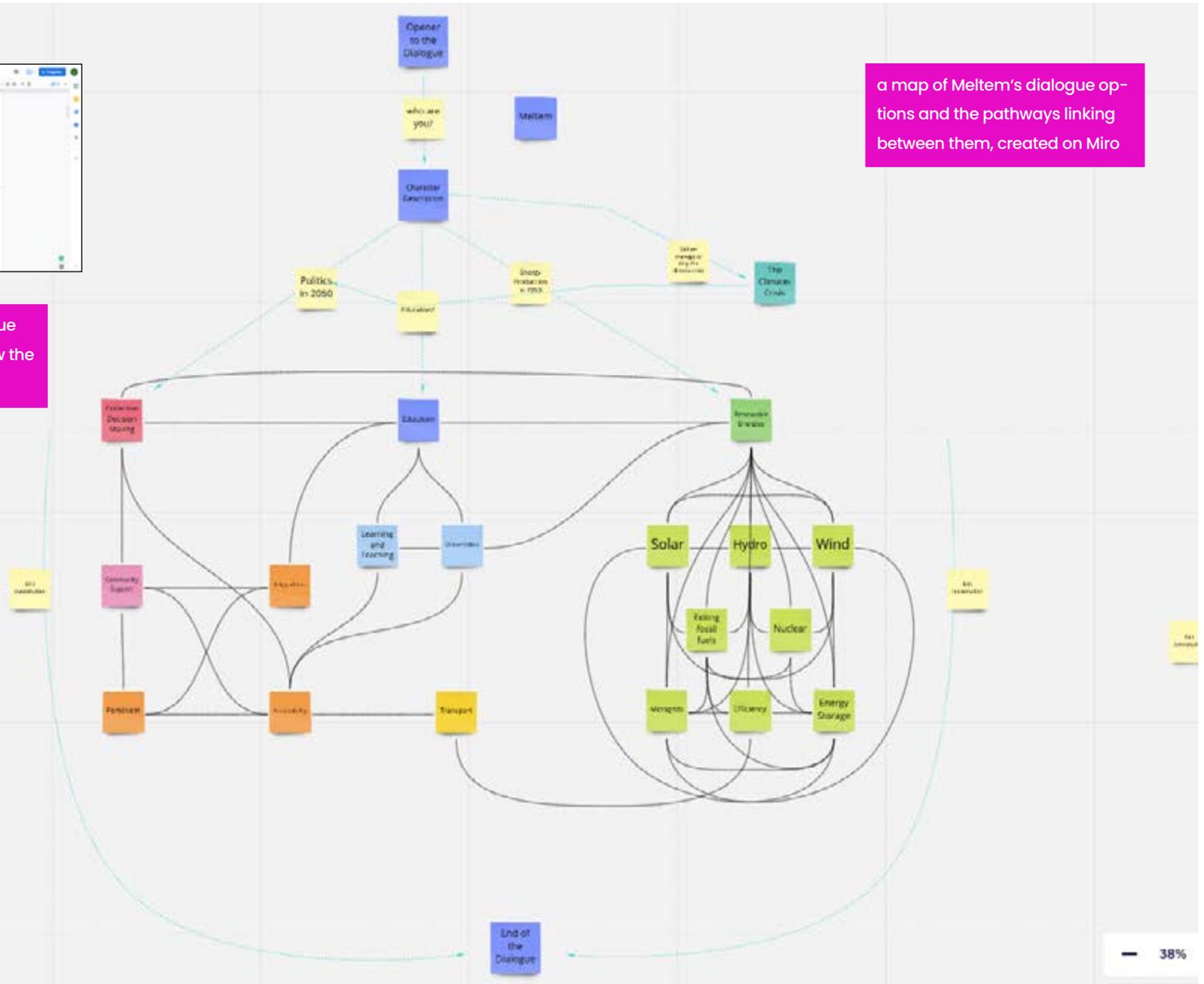


sketches of the personas Paul (left) and meltem (top)

6.4 Dialog persona Meltem



screenshot of Meltem's dialogue options. go to Appendix to view the complete written version.



a map of Meltem's dialogue options and the pathways linking between them, created on Miro

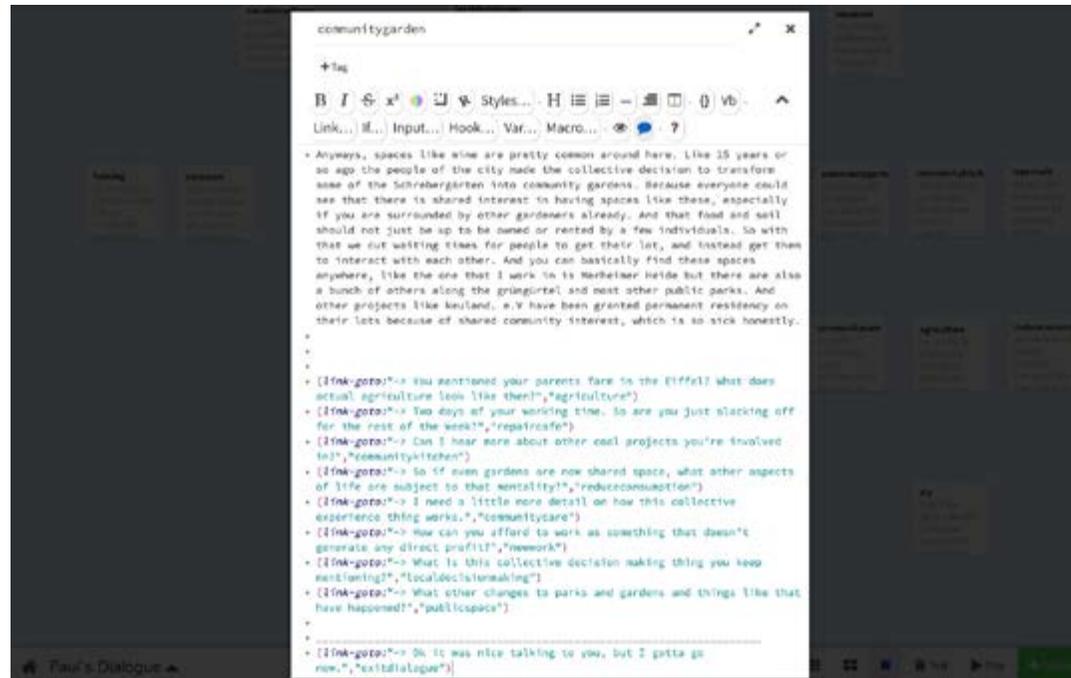
6.5 HTML-prototype

To test the previously displayed dialogue-trees I created a low fidelity version of the final prototype using the free online software Twine (twinery.org). Through this I was able to generate HTML5 and JavaScript based prototype that uses hyperlinks to connect all related dialogue options with one another.

After the finalization, I tested the prototype by playing through it myself and sharing the HTML-file with friends so that I could generate feedback on the functionality by having them test the interactions. Once satisfied with the results, I deemed the testing to be completed and moved on to the production of the video-based, high fidelity prototype.



screenshot of the text editor in Twine featuring html-links to other options

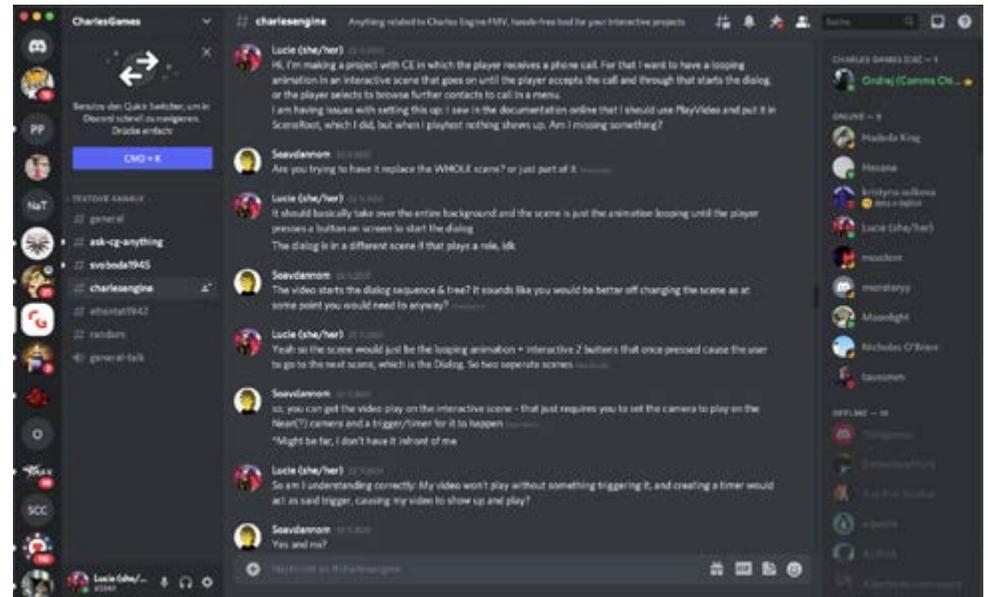


screenshot of a playthrough of the html-prototype created in Twine (top)

6.6 Video-prototype

For the recording of the videos I contacted [redacted] to respectively portray the personas of Paul and Giulia. As per the equipment I borrowed a Canon EOS 6D MK2 DSLR with the included lense and a RODE microphone for the audio recording from LCC.

Due to time spend on commuting and limited availability of consistent sunlight, I had to shoot both actors on two separate days. Disregarding the time spent commuting, each video-shoot took between three to four hours in duration, including the set up, recording of multiple takes per dialogue option and the following disassembly. Following the recording I went on to edit and colourgrade the videofiles and audio in Adobe Premiere.



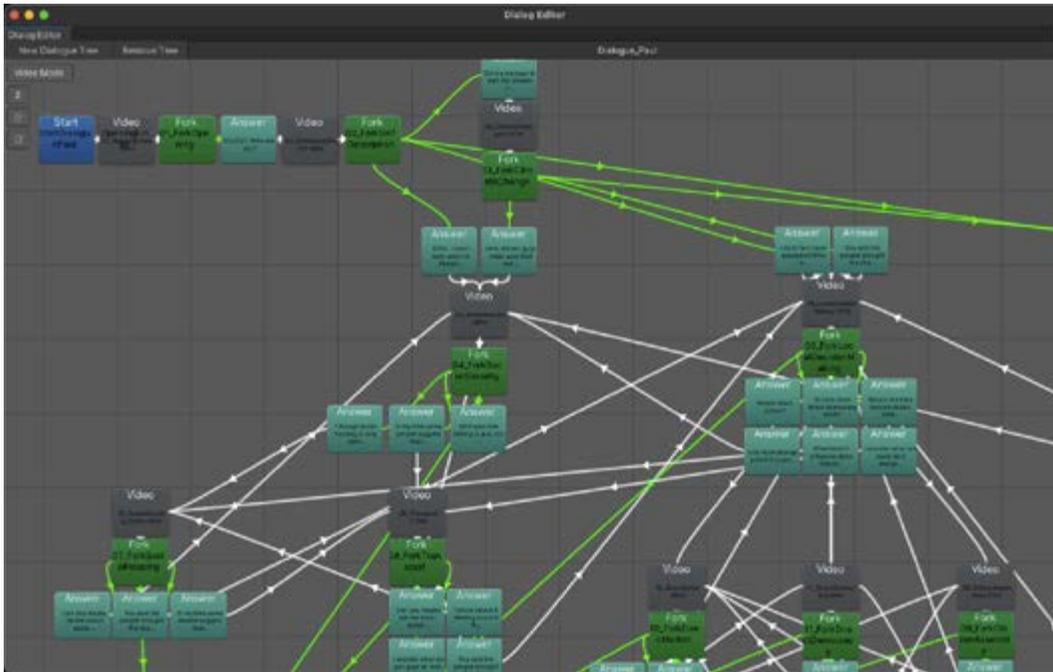
Screenshot of [redacted] portraying Paul in the video-interaction (bottom)



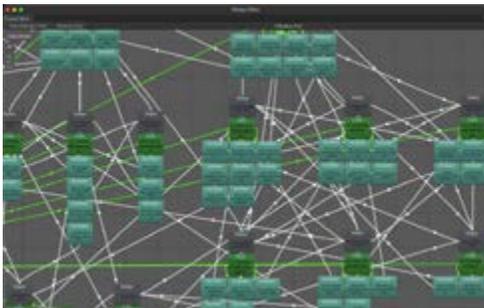
Screenshot of the CE Discord (top).

Afterwards, I enquired with the technical staff at LCC's Creative Tech Lab (CTL) about which software would be best suited to create the links between each videofile. With the staff suggesting creating the interaction as a FMV game using the game engine Unity and the plugin Charles Engine, I went on to produce the prototype in said manner.

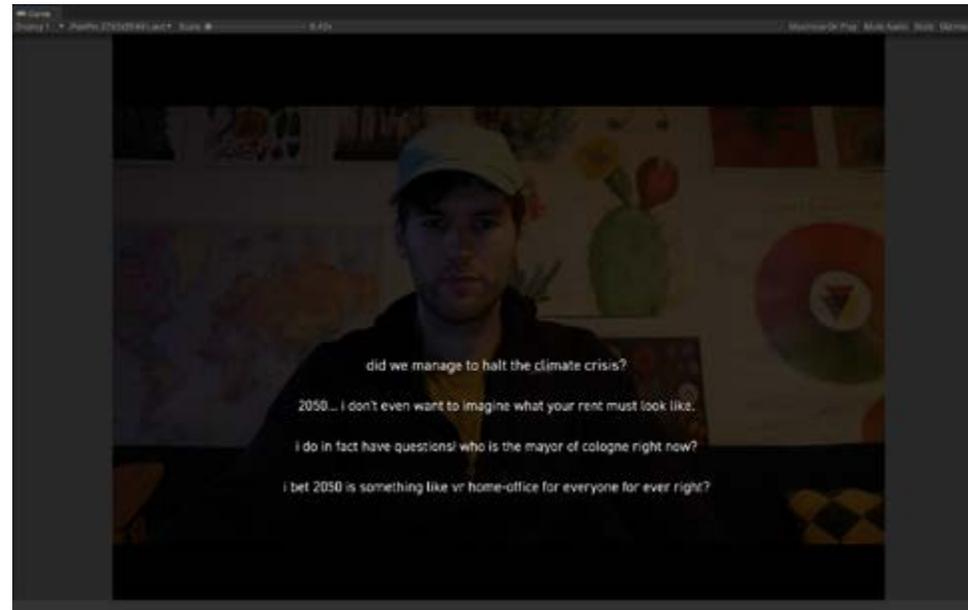
Charles Engine is a software add-on at the price of 40€ that allows to create links between each video using node-trees, which means that there is no active coding required to create the interaction. Since I still ran into issues that neither the software's manual nor the CTL staff could solve, I joined the development-teams discord server to feed back with the developers themselves. With their help, I was able to produce the video-interaction from scratch and fix all occurring bugs and errors within nine days time.



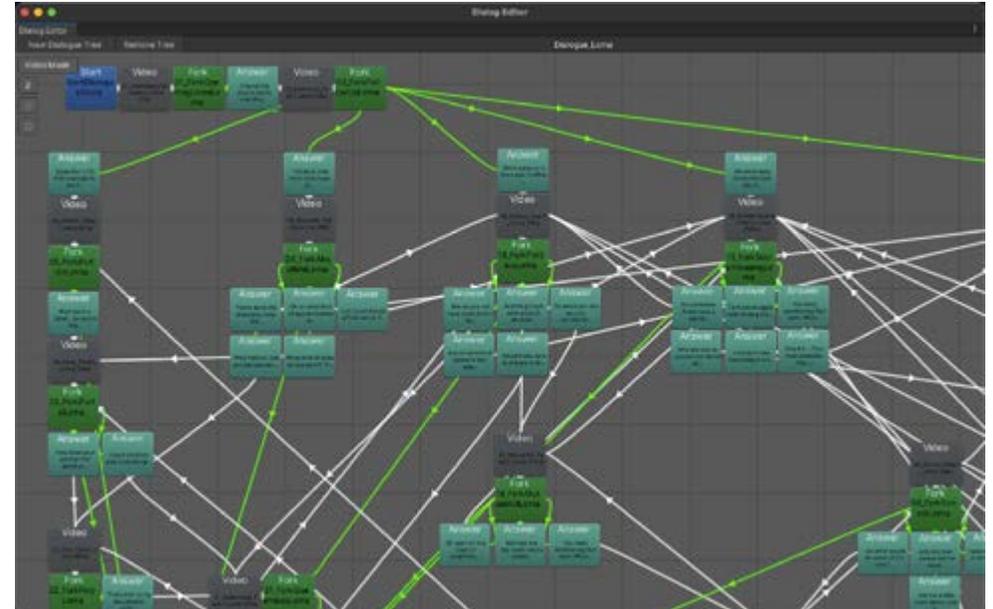
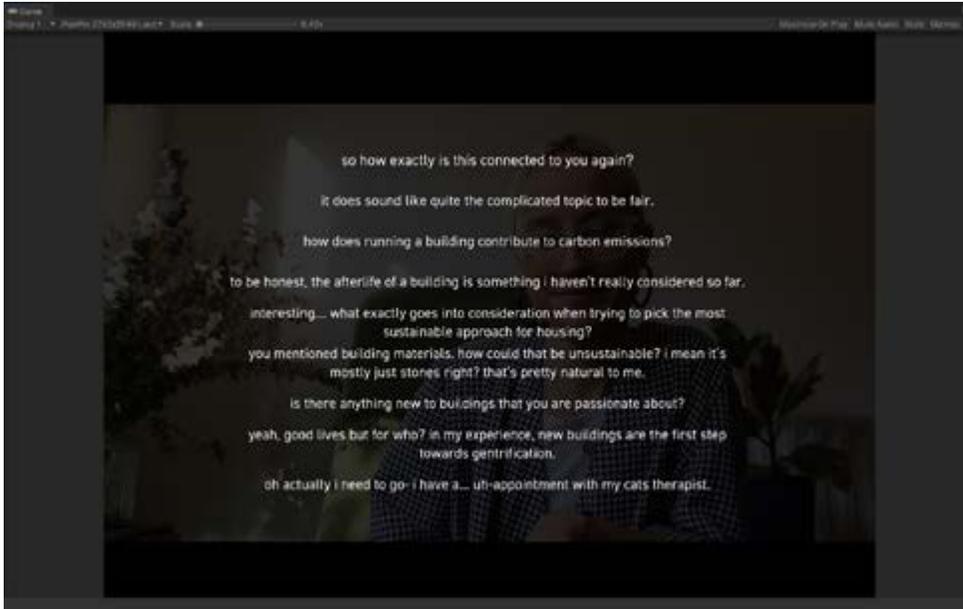
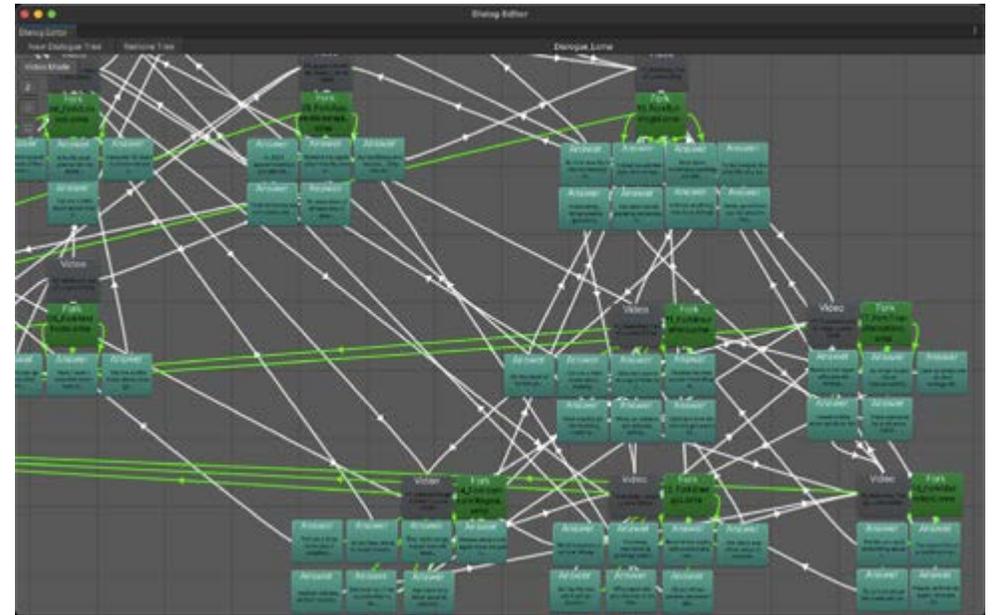
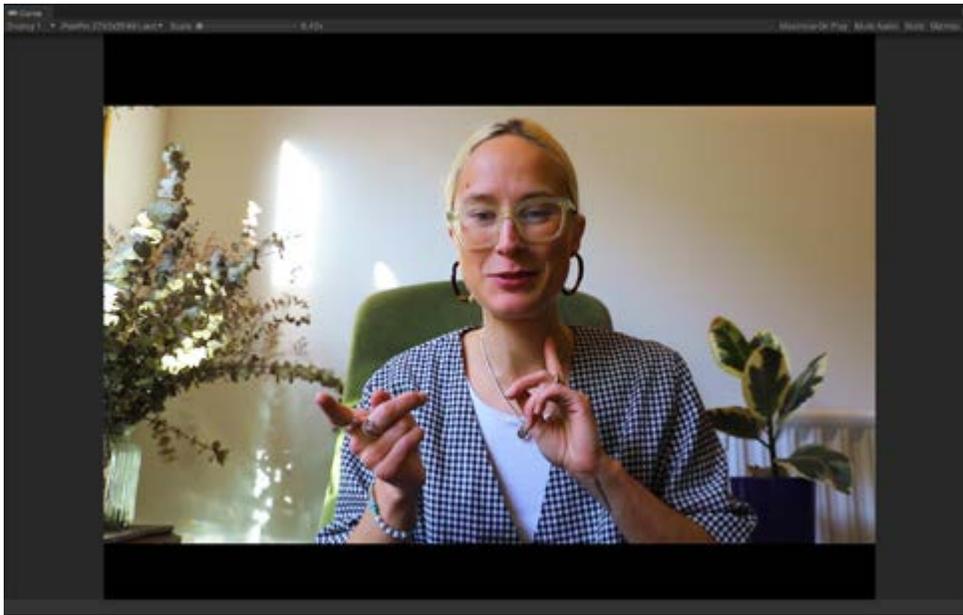
screenshot (left, top) of the node-based dialog-tree. each gray square represents a videofile, each turquoise square represents a corresponding answer. the white arrows show which answer links to which videofile.



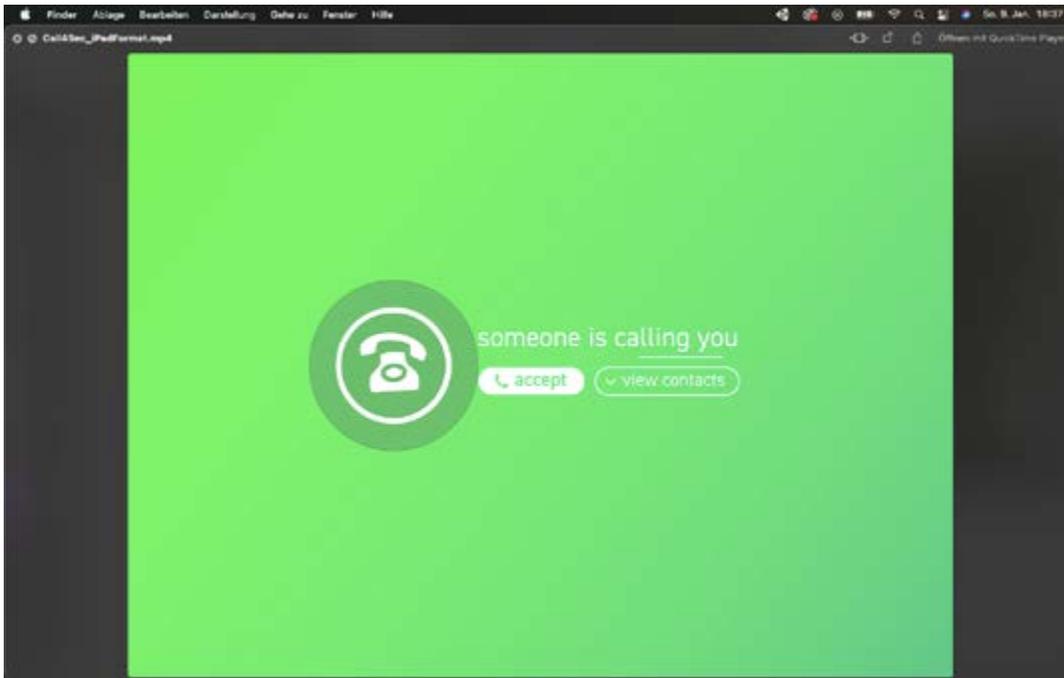
screenshot (top) demonstrating the complex network of videos and answers. just 22 dialogue options produce over 130 unique interactions.



screenshot (left, bottom) shows how the participant gets to interact with the persona. none of the wiring is transparent to them, all they get to see are the clickable dialog-options displayed in white text.



screenshots showing the previously described process applied to the persona Giulia.



animation of a calling and hang-up animation made in Adobe AfterEffects (top left) and a menu for character selection (bottom left; top right; bottom right) complete the interaction by tying everything together stylistically and giving the participant the option to navigate through all scenes seamlessly.

Kais

... came to Köln as a refugee in 2015. He lives here ever since and works as a community organizer. As a highly empathetic person, Kais takes on the role of a social mediator and leader in several youth groups and safe spaces for people of intersectional experiences and marginalizations.

upcoming

Petra

... is 89 and born and bred in Köln. As someone who used to work in the city administration she has seen plenty of changes to Köln and some unique thoughts on this latest iteration of it. Petra values her family and christian faith above all else and likes to engage herself in the carnival-club of her home-Veedel Köln Esch.

upcoming

Malte

... is in his late 50s, a father and right now lives alone in Köln Junkersdorf. He is one of the city's managers for sustainable transportation systems. Malte is an ambitious person who believes in liberal-conservative values and expresses himself through his passion for martial arts.

upcoming

Frey

... is 14 years old and goes to school. They live with their family in Köln Langerich and have a passion for drama, pop-culture and anything regarding queerness. Born into this new sustainable society, all of these changes are natural to them, they never knew anything.

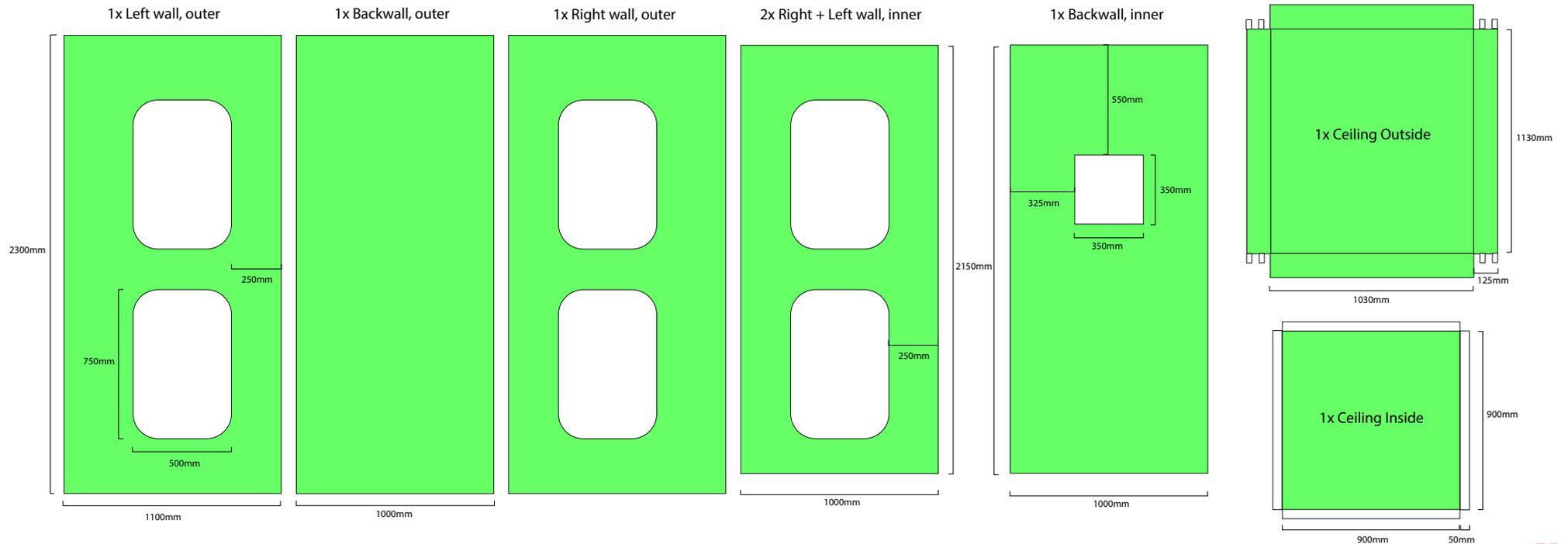
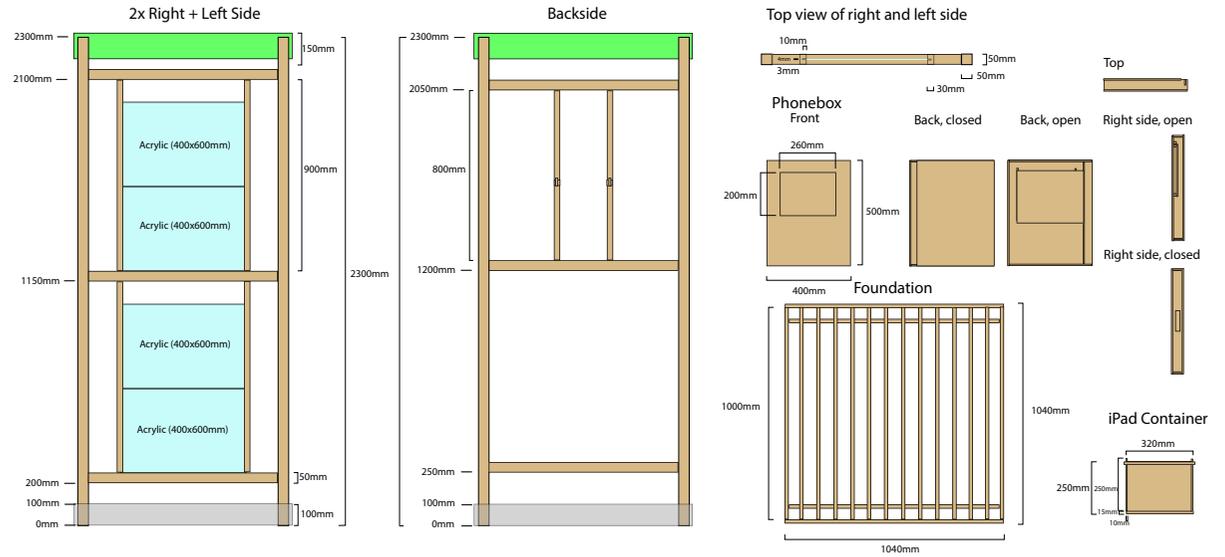
upcoming

screenshots showing the menu screens for each persona. participants can navigate through the menu by pressing the buttons with the numbers. since only the personas of Giulia and Paul got produced for interaction, the other personas are portrayed as 'locked', mimiking a video-game aesthetic teasing a DLC character.

6.7 The physical housing

The physical housing for the phone booth interaction was built in LCC's 3D workshop under the guidance of the present technicians.

I originally designed a modular build for the phone booth that intended to make use of cardboard walls attached to a wooden frame, but the technicians scraped the idea for a simplified version of my original set up. Almost all materials used in the production process were taken from the 3D workshops leftovers, keeping the production cost considerably at 13,50€. For sustainability reasons, the phone booth was designed so that all elements used could be reused in the 3D workshop.

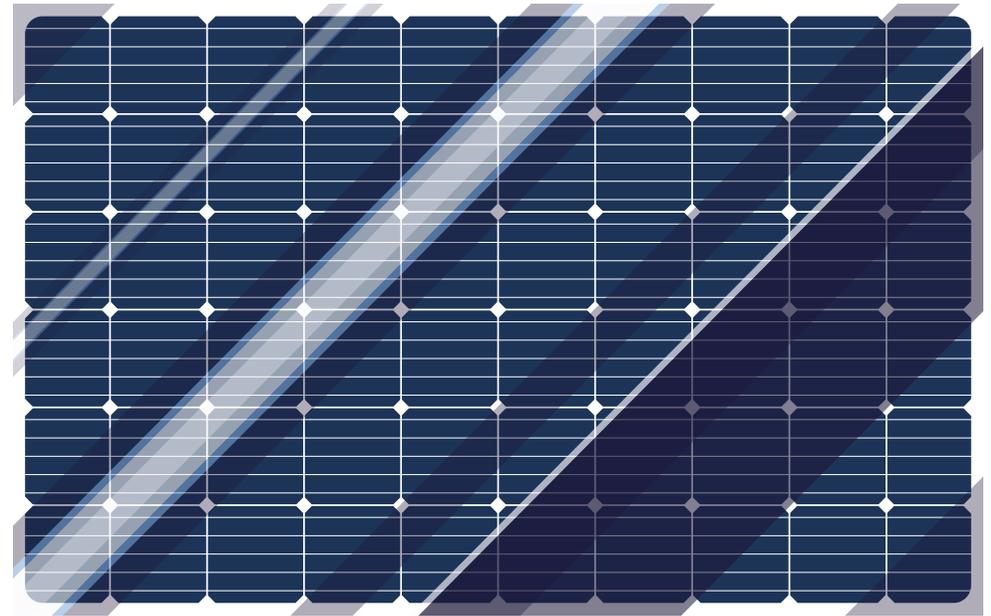


the new design by technician Greg uses leftover plywood instead of cardboard for the walls of the phone booth



photographs showing the transition of the building process from merely a wooden frame to the finished version displayed at the exhibition



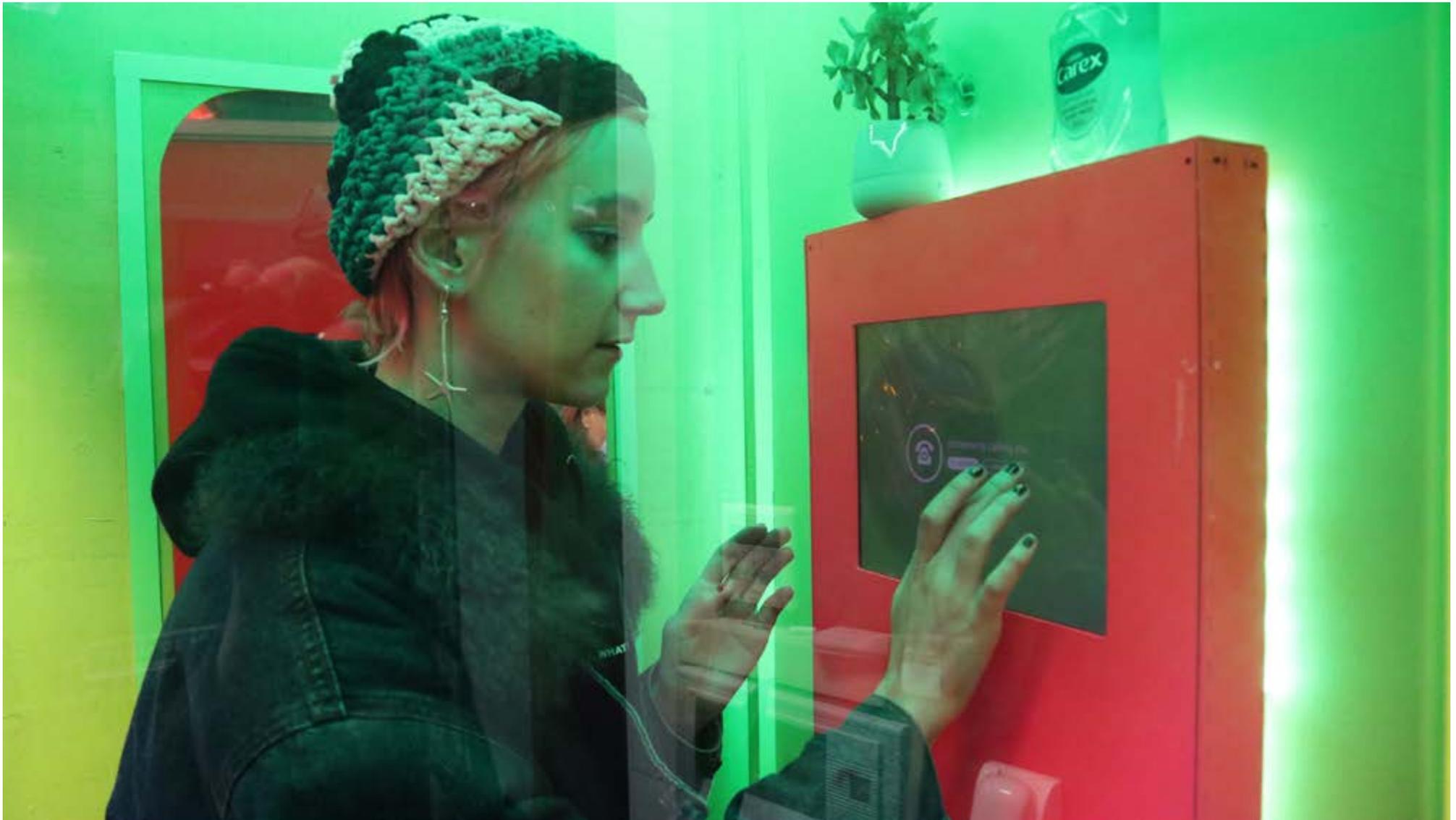


**a call from
the future:
KÖLN
2050**

decorative elements designed in Adobe Illustrator (PV panel, top; set-up sign, left) were later printed out and attached to the phonebooth as compelling finishing touches.

a poster (far left) designed for the MA DSISF research wall at LCC invites people to visit the exhibition space.

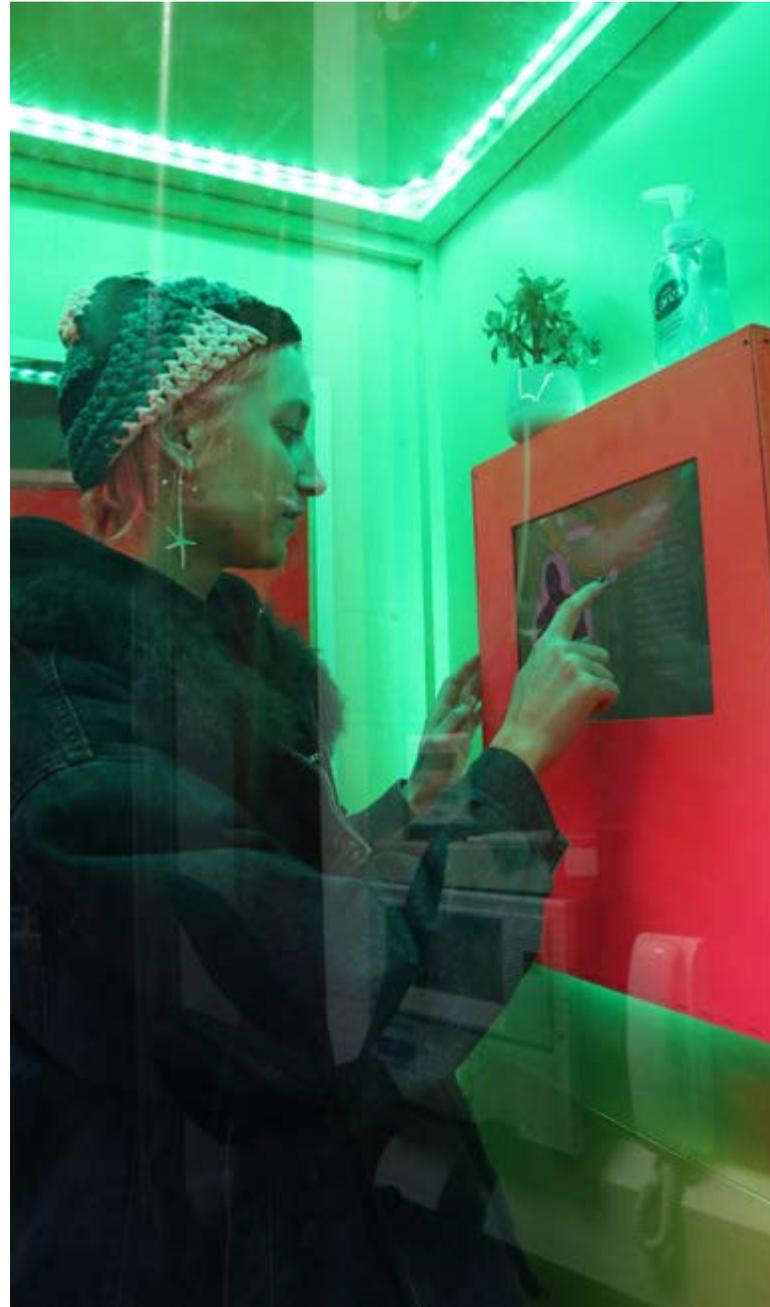
7. exhibition photos



a participant (course leader Anna Schlimm) answering the call from the future.

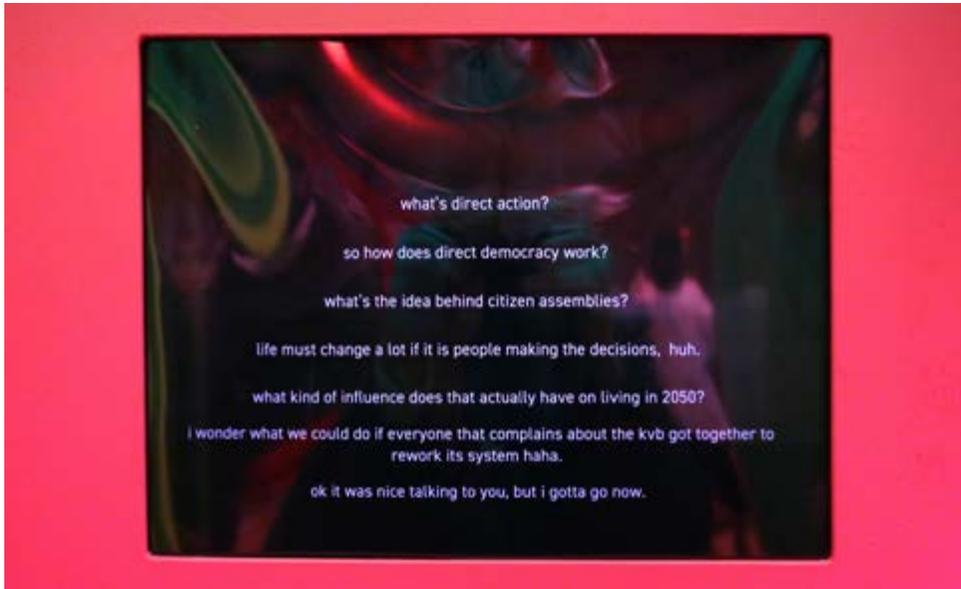
time frame: 09.12.2021 – 12.12.2021

view from the outside
through one of the
windows



a participant
inside of the
phonebooth is
selecting one
of the personas
from the
menu-screen

the phone booth set-up in its entirety



dialog options available for selection (top left), Lorna conversing with Giulia (bottom left)



a participant is engaging in conversation with the persona Giulia.

8. evaluation

Qualitative assessment of the phonebooth:

How would you rate the likelihood of you engaging with this installation if you saw it on the street? *

very low 1 2 3 4 5 very high

What did you learn about systemic sustainability? Is anything about it new to you? *

Your answer _____

How many questions did you ask the persona(s)? *

Your answer _____

How many personas did you interact with?

1

2

2 and I read the descriptions of upcoming personas

Were you able to relate with the persona? If yes, what about it? If no, what was missing? *

**Mini questionnaire pre phonebooth-
interaction**

awesome.max1@googlemail.com (not shared) [Switch accounts](#)

*Required

How do you rate our chances against the climate crisis? *

very bad 1 2 3 4 5 very good

How would you describe your feelings about the assumed future? *

Your answer _____

How would you describe your knowledge about systemic sustainability? *

nonexistent 1 2 3 4 5 6 7 i know everything

In your opinion, how do you think we can tackle the climate crisis on a systemic level? *

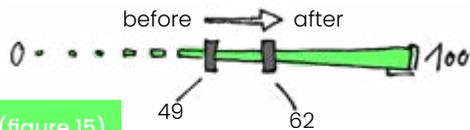
time frame: 09.12.2021 – 28.12.2021

8.1 Change in attitudes

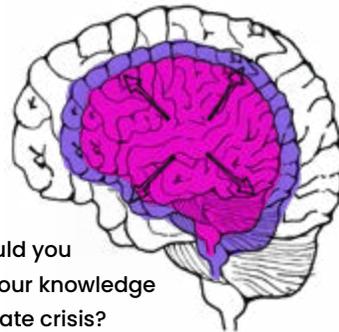
The potential change in attitudes was tracked via five different questions, asking about participants' attitudes and feelings towards the future, knowledge about pathways to such and motivation for involvement with eco-socially sustainable action.

The overall results of this section show that a positive change happened in the perception of the perceived future. In addition, feelings towards the climate crisis such as eco-anxiety and knowledge around systemic sustainability also improved in varying degrees. Assuming that no single piece of media will be able to change a person's attitudes and opinions in their entirety, this indicates a significant improvement in mentality. All this proves the initial assumption, that when faced with a more positive version of the future, people can adapt their beliefs and visions, which is most felt on an emotional level.

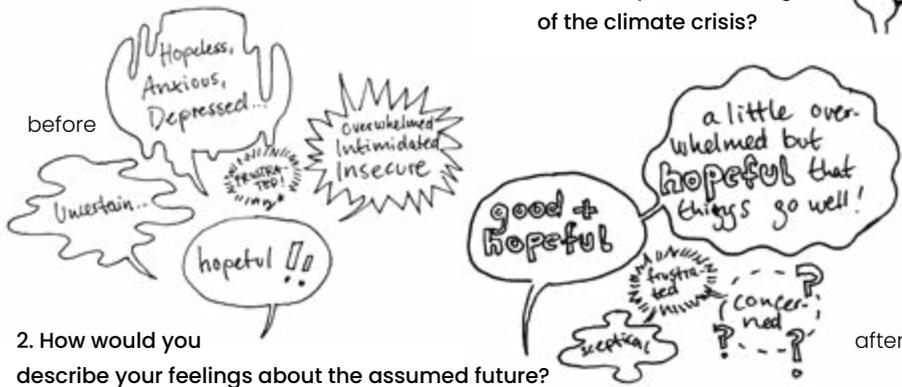
1. How do you rate our chances against the climate crisis?



(figure 15)



3. How would you describe your knowledge of the climate crisis?



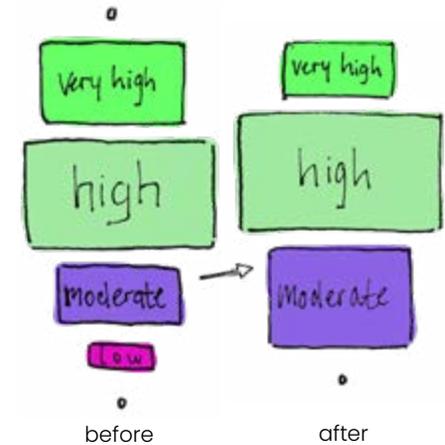
2. How would you describe your feelings about the assumed future?



4. In your opinion, how can we tackle the climate crisis on a systemic level?

(figure 16)

5. How would you rate your motivation to be involved with eco-socially sustainable action?



When compared with the answers in the later sections regarding what they liked about the experience certain aspects that ensure this positive change can be identified. Key aspects for the success in that regard are the portrayal of a cohesive system in play, the interactive learning style of the dialogue as well as the relatability and positive but non-recruiting attitudes and answers of the personas.

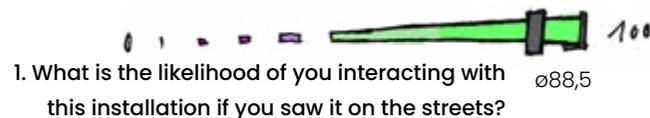
In the same vein, it is interesting to note that the willingness for personal involvement in eco-social sustainable action does not show clear signs of improvement, with both the lower and the very high end of the spectrum moving more towards a moderate to high willingness for involvement. The reason for this is not entirely apparent. Still, a potential explanation could be a lack of calls to action placed in the interaction, or that it is generally harder to get people to be involved rather than just tweak their opinions.

8.2 Evaluating usability and use cases

According to the answers given in the questionnaire, the installation serves its purpose of drawing in people to interact with it almost to perfection. Once interacting with the prototype, the average user talked to 1.3 Personas and asked 8.74 questions. On a technical side, there seemed to be no noticeable problems for most users, with only a minority stating that there were some loops of talking-points they found themselves in and one user stating that the sound of the surroundings overshadowed the installation so that they could not focus, suggesting subtitles as a solution.

Participants mostly felt connected through the relaxed conversation style with someone they found relatable when talking to the personas. A few people expressed the wish for more diversity of identities, which is understandable since both personas developed for interaction are young, white, cis and left-leaning in their ideology. However, this is to be changed in the future, as shown in the conceptualization stage with multiple personas coming up.

While some felt like the information offered by the installation was not new to them, they still felt like the systemic approach bettered their understanding of what a potential eco-socially sustainable future looks like. When asked about the differences between learning through an installation like this versus through traditional media, all recipients said they see this approach as unique and prefer it as a learning method. As reasons for this, participants state a high level of personal connection, positive feelings towards learning through conversation and the engaging approach to learning, that allows them to pick and choose what they will find out about.



3. How many questions did you ask the persona?

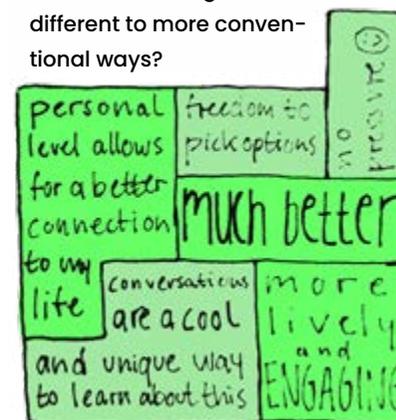
$\varnothing 8,74$

(figure 17)

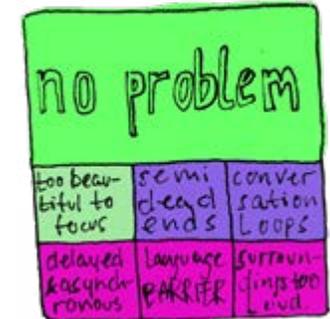
2. What did you learn about systemic sustainability? Is anything about it new to you?



6. How is learning like this different to more conventional ways?

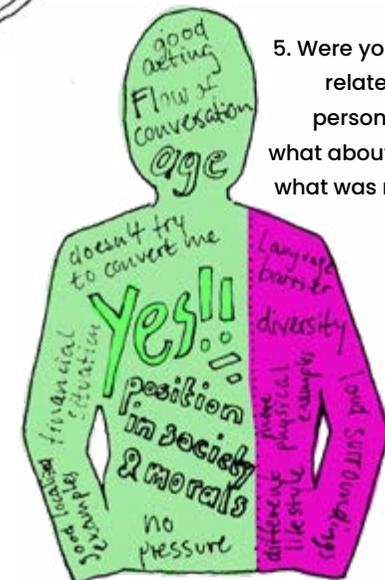


7. Did you run into any issues when interacting with the prototype?



4. How many personas did you interact with?

5. Were you able to relate with the persona? If yes, what about it? If no, what was missing?



8.3 Additional observations

Although not stated by people in the questionnaires, a few noticeable things regarding the technicality and usage of the interaction became transparent while observing the participants at the exhibition space.

The first one is that most people do not immediately understand that they are supposed to touch the text option to progress in the dialogue. This should be fixed by highlighting the affordance through the addition of a visual cue.

Also notable is that participants sometimes navigate themselves into conversational loops. A visual indication to differentiate already accessed information from new options could be useful to fix this. Also, additional pathways to answers that might lead people out of assumed dead ends could improve conversation flow. Finally, a significant share of people could not access some core dialogue options because they are not easily accessible once a specific pathway is chosen.

When choosing a dialogue option, the wording of the questions appears to be a pivotal factor to whether or not people choose it and learn more about the option. Surprisingly, it does not seem to matter too much if the question accurately represents the then accessed information, it is more about whether or not the question itself seems fun to learn about. This correlates with the previous insight from the Happen Films interview, where they said that the right or wrong title can make or ruin all engagement. However, it also means that further attention on the wording is required to ensure that recipients feel invited to learn about all available information and accurately educate themselves on systemic sustainability.

The majority of participants did not notice the opportunity to check out other personas. This is most likely because the 'check contacts' option at the beginning of the interaction gets overshadowed by the sound and design of the interaction. It might also be because it does not sufficiently indicate the potential to talk to other personas. Further investigation into the affordances around this is required.

9. conclusion and outlook

The prototype managed to prove the initial assumption that there is value to exploring generative options to climate communication that focus on creating positive perspectives for better futures on an empathetic level. This can be evidenced by a general improvement in thoughts and feelings around the assumed future regarding the climate crisis and a decrease in levels of eco-anxiety after interacting with the installation.

The testing and evaluation proved great potential for educational methods that take on a more interactive, personal and non-linear approach to teaching about systemic sustainability, with participants stating that they value the relatability of the personas and settings. The previously formulated theory of change proved to be a valuable strategy to conduct research and conceptualize the project.

For taking this project forward and into the real world, further work is needed on the usability of the prototype, the structure and phrasing of the conversations and the variety, diversity and availability of personas. It also needs to be rewritten and translated into the German language and equipped with subtitles for accessibility purposes.

Due to a large amount of time, knowledge and to some extent finance needed to realize these additional efforts, the next step for this project is to create a portfolio highlighting both the interaction itself and the results of the testing, so that it can be pitched to crucial stakeholders for funding.

This will also translate into an overall higher production quality for the physical materials used for the phone booth, dialogues written and objects, costumes, and settings used in the recordings to better showcase and sell the idea of the future society through more opportunities for experiencing and interacting. Potential addresses for such stakeholders are the City of Cologne and political foundations, organizations and NGOs such as Heinrich-Böll Stiftung, Rosa Luxemburg Stiftung, OroVerde or Greenpeace.

Hopefully, people in charge of the distribution of the necessary resources can be convinced of the potential and empowering nature of this new, experimental kind of climate communication through the acquired evidence and research so that this project can be brought into the future and connect with even more members of the general public.

11. Bibliography

Ahmed, A.; Chapman, A. (2021) 'Climate Justice, Human Rights, and the Case for Reparations', Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8694300/>, (Accessed: 06.01.2022)

Altinay, Z. (2017) 'Visual Communication of Climate Change: Local Framing and Place Attachment, Coastal Management,' 45:4, 293-309, DOI: 10.1080/08920753.2017.1327344 (Accessed: 06.01.2022)

Amusa, T.; Enete, A. (2010) 'Challenges of Agricultural Adaptation to Climate Change in Nigeria: a Synthesis from the Literature' Field Actions Science Reports [Online], Vol. 4, Available at: <http://journals.openedition.org/factsreports/678> (Accessed:06.01.2022)

Atkin, E. (2021) 'About HEATED', Available at: <https://heated.world/about?sort=about>, (Accessed: 19.08.2021)

Baker, D.; Dent, M. (2019) 'NIMBYs Shoot Down Green Projects Next Door While Planet Burns', Available at: <https://www.bloomberg.com/news/features/2019-09-17/nimbys-shoot-down-green-projects-next-door-while-planet-burns> (Accessed: 06.01.2022)

Birnbaum, J. (2009) 'Indigenous Science, Cultural Survival Quarterly', 33, pp. 14-20

BMW (2022) 'Enhancing energy efficiency in buildings', Available at: <https://www.bmw.de/Redaktion/EN/Dossier/enhancing-energy-efficiency-in-buildings.html> (Accessed: 06.01.2022)

Bond, M. (2010) 'Localizing climate change: Stepping up local climate action.' Management of Environmental Quality: An International Journal. 21. 10.1108/14777831011025553.

Bregman, R. (2018) 'Utopia for Realists: And How We Can Get There', Bloomsbury Paperbacks

Chan, A. (2021) 'Climate Change and Contemporary Chinese Science and Speculative Fiction: Invisible, Extractive and Uneven Boundaries' Available at: <https://sfrareview.org/2021/02/15/climate-change-and-contemporary-chinese-science-and-speculative-fiction-invisible-extractive-and-uneven-boundaries-2/>, (Last visited: 19.09.2021)

Conz, BW (2018) 'Permaculture Demonstration Sites in Central America: Contributions to the Agroecological Transition and Implications for Educators.', Revista Geográfica De América Central , 3 (61E), 111 - 124.

Corner, A., Shaw, C. and Clarke, J. (2018). 'Principles for effective communication and

public engagement on climate change: A Handbook for IPCC authors.', Oxford: Climate Outreach

Costanza-Chok, S. (2020) 'Design Justice: Community-Led Practices to Build the Worlds We Need', The MIT Press

D'Alisa, G. et al. (2020) 'The Case for Degrowth', Polity

Dunne, A.; Raby, F. (2013) 'Speculative Everything' Cambridge, Massachusetts, London: The MIT Press

Eckstein, D.; Künzel, V.; Schäfer, L. (2021) 'Global Climate Risk Index 2021', Available at: https://germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf (Accessed: 06.01.2022)

Escobar, A. (2018) 'Designs for the Pluriverse', London: Duke University Press

Franta, B. (2018) 'On its 100th birthday in 1959, Edward Teller warned the oil industry about global warming', Available at: <https://www.theguardian.com/environment/climate-consensus-97-per-cent/2018/jan/01/on-its-hundredth-birthday-in-1959-edward-teller-warned-the-oil-industry-about-global-warming> (Accessed: 02.06.2021)

Frearson, A. (2021) 'Digital twins offer "a very powerful way of developing our cities" say experts', Available at: <https://www.dezeen.com/2021/07/09/digital-twins-develop-cities-digital-design-architecture/>, (Last visited: 19.09.2021)

Gray, C.; Malins, J. (2004) 'Visualizing Research', Cornwall, UK: MPG Books Ltd.

Hawken, P. et al. (2017) 'Drawdown, the most comprehensive plan ever proposed to reverse global warming', UK: Penguin Books

Holdo M., (2018). 'Sincerity as Strategy: Green Movements and the Problem of Reconciling Deliberative and Instrumental Action.', Environmental Politics, Vol. 28 (2019), pp. 595–614.

Hooks, B. (1994) 'Teaching to Transgress: Education as the Practice of Freedom', New York, London: Routledge

Internationalist Commune of Rojava, (2018) 'Make Rojava Green Again', London: Dog Section Press

IPCC (2014): Summary for policymakers. In: 'Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'

[Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.

IPCC, 2014: Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

IPCC, 2019: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.

IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.

Jain, A. (2017): 'Why we need to imagine different futures | Anab Jain', Available at: https://www.youtube.com/watch?v=PYjWLqE_cfE&t=15s&ab_channel=TED, (Accessed: 19.08.2021)

Kihara, T.; Alexeenke, P. (Unknown) 'TheirTube: How do the recommended videos look on their Youtube home page?', Available at: their.tube, (Accessed: 19.08.2021)

McKenzie, B (2020) 'Explaining Possitopia', Available at: [<https://climatemuseumuk.org/2020/10/15/explaining-possitopia/>]

(<https://climatemuseumuk.org/2020/10/15/explaining-possitopia/>) (Accessed: 02.06.2021)

Meadows, D. (1999) 'Leverage Points', Hartland, Vermont, USA : The Sustainability Institute

Mullins, J. (2020) 'Queer Ecology: Shared Horizons after Disturbance, *The Italianist*', 40:2, 229-243, DOI: 10.1080/02614340.2020.1766796

Nesta (2018) 'Welcome to ShareTown.', Available at: <https://www.nesta.org.uk/data-visualisation-and-interactive/sharetown/> (Accessed: 19.08.2021)

Pomeroy, L. (2019) 'Taiwan is making democracy work again. It's time we paid attention', Available at: <https://www.wired.co.uk/article/taiwan-democracy-social-media>, (Accessed: 19.08.2021)

Raworth, K. (2017) 'Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist', Random House Business

Ritchie, H. (2019) 'Who has contributed most to global CO2 emissions?', Available at: <https://ourworldindata.org/contributed-most-global-co2>, (Accessed: 06.01.2022)

Superflux; Arden, J.; Jain, A. (2019) 'Mitigation of Shock: London', Available at: <https://superflux.in/index.php/work/mitigation-of-shock/#>, (18.09.2021)

Superflux; Arden, J.; Jain, A. (2019) 'Mitigation of Shock: Singapore', Available at: <https://superflux.in/index.php/work/mitigation-of-shock-singapore/#>, (18.09.2021)

Taylor, M, et al. (2019) 'Climate crisis: 6 million people join latest wave of global protests', Available at: <https://www.theguardian.com/environment/2019/sep/27/climate-crisis-6-million-people-join-latest-wave-of-worldwide-protests> (Accessed: 02.06.2021)

Thapa, S. (2011) 'Bhutan's Hoax', In *Wavemag*, 187

The Design Council (2016) 'Impact Evaluation: Final Report', Available at:https://www.designcouncil.org.uk/sites/default/files/asset/document/KHDC_Impact%20Evaluation_Final%20Report.pdf, (18.09.2021)

Ura, K. et al. (2012) 'A Short Guide to Gross National Happiness Index', The Centre for Bhutan Studies: Thimphu, Bhutan

Urban, J., Chabada, T., & Skalík, J. (2018) What can work in climatic campaigns: Review

of information-based and framing approaches. *Envigogika*, 13(2).

Urbanista (2017) 'Städteranking zur nachhaltigen Mobilität', Hamburg: Greenpeace e.V.

Victor, D. et al. (2017) 'Prove Paris was more than paper promises', *Nature*, 548, pp. 25–27.

Wei, YM., Han, R., Wang, C. et al. (2020) Self-preservation strategy for approaching global warming targets in the post-Paris Agreement era. *Nat Commun* 11, 1624 (2020)

12. Literature

ABC News (2018) 'Natural sequence farming: How Peter Andrews rejuvenates drought-struck land | Australian Story', Available at: <https://www.youtube.com/watch?v=-40BcRHX1Bc&t=113s> (Accessed: 11.01.2021)

BBC (2020) 'The man who grew his own Amazon rainforest - BBC World Service', Available at: <https://www.youtube.com/watch?v=Angaelf78AQ> (Accessed: 11.01.2021)

ClimateAdam (2021) 'Climate Scientist answers Strangers on Omegle', Available at: <https://www.youtube.com/watch?v=OLfXflixu1E&t=520s> (Accessed: 11.01.2021)

FLORB (2019) 'They Built a Rainforest Ecosystem inside a Geodesic Dome', Available at: <https://www.youtube.com/watch?v=MWr67v620kY> (Accessed: 11.01.2021)

Happen Films (2015) 'Agari Permaculture Farm Tour', Available at: <https://www.youtube.com/watch?v=nQ2tqJz1A-o> (Accessed: 11.01.2021)

Happen Films (2016) 'A Simpler Way: Crisis as Opportunity (2016) - Free Full Documentary', Available at: <https://www.youtube.com/watch?v=XUwLAvfBCzw&t=953s> (Accessed: 11.01.2021)

Happen Films (2016) 'Amazing 23-Year-Old Permaculture Food Forest - An Invitation for Wildness', Available at: <https://www.youtube.com/watch?v=6GJFL0MD9fc&t=865s> (Accessed: 11.01.2021)

Happen Films (2019) 'Tips for Zero Waste Living - How a Family of 5 Makes Almost No Waste! | Life With Less Waste', Available at: https://www.youtube.com/watch?v=B5ijPk5_8pM&t=293s (Accessed: 11.01.2021)

Happen Films (2019) 'Inspiring Woman Growing a Huge Amount of Food in Her City Permaculture Garden', Available at: <https://www.youtube.com/watch?v=Y9ZukMyejLk>

(Accessed: 11.01.2021)

Happen Films (2019) 'Legendary Australian Permaculture Garden Tour - David Holmgren & Su Dennett's Melliadora', Available at: <https://www.youtube.com/watch?v=ss1BjW2kSNs&t=179s> (Accessed: 11.01.2021)

Happen Films (2019) 'Man Spends 30 Years Turning Degraded Land into Massive Forest - Fools & Dreamers (Full Documentary)', Available at: <https://www.youtube.com/watch?v=3VZSJKbzyMc> (Accessed: 11.01.2021)

Happen Films (2020) 'Imagining Decolonisation - and Why It's Good For Everyone with Tina Ngata - HF Podcast #7', Available at: <https://www.youtube.com/watch?v=DMsSTfgrlY&t=155s> (Accessed: 11.01.2021)

Happen Films (2020) 'Hugely Abundant 1-Acre Permaculture Homestead Tour - Limestone Permaculture Farm Revisit', Available at: <https://www.youtube.com/watch?v=dztgMnaH1rw&t=305s> (Accessed: 11.01.2021)

Happen Films (2020) 'Community Resilience in a Time of Pandemic with Artist as Family - Happen Films Podcast #1', Available at: <https://www.youtube.com/watch?v=qVapePALGgM&t=183s> (Accessed: 11.01.2021)

Happen Films (2020) 'Rob Greenfield: Being the (Radical) Change You Wish to See in the World - Happen Films Podcast #2', Available at: <https://www.youtube.com/watch?v=IV5avFEUt3E&t=730s> (Accessed: 11.01.2021)

Harries, F. (2017) [A Creative Approach To Climate Change | Finnegan Harries | TEDxTeen], Available at: <https://www.youtube.com/watch?v=lJ0md-sF-c&t=629s> (Accessed: 11.01.2021)

Harries, J. (2021) 'Climate Catastrophe - How Did We Get Here?!', Available at: https://www.youtube.com/watch?v=Bl0ZdVoHm_w (Accessed: 11.01.2021)

Hot Mess (2020) 'How Different Generations Talk About Climate Change | Hot Mess', Available at: <https://www.youtube.com/watch?v=TQYo9nk-Zlw&t=557s> (Accessed: 11.01.2021)

Hot Mess (2020) 'Why Voting Local is the #1 Way You Can Fight Climate Change', Available at: <https://www.youtube.com/watch?v=nUo5ozVUXRI> (Accessed: 11.01.2021)

Lertzman, R. (2020) 'How to turn climate anxiety into action | Renée Lertzman', Available at: <https://www.youtube.com/watch?v=f52LJJFBLc> (Accessed: 11.01.2021)

Pichon Battle, C. (2020) 'Climate change will displace millions. Here's how we prepare |

Colette Pichon Battle', Available at: <https://www.youtube.com/watch?v=8NSQYO2es3U&t=326s> (Accessed: 11.01.2021)

Our Changing Climate (2019) 'Are plant-based meats actually sustainable? (Impossible Burger & Beyond Meat)', Available at: https://www.youtube.com/watch?v=snMaXpZc_Mg&t=537s (Accessed: 11.01.2021)

Our Changing Climate (2020) 'The real problem with GMO Food', Available at: https://www.youtube.com/watch?v=h4_t4Xgd4CA (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Does Vertical Farming Actually Work?', Available at: <https://www.youtube.com/watch?v=V605mb9Fr-M&t=561s> (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Planned Obsolescence Sucks. Here's Why It Still Exists.', Available at: https://www.youtube.com/watch?v=wzWU7DOS9_8 (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Why Billionaires Won't Save Us', Available at: https://www.youtube.com/watch?v=_634hXz32pY (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Why Capitalism is Killing Us (And The Planet)', Available at: <https://www.youtube.com/watch?v=-qxP2TzYcNw&t=632s> (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Why Celebrities Won't Save Us (From Climate Change)', Available at: <https://www.youtube.com/watch?v=7q3EaLKTNEA> (Accessed: 11.01.2021)

Our Changing Climate (2021) 'Why Lawns Must Die', Available at: <https://www.youtube.com/watch?v=megly0m05-4&t=23s> (Accessed: 11.01.2021)

Stockholm Resilience Centre (2021) 'How to apply resilience thinking', Available at: <https://www.youtube.com/watch?v=khep7hHeZG8> (Accessed: 11.01.2021)

VPRO Documentary (2017) 'Regreening the desert with John D. Liu | VPRO Documentary | 2012', Available at: <https://www.youtube.com/watch?v=IDgDWbQtIKI&t=289s> (Accessed: 11.01.2021)

Zentouro (2015) 'Is the Tesla Powerwall Really That Awesome?', Available at: <https://www.youtube.com/watch?v=bDw6u7AFIW0> (Accessed: 11.01.2021)

Zentouro (2017) 'Climate change resources for figuring out the facts', Available at: <https://www.youtube.com/watch?v=yoV-ubxJ0Zw> (Accessed: 11.01.2021)

Zentouro (2017) 'Does going to a protest do anything?', Available at: <https://www.youtube.com/watch?v=mizQ1dQvmmk&t=300s> (Accessed: 11.01.2021)

Zentouro (2019) '100% renewables is possible, here's how', Available at: https://www.youtube.com/watch?v=v4DwyVEo_cA (Accessed: 11.01.2021)

Zentouro (2019) 'Climate change is not gender neutral feat. @Our Changing Climate', Available at: <https://www.youtube.com/watch?v=kuiaXcRSAGa&t=241s> (Accessed: 11.01.2021)

Zentouro (2019) 'The IPCC ocean report in 5 minutes', Available at: <https://www.youtube.com/watch?v=jvGJRJ-jX70> (Accessed: 11.01.2021)

Zentouro (2020) 'YouTube's Climate Denial Problem', Available at: https://www.youtube.com/watch?v=kZYH_MirV8&t=174s (Accessed: 11.01.2021)

Zentouro (2021) 'Buildings: a climate problem or a climate solution?', Available at: <https://www.youtube.com/watch?v=B5gEtSW-Guk&t=113s> (Accessed: 11.01.2021)

Zentouro (2021) 'Keystone Pipeline is dead now we need to #STOPLINE3', Available at: <https://www.youtube.com/watch?v=O5NMK1FKXeM> (Accessed: 11.01.2021)

Zentouro (2021) 'The Underground Solution To Climate Change', Available at: <https://www.youtube.com/watch?v=DUMc8JI2xsE> (Accessed: 11.01.2021)

Zentouro (2021) 'There's no such thing as a natural disaster', Available at: https://www.youtube.com/watch?v=dT9-0mG_Ewk&t=233s (Accessed: 11.01.2021)

Evaluation of the questionnaire

Available at: https://docs.google.com/spreadsheets/d/1YCEo9UmUHEGle_XhL59NNN8Jhcw7m2le-Maoy_Jr0ys/edit?usp=sharing

Evaluation of the Fon2Future interaction

Before and After:

1. How do you rate our chances against the climate crisis?:

2,46 (Before) -> 3,14 (After) (Scale 1 to 5)

2. How would you describe your feelings about the assumed future?

Before: Overwhelmed & Intimidated & Insecure (3), Hopeless & Anxious & Depressed (4), uncertain (3), Frustrated (1), Hopeful (3).

After: Still sceptical (1), a little overwhelmed still but with more hope! (5), Frustrated (1), Concerned (2), good & hopeful (3), it was hard for me to relate to this world because its so different (1)

-> If there is other people talking, people cant hear all that well

3. How would you describe your knowledge of the climate crisis?:

4,23 (Before) -> 4,85 (After) (Scale 1 to 7)

4. In your opinion, how can we tackle the climate crisis on a systemic level?

Before: not sure/dont know (2), rewilding nature (1), change economics & corporate rules (3), change politics (5), Consume less/Reduce resource usage (3), Change fossil fuels to renewables (4), change agriculture (3), change transport (2), activism and grassroots stuff (3)

After: Activism and grassroots stuff + collective action (7), change of economics (2), Change of international Politics (2), Education (2), us e ALL solutions (1), Agriculture, Energy, Transport (1).

5. How would you rate your motivation to be involved with eco-socially sustainable action?

Before:

Low: 1, Moderate: 3, High: 5, Very high: 4

After:

Moderate: 5, High: 6, Very high: 3

Usability:

1. How would you rate the likelihood of you interacting with this installation if you saw it on the streets?

-> 4,42/5 (The one person saying 2/5 said it is because they are a hesitant person that is reluctant to interact with things that are new and unusual to them)

2. What did you learn about systemic sustainability? Is anything about it new to you?

-> basic democratic focus (2)

-> focus on pay-off of being involved

-> I want it on my phone

-> Not really new information but provided a better combined understanding (4)

-> yes (2)

-> Nothing new (3)

-> Couldnt focus (1)

3. How many questions did you ask the persona?

-> on average 8,74 questions

4. How many personas did you interact with?

-> 1 (8 bzw 57%)

-> 2 (5 bzw 36%)

-> 2 und gelesen (1 bzw 7%)

5. Were you able to relate with the persona? If yes, what about it? If no, what was missing?

pro:

-> no pressure, easy going (2)

-> good conversation flow (2)

-> doesn't try to convert me (1)

-> yes (5)

-> their position in society and believes where relatable (5)

-> could relate to the actor (1)

-> especially on the financial part (2)

-> age (2)

-> Liked the local examples (ringbahn etc) (1)

con:

-> language barrier

-> not enough objects and things that can be shown about the future

-> need more diversity

-> everyday life aspects that are relevant to me are missing

-> physical space not quiet enough to focus

-> persona didnt match my identity so much

6. How would you rate/describe the difference between learning about eco-social sustainability through this interaction versus in conventional ways?

-> Personal level is something you rarely ever get in conventional ways, more connected to my life. (5)

- > No Pressure (2)
- > Freedom to pick what u wanna learn about (2)
- > The conversationstyle is cool for learning (5)
- > Much better (3)
- > More lively and engaging (4)

7. Did you run into any issues when interacting with the prototype?

- > No (6)
- > Too beautiful to focus (1)
- > Distracting sounds from surroundings (1)
- > Semi-Dead Ends with questions (1)
- > Languagebarrier English/German (1)
- > Conversation loop (1)
- > Some delay and asynchronosity (1)

8. Anything missing?

- > Furry Personas (1)
- > Stronger call to action than just the sign (1)
- > Slightly shorter responses (1)
- > More focus on economics (1)
- > Show some objects (1)
- > subtitles (1) (accessability)
- > more characters! (1)
- > no (3)

9. Additional Feedback:

- > Bring to schools / educational institutions!
- > Great idea, i think the location of the phone-booth is key (needs to be a place where people have 10 minutes to wait and interact), language options are important (not everyone speaks english/german (well)), would be cool to be able to pick more personas, more diversity. maybe add a true working-class persona with easy language and their culture. Call rich people to share their wealth and power through positive communication. Need to be believe.
- > Place at Bezirksamt?

Additional Observations:

1. Not enough people understand that they are supposed to press the text option. highlight the affordance, add a visual cue for that.
2. People sometimes navigate themselves into conversational loops. Visual indication to show already accessed information could be useful. Also, add additional pathways to answers that might lead people into assumed dead ends. A lot of people never get to see a lot of dialogue options bc they aren't easily accessible once a certain pathway is chosen.

3. The wording of the questions seems key to wether or not people want to press it and learn more about the option. Sometimes it doesnt even matter that much if the question accurately represents the then presented information, it's more about wether or not the question itself seems fun to learn about. This correlates with the previous insight from the Happen Films interview, where they said that the right or wrong title can make or ruin all engagement. It also means, that further attention on the wording of these is required to ensure that recipients feel invited to learn about the information that seems key to know if one wants to educate oneself on systemic sustaibability.

4. one question features a bug where the same dialogue answer appears twice, but if you press the wrong one the interaction breaks and needs to be restarted manually. this needs to be fixed.

Research into the present demographics of cologne

Age:

16,1% under 18.
16,7% 18 - 30
49,6% 30 - 65
12,1% 65 - 80
5,4% 80+

<https://de.statista.com/statistik/daten/studie/1194900/umfrage/bevoelkerung-koeln-nach-alter/>

Average age: 41 years old

Native Colognians:

About 34% born in Cologne
41% moved to Cologne 10+ years ago,
23% moved to Cologne within the last 10 years,
2% moved to Cologne within the last year.

Migration

40% first and second generation imigrants combined
20% exclusively foreign nationality
20% Second generation imigrants
-> roughly 15% dual citizenship (of the entire population)

Most represented country of origin (of the entire population)

5% Turkey, -> reduced since 2002 through changes in laws regarding citizenship. Since then every person with turkish born to parents in Germany automatically gains German citizenship.

2% Italy,
2% Jugoslawia
2% Asia (they could not have been any less specific I gess)
1% Irak
1% Bulgaria
0,8% Poland
0,8% Syria
10% other country of origin.

People per household

561.071 households
1 Person 50,4%
2 Persons 27,1%
3+ Persons 22,5%

64% renters, 36% own property*

-> chance of being renter increases the lower the persons income*

-> homeowners on average are very pleased with their living situation, renters on average are very displeased with their living situation

8% of Colognians -> >50% of income spent on rent
19% of Colognians -> 33-50% of income spent on rent
23% of Colognians -> 25-33% of income spent on rent
50% of Colognians -> <25% of income spent on rent

Religion

32,8% catholic (2018)
14,4% protestant (2018)
11,9% muslim (2011)
0,3% jewish (2011)
2,1% orthodox christian (2011)
40% other or no confession (2011)

Income (2016):

856.000 adults in general population
575.000 or 67% with regular income,
of which 19% (12,5% of the general population) have contracts other than fulltime employment (temporary contract, part-time, minijob, outsourced, not registered with social security services etc.)
12% (7% gesamt) self-employed

Percentage of fulltime contracts sinks, share of other types of employment rises significantly
-> due to deregulation of the market and structural changes towards a service economy
-> people most affected by this are women and people with foreign citizenship

Income (2016):

Median income of 1780€ per person
(Endangered of) poverty: 23%, 202.000 people (less than 60% of median)
lower middleclass: 41%, 353.000 people (60 to 120% of median)
upper middleclass: 30%, 260.000 people (120 of 200% of median)
upper class: 6%, 53.000 people (more than 200% of median income)

16% of all workers run danger of being in poverty.

That risk is significantly higher for anyone not employed in fulltime work.

"Even though 80 per cent of Cologne residents between the ages of 18 and 80 are employed, and most of them are subject to social security contributions, one fifth of the employed work in an employment relationship that tends to be insufficient for them to be able to live adequately on it in the long term. The so-called "normal employment relationship" - full-time, permanent and subject to social security contributions - has declined over the last 20 years in favour of other forms of employment. In Cologne, an estimated 109,000 Cologne workers are in some form of atypical employment - women, young workers and people with a migration background are disproportionately affected."

https://www.stadt-koeln.de/mediaasset/content/pdf15/statistik-umfragen/erwerb%C3%A4tigkeit_und_wirtschaftliche_lage_der_k%C3%B6lnerbev%C3%B6lkerung_um_ksn_2018_4.pdf

Spending:

monthly:

34% on renting, 23% on costs related to living, 10% transport, 21% pleasure and consumption, 5% savings, 7% other.

Health:

Disability:

8,8% of the population are deemed heavily disabled.

of which 80% as the result of chronic illness, only few are born heavily disabled.

<https://www.ksta.de/koeln/neue-statistik-9-prozent-aller-koelner-haben-eine-behinderung-30416600>

In Germany:

More than 50% of the population experience chronic illness.

20% cancer or issues with the heart

11,4% muscles or bone diseases

8,5% mental health issues

27,8% of the adult population are affected by a mental illness per year. Half of them have more than one disorder. The most common are affective disorders and alcohol or drug use.

Young and socially disadvantaged people are affected more often.

Within one year, 15% of women have a depressive phase, 20% an anxiety disorder. 8% of men have a depressive phase and 10% of men have an anxiety disorder.

<https://www.aerzteblatt.de/nachrichten/116897/Mehr-als-die-Haelfte-der-deutschen-Bevoelkerung-ist-chronisch-krank>

Politics:

Communal Elections 2020:

28,5% Grün, 21,6% SPD, 21,5% CDU, 11,7% Sonstige, 6,5% Die Linke, 5,2% FDP, 9% Volt

-> Aber nur ca 51% der Kölner*innen* haben gewählt.

EU Parliament Elections 2019:

32,9% Grün, 19,8% CDU, 17% SPD, 6,2% AfD, 6,2% FDP, 6,1% Die Linke, 11,8% Other

Landtagwahl 2017:

32,5% // 28,1% SPD, 31,3% // 26,5% CDU, 10,8% // 11,8% Grün, 8,8% // 13,8% FDP, 7,4% // 8,4% Die Linke, 5,3% // 6% AfD, 3,9% // 5,4% Other

General Elections 2017:

31,1% // 26,4% CDU; 30,8% // 23% SPD; 12,2% // 13,6% Grün; 8,6% // 11,5% Die Linke; 7,9% // 13,8% FDP; 6,9% // 7,3% AfD; 2,6% // 4,6% Sonstige

92% are interested in politics in general

96% are interested in the development of the city

80% are interested in decisions of the city administration

74% say they have voted in 2 of the last 3 elections

< 20% use alternative forms of participation:

Multiple answers:

13% have been to demonstrations

12% have participated in citizens' initiatives at some time

11% have participated in referendums

8% have taken part in citizens' meetings

6% have written letters to the mayor or the administration

5% have participated in a political party

5% have contacted city councillors

5% have contacted advisory councils

4% have contacted citizens' associations.

Non-voters also hardly use any other forms of political engagement.

https://www.stadt-koeln.de/mediaasset/content/pdf15/statistik-umfragen/aktive_b%C3%BCrgerschaft_um_ksn_2018_3.pdf

Queerness:

10,6% of people between the age of 18-75 identify as LGBTQIA, of which:

-> 60% Gay (-> 6,36% of general population)

-> 7% bisexual, cis male (-> 0,742% of general population)

-> 19% Lesbisch, (-> 2,014% of general population)

-> 11% bisexual, cis female (-> 1,166% of general population)

-> 4% queer, trans*, inter* and others (-> 0,424% of general population)

28% of people identifying as LGBTQIA are older than 50. The older the person, the less likely they are to identify as LGBTQIA. LGBTQIA on average are younger people.

Volunteer work

56% never engaged in any volunteering

24% volunteer, percentage increases

-> 31% at least once per week

-> 15% 3-4 times per month

-> 30% several times in a year

-> 24% less than that

20% used to volunteer.

16% of Cologne residents provide care, 3/4 of them in other households than their own, most provide care to their own family. most people do not provide care until they are 45 or older.

Dialog Paul:

Opening Line(s)

Woops uhhh... hi? You're not Kais... And you dress so- unique. Is that fast fashion? Wild. I guess something must've been messed up with the connection? What year is it where fast fashion is still a thing? 2010 or something?

-> It's 2021. Who are you?

Self Description

Oh yeah right, sorry this must be so confusing for you. Let's start again. So, hi, I'm Paul, I live in Köln Mülheim in the year 2050. Yeah, I know - sounds crazy that we're talking right now but you know what's even less believable is that Queen Elizabeth IS LITERALLY STILL KICKING IT today! But yeah anyway, I kind of wanted to speak to this community organizer about a mutual aid project but I guess that apparently didn't happen. Oh well, now that we're here, let's do this. You must have so many questions right now about what's going on and life in 2050 and all that.

-> Did we manage to halt the climate crisis?

The Climate Crisis:

Ok, so this might sound hard to believe but actually: yes! But it wasn't really because of the people in charge all of the sudden doing the right thing or that all of these meetings of the super-rich in Davos and stuff finally contributed to something. I think if we had further relied on that, it would have been our downfall. It's because everyday people at some point actually had enough and took matters into their own hands. Not quite like a stereotypical revolution but just through collective decision making, organizing, change of praxis and all of that. And by that I don't mean that you as an individual can change the entire world, but that our society is made up of people like you and me. And together we can influence things that are bigger than you and me alone. Like political decision-making. Or new production standards that push our industry towards being circular. Actually, even now it still feels kinda fantastic that people have been able to pull that one off. But it's not like we live in fairyland and don't have any problems at all, it's just that the climate crisis isn't one of them anymore.

-> What kind of work do people in 2050 do?

Neues Arbeitsverständnis:

Hm I feel like probably a lot has changed when it comes to work. Nowadays, whenever you get into some kind of profession, you have to be educated on the impact and positionality of your work within the economy and environment. And there are codes of conduct in place that ensure circular material usage. So all of this led to people being more deliberate with the work that they chose because it is a lot more about impact than it was before. I think status right now comes more from how important your position is, how much it contributes, rather than just how much you earn, you know. Because people consume a lot less anyways.

And at the same time people are a lot more okay doing jobs that before used to be considered low-profile. That's because due to union works and favourable conditions for cooperatively worker-owned businesses, everyone has a lot more say and a much more stable wage at the end of the day. And since you don't necessarily HAVE to work with the universal basic income we are getting, people can't get away with treating their employees

poorly because they are not dependent on a shitty job to keep themselves alive. They can start looking for other things and for places that they feel actually value their time and skills and contribute to the good in the world. So for example I don't really work a "corporate job" at all, instead I volunteer in a bunch of different places. So I split my time between two days in the community garden, two days in the community kitchen and one day in the repair-café and I usually am there for like 4-6 hours a day depending on how much there is to do. Which I am free to do because I get my UBI with which I cover rent and then I get food and I have access to so many other resources plus a few donations here and there from people that value the mutual aid work that we are doing...

Community-Care:

Oh yeah, community-care is definitely really important to me. Just connecting, giving and accepting help is really empowering and in my opinion it helps build resilience and overall happiness. I come from a background where you get your hands dirty so I'm very in tune with this down to earth type work and helping each other out.

And like, sure, it is part of my ethics and political beliefs yeah, but it has also definitely become bigger over all. Not just for me but in society in general. Like, there are a lot of multi-generational housing opportunities in each neighborhood where young and old people can live together and offer each other support wherever needed.

And for stuff outside of your immediate community people generally use this digital organizing platform to get together for a shared project or figure out who needs what and who can provide it.

You know what's kind of funny though? Like these projects have essentially always existed right? Like even in your day and age, people are constantly making the most out of their situation by getting together and sharing. I feel like the issue is more with finding and knowing about these spaces then. You know stuff like free culture and art spaces like Lux93 or community-spaces for BIPoC and LGBTQIA+ people, or even just some backyard donation-based tool-borrow and food redistribution places. All of that has been around for ages in Cologne, one just needs to find it.

-> How did you guys make sure that eco-sustainability also comes with social justice and sustainability?

Einkommensabsicherung:

Ok, like I personally don't make a lot of money, because the stuff that I work at is not something that generates crazy amounts. But I'm not in for that in the first place. Which for someone from 30 years ago like you probably seems like a crazy privilege but is actually quite normal these days.

Like we have both really affordable social housing programs and a monthly allowance from the community that covers the base level stuff you need to live kinda decently. And it really frees you up to do stuff. What's kind of funny to me is that so many people still choose to do regular jobs for that extra cash. But as I said, for me it's not about that. I work because I wanna have an impact and contribute and build a base and community. So I do that in the community garden & kitchen and at the repair-café.

And honestly through that I get so much coverage for food and tools and things and connections to other people anyways that this is basically all that I need. A lot of stuff in

general has moved away from this idea that one person needs to own everything. Sort of like a collective shift of mentality. So you can lend a lot of stuff or share things collectively. It's actually pretty freeing to think about.

Landwirtschaft:

So one thing that people often don't think about because they rarely have direct contact with it is how much systemic sustainability can be achieved through different methods in agriculture. Like, my parents are farmers in the Eifel and when they tell me stories about how people used to go about it just 30 years ago, it just seems insane how much land was lost just due to soil degradation with overuse of fertilizers, not planting enough crop diversity, herbicide overuse and all that stuff.

So basically what they did in order to become sustainable farmers, is first they stopped producing food for animal consumption... which was kind of easy for them to do because uhm people around that time cut down on meat anyways because of its bad environmental impact, right? But what that meant is that it also became a lot more efficient in terms of land usage because instead of feeding tons of crops to a cow, you can just use that land to grow food for a lot more humans.

And their neighbor farm switched from feeding crops in stables to something called silvopasture. So that's a method where you can let your cattle and goats and everything off into the hilly and unfarmable parts of the forest and they just feed off the grass that grows there. So you don't even have to use actual farm land to feed them at all. And for them that worked out great with the sinking demand but increase of price for meat. People now really value their quality product, you know. We don't really have these mass-produced animal-camps with horrible working conditions anymore at all.

I guess what required a little more effort for my parents though was changing their practice. because it came with a lot of rethinking what you're doing and reeducating yourself on sustainable farming practice and all that stuff. But they say it was really exciting for them though!

So they first learned about it and now they have all these cool methods like tree-intercropping, where you plant fruit trees in between your rows on the fields, and you protect your soil and water levels through that. Or even agroforestry where your plantings kind of mimic the natural layers and variety of plants in a forest, and through that you essentially create this place where biodiversity can thrive while you are still able to gather close to the same amount of produce. In the end it is a lot about controlling what variety you plant, because that also ensures that you don't have to use artificial fertilizers and can just stick to compost, manure and the plants themselves naturally regenerate the soil.

And when I think about how I grew up on their farm, I'm honestly pretty glad they did that because it was such a nice environment compared to just having an ocean of corn at your hands haha. I mean look at that:

hält handybilder der farm der eltern in die kamera

Community Küche:

I think with the community kitchen it was kind of a natural expansion of both my political

beliefs and the stuff I grew up with from what my family was doing on their farm. So on one hand I can help people out directly, but I can also ensure that we make the most out of food. And we are actually like really a staple of sustainability here because places like ours essentially make sure that none of the food produced for this city goes to waste and instead it is used to feed those that are still less fortunate.

And actually the majority of our food doesn't even come from the community gardens, even though they can contribute. It's more about making use of the food that gets left behind in the system. So back in the day people literally threw out like 35% of all food produced which is just crazy if you think about it when you have other people begging for money to put something into their stomach. And yeah so even though that happens a lot less by now because of all the new legislation and distribution networks, there is always a bit that is left over right? That's kind of where we come in and we use everything that is still good, and what's truly leftover we use for compost. It comes hand in hand with the philosophy as this being a sustainable city in which all resources are used in a circular way. like circular economics or whatever.

But also on a more personal level, I love this because it provides a space for neighbors and other people to get to know each other and form a community. So everyone can really connect here and people just know that no one gets left behind and that if times are really hard on you you will always have a place here and other people that care for you and make sure you're fed. And quite literally have a place at the table.

Urban Gardening:

I'd say I usually try to spend two days of my working time in the community garden and that's like 4-6 hours each depending on how much there is to do. Some people think that this is all about sustaining the city through veggies grown within their little lots but that's not quite possible actually. The majority of the food still comes from regional farmers like my parents in the Eifel.

But what we do there instead is we use it as a space for education and forming bonds with each other. Like everyone is welcome no matter their background or expertise, you just need to be willing to get your hands dirty and contribute. For me and I'd also say for most other people that work there, it is literally a hub where we form so many connections and bonds. And not just with other humans, but also with our own philosophy and outlook on life and our connection with nature. I think it for sure teaches you a great deal about valuing food if you realize how much labour goes into producing it. And suddenly you learn to think a lot more about nature's own rhythm with the seasons and everything and you move a little more in tune with them.

Anyways, spaces like mine are pretty common around here. Like 15 years or so ago the people of the city made the collective decision to transform some of the Schrebergärten into community gardens. Because everyone could see that there is shared interest in having spaces like these, especially if you are surrounded by other gardeners already. And that food production and soil should not just be owned or rented by a few individuals. So with that we cut waiting times for people to get their lot, and instead get them to interact with each other. And you can basically find these spaces anywhere, like the one that I work in is Merheimer Heide but there are also a bunch of others along the Grüngürtel and most other public parks. And other projects like Neuland have been granted permanent

residency on their lots because of shared community interest, which is so sick honestly.

Reperaturcafé:

Repair-Cafés have basically become a big part of the circular economy model that we are living on a city-wide level right now. So even with some special cases where you would need to hire a professional, in repair cafés, we are able to essentially fix most of your broken things including technology. And it's completely free minus the material cost.

I work at one for about 1 day a week and I focus more on mending stuff like textiles and fixing broken furniture, but we do have some technicians that can replace components of your phone and computer and whatnot. So what really helps with this is that every product that has been produced since 2028 is designed to be open access to any person trying to fix it and if possible has its components arranged modularly. Which means that you can swap one of them out without damaging the system. And that is all because of our new requirements for production processes and supply chains that people decided on in a referendum. I think back in your day that used to be the USP of some products like Fairphone but now it's how basically all of the production operates. And with that, we can really extend the life-cycle of your possessions and reduce the overall need for consumption by a lot.

It's also cool because it allows for so many opportunities to individualize whatever you have. Like, I do that a lot when mending clothing etc, where you can really use your creativity with things like: what yarn do I use, do I use a patch, do I disassemble this thing entirely and make something completely new from it. Like nowadays, in this age-old "reduce-reuse-recycle" phrase, recycling is definitely the thing that comes last. We reduce consumption a lot and reuse and fix stuff a lot before something is actually completely broken and needs to be recycled.

Konsumreduktion:

So reduced consumption is one of the big systemic themes of this time and kind of goes hand in hand with my work in the repair-café. It is about individual consumption as much about reducing consumption in production and at a systemic level, especially that of non-regenerative materials. I mean like wood, bamboo, essentially all stuff that grows back. One way how we go about that is through our circular economy, meaning that all parts in a product are supposed to be so reusable that all of them can find use in the production of something new.

And we basically ensured that through regulation for the material usage, transport and human resources in supply chains, but also through democratic decision making in the industry by cooperatively owned and managed businesses. Which is this thing where people that work in the company have the same say and stakes in a company. And other than that- what helps a lot is that most products that are produced these days are designed in a way that you can repair them yourself or at a repair-café, DIY style.

But not gonna lie, this entire industry world isn't really my space, for me personally it's more about cutting down and figuring out what actually really adds to my life. Like, I don't need 15 new shirts per year. Something like that.

-> You said the people brought the change? How?

Local decision making

It's basically split into a variety of different kinds of democratic involvement. So in your time, you get to vote like every 4 years or so and that's basically it for your say in what happens in your city. And a lot of people don't even get to do that when I think of the Integrationsrat. What we do now gives people a lot more opportunity to have their voice heard and it was only integrated because people build up enough pressure to make it happen. I guess the main ways for people to enact change on a local level nowadays are direct democracy, citizen assemblies and direct action.

-> What's direct action?

Direkte Aktion:

Yeah, so the general idea behind this is that when you feel like something is a pressing issue, you don't have to wait for decision-makers to finally do the right thing. Instead, you look for things that YOU can do. Like, start a campaign, connect with your neighbours, do youth work in your community, you know stuff like that. And obviously, one person alone cannot change the system. The real change came when everyone who used to just stay home after being exhausted from working their dead-end job started investing a little bit of extra time into their community. And dared to push for things that they once assumed to be out of their reach. Because that leads to something great on a collective level, right? Because in the end, you are the one that needs to have full authority about your own life, right?

For me,- I'm quite the handy person, so I help repair stuff in this repair-café I'm working at and I also help out in a community garden and cook for anyone in need at our local community kitchen. But essentially it could be whatever you feel is necessary for the here and now. It's about starting change in a grassroots way. We as the people. The cool thing is that as soon as you start doing this you notice that you're actually not alone at all with your opinions and that there are so many cool people already doing great work on whatever you thought was a dead issue prior to getting involved. It's really empowering and, for me at least, gives me hope and a sense of belonging.

-> So how does direct democracy work?

Direkte Demokratie:

Here in 2050 we have new methods of forming decisions as a community. The generation of my parents fought to implement local referendums as a method for direct democracy. That helps speed up local decision making for important issues.

So essentially how it works is that when a topic is up for debate, everyone gets one vote and can either say yes or no. You need at least a two-thirds majority to make your new decision happen. And we make sure that everyone that lives in this city has an equal vote, no matter what nationality their passport says. Because in the end, if you live here, you should have a say in whatever happens. So we got rid of the Integrationsrat and gave equal votes to everyone because if you think about it, it was a really undemocratic way of doing things. Like they kept at least 10% of the population out of voting by that.

And when it comes to collective decision making, we also have this digital platform where you can look up currently trending topics and try to push them to a point where people get to vote on them. Or you could suggest your own topic and then try to get enough people to back your cause. You can also discuss ideas there and try to get an overview of what

the general opinion of the community on a certain topic is. Although in my opinion nothing beats talking to people face to face and engaging in direct action.

-> What's the idea behind citizen assemblies?

Bürger*innen-Versammlung:

Citizen-Assemblies are one of a multitude of options that people in Cologne have now for more democracy and collective decision making. The way that it works is that every month you have a council out of 50 randomly chosen citizens that can come together and discuss things that they feel need to change in this town. And then, if they agree on it, they can give it as a proposal for either the city council or the people to vote on through a referendum.

The reason for choosing them randomly is in order to give everyone in the city a fair chance of getting picked. Which I think especially minorities really profit from because they finally have a chance to really make their voice heard if they get picked. Through that we split up the power that the council holds and get rid of this slow and highly bureaucratic bottleneck that stands in the way of forming decisions effectively. The idea behind it is that you can give more power to the people, which turns out, the people like a lot. So this, referendums and direct action are some of the things I involve myself in because I get to say what I feel is right without having "representatives" skew my opinions for their own agenda.

Wohnen:

So I'm living in a flatshare with 3 other community members in Köln Mülheim. I don't earn much at all but honestly, that doesn't really matter because like a decade ago the community decided to invest heavily into quality social housing programs that are all sustainably built and everything.

So back in your day you probably had to spend like at least a third of your wage on rent right? And have to work a lot to bring that money in? Yeah, I don't really have to do that at all. It really frees you up, you know. I can work on stuff that I feel actually contributes to the lives of people here. Rather than just do some corporate work to sell a product no one needs. I think that decision back then was inspired by how Vienna at that time had like 60% of all people living in really nice social housing for the last 100 years or so. And they didn't even have to pay much for rent so the people over here thought "why can't we do that?". I'm pretty glad they did that, not gonna lie haha.

ÖPNV:

That's basically another reason why it's super affordable to live here right now. You can use all public transport for free, it's paid by the community. So when I go to work I either take my bike or use the train, depending on the weather. As long as you have this railcard with you, you can just ride all public transport as much as you want. I think they give that to you when you register with the council but you can also just grab a temporary one from basically any station. I like the temporary ones because they don't keep track of your ID. (Shows card)

And like 5 years or so ago they added the ring-system for the metro to the right-hand side of the river rhine as well and made sure that every train has its own track so there are no delays anymore. and they run a lot more often too. So now everything is connected and it's so easy to get around.

Oh right, and there is a lot more busses and autonomous shuttles roaming around because personal vehicles have essentially been banned from using the city roads. I know that apparently, people used to fight a lot about whether or not it would be the right thing. But in the end, people came to the conclusion that in reality, their commute was mostly about being stuck in traffic and getting angry at each other while polluting the environment and having to look for parking spots for like half an hour. Not really the type of personal freedom that they imagined when they bought a car I bet. Not that I would know though, I think I wasn't even old enough to have my drivers license when they passed that decision haha.

So the way they do it now is they have these parks and rides all around the city border and then you can just take your free train connection to the city centre and you are essentially there within 20 minutes maximum. And if you live here and need something heavy to be carried around, you can either get one of the shared cargo-bikes or get an autonomous shuttle to pick it up. Sometimes I wonder why it took them so long to figure that one out, especially since other cities like Amsterdam and Copenhagen and stuff apparently had already been doing that for years.

Öffentlicher Raum:

I think it's kind of funny that people struggle to see public space as something that belongs to them and that they can transform to their liking. Because in the end, who is the public? It is you and me and your neighbours, right? So it belongs to all of us.

And with no cars clogging up the streets and parking space and whatever, people have really started to claim it back. There's still a lot to do in terms of getting truly everyone to engage with it, but you can really see that one by one the streets transform with the majority using them as space to like hang out or you have restaurants that now have a nice outdoor area. I feel like this tendency of Cognians to hang out at the Kiosk really was taken to a new level by this haha. It's also interesting because with streets becoming public spaces, like actual city squares and stuff have been turned a lot more into event spaces rather than just spots where people hang out.

And it also allowed the city to transform a part of its parks into tiny forests for exploration and biodiversity because people have been able to move on from previously only having these islands of lawn as their hangout space to essentially treat large parts of the city as a place for relaxation. The overall amount of stress due to noise and air pollution has obviously also decreased which is a nice side effect I guess.

DIY:

That's the spirit. I think it is all about empowering yourself and those around you. Definitely ties in with direct action, like in that sense of you don't have to wait for someone to do it for you, you have all the skills and ideas to figure it out and do it. And it's very much the theme of the time. With direct democracy becoming the new norm and people taking charge in all of these cool cultural and volunteer projects. It's almost as good as Anarchism haha.

Exit Dialogue:

Okay sweet. It was nice talking to you. I assume this phone line probably also works the other way around, so if you ever feel like talking again, just call me. See ya!

Dialog Giulia:

Opening Lines:

Ohhh hey! You called me? Sorry to be so blunt but.. who exactly are you?

Follow up:

Ohhhh right sorry! This must be about this 2022 to 2050 partner programm that I signed up for ages ago. Okay so let me introduce myself: I'm Giulia, from Köln Ehrenfeld in the year 2050. And I guess this phone line is the link between your time and the society of mine? How exciting! Okay okay let's have a chat. What do you want to know about?

Einkommenssicherung (Geschiedene Eltern)

I'm currently doing an apprenticeship as an architectural draftsperson for sustainable buildings. It's actually quite common right now to do an apprenticeship rather than going to university. That's because of multiple reasons. So on one hand, everyone in this city gets a universal basic income, but also there are now requirements for the minimum wage apprentices get, which starts at 50% and over the years goes up to 85% of an entry level position. And if you manage to get one at a worker co-operative, you get your full value paid out right from day one. So it is definitely very affordable right now to do an apprenticeship, up to the point where you don't have to worry at all about moving out and doing your thing as a young person. And then of course also social housing which is quite the typical way of living right now, where your flat is owned by the community and you pay low rents because of that. That's something that I benefit from a lot because.. - so I don't have the best relationship with my dad, he moved out when I was like 12... and my mum is not exactly bringing in the big bucks. So being able to earn enough, be supported enough to be self-reliant as an apprentice without having to live near the poverty line,- it's been very empowering and freeing for me honestly.

About me:

Hmmm sure. Let me think, what can I tell you? Maybe a quick rundown. So I'm 23, right now I'm doing an apprenticeship, I live in a flat share in Ehrenfeld. I'm half Italian, half German, I'm a catholic but I don't really practice it. I grew up mainly around my mum. I have three partners, I love clubbing and sports. I'm an Aries sun, Cancer Moon, Leo rising. See? Now we're almost best friends or something haha.

FC Köln:

No. Right now we are actually in the zweite Bundesliga and Gladbach is the reigning champion for 5 years in a row. I guess it's not all sunshine in 2050. But hey, at least Karneval is bigger than ever and we did win the war between Allaf and Hellau so we definitely have something going for us!

Schule:

Ok let me think because this feels like a while back even though it's only been for years. I went to school from 2033 to 2046. I visited a Gesamtschule, which most of the old Haupt- and Realschulen got merged into. So we have two kinds of secondary school, Gesamtschule und Gymnasium. And even during the time I went there, there was still a lot of restructuring that I experienced myself. Because changing a system is not a process that happens over night right?

So while I was in school, some of the curriculum changed, some methods changed. Not in the sense that the subjects were completely different before and after, more about what you actually learn in these subjects and how much time they get per week. And when we are speaking methods, I think for someone in your time it's probably interesting to hear about digitalization in that context too. I don't know if there is something you are particularly interested in?

Subjects

So regarding subjects, the biggest shift apparently already had happened before I got into school when I compare my school-experience with my mums for example. And most of that was about how school is interpreted. Like, what is the role of a school? It's that we learn to be functional and critical members of society. That we learn to think independently. But this idea about it being a place where everyone has equal chances only really applies if all students also get the same attention at home right? So the way that that was combated was by reinterpreting the role of the school. So my mum for example used to have school only until like 1 or 2pm. For us it was throughout the entire day, with the afternoon being reserved for club activities. And what that does is that someone like me for example, where my mum raised me alone, I now get access to all these things I wouldn't have been able to do that back in her day. Like getting help for things I struggle with. Getting involved in sports. I love sports. I love competing. But my mum wouldn't have been able to pay for and pick me up from an external club all the time if school wouldnt have changed.

And then about the actual subjects:

Most of the changes in curriculum come from rethinking what kind of skills a child or teenager needs to learn in school. The subjects most affected by this are politics or SoWi, and then also natural sciences like biology, physics and geography. That's because the mechanisms of engaging in politics, especially on a local level, have changed a lot since your time, so education and a new self understanding in that regard are required. And then with natural sciences, I feel like the reason for that is pretty self-explanatory: climate change. So in these you would learn not only about the causes and effects of it, but also about how our local community can ensure sustainability and what methods other parts of the world use. And we have guest speakers and workshops and everything for that, it's honestly a pretty cool subject. And a solid career choice too.

Methods and Digitalization

I assume that in your time, when people hear about digitalization, they think it means that the entirety of the school will be changed through digital tools. That's actually not what happens. So as someone who used to go to school like 5 years ago: digital tools and learning opportunities are mostly used as a component of learning and teaching, but not as the main mechanism.

What I mean by that is we have a variety of teaching and learning methods that teachers pick from depending on the subject and form they are teaching. So front-of-class teaching for example is not dead at all. It's just used specifically when it makes sense. And in other situations we would instead learn by playing a game. Or we go out, experiment, make real life experiences with the subject matter. I think the big thing that changed with digitalization is that it made things more efficient. So now you don't always need a teacher to repeat the same lessons every year, you have a professional recording of that lesson and the teacher is instead free to spend the time engaging with students that need help. That

also allows students to progress at different speeds and start to individually explore extra things that build on that topic that are interesting to them.

And in addition to that, every student has a digital profile on their secure school server, where their selected courses, progress, strengths and need for assistance is stated. And these even work across courses. So now, a teacher who sees 150, 200 different students in a week doesn't need to memorize everything about every student anymore. As if that would've been possible in the first place. So all that came around the time I was in fifth or six grade. And now think about how much something like that changes for how a substitute teacher can teach. If they suddenly have insights into the students' progress and learning styles. But it also allows students to give feedback about teachers' behaviours, so what happens in schools in general becomes a lot more transparent for everyone involved.

Ausbildung

I guess I could have chosen to study my career choice of Sustainable Buildings and Architecture at TH Köln. And I did have a talk with this sweet professor about it, - I think her name was Meltem? Anyway, I then figured out that I do prefer the more hands-on approach where I actually get to interact with the people doing the building part that an apprenticeship brings. Which is totally fine because both earn similar rates and basically just fulfill different roles in the same industry.

In this time right now, we recognize that people who study and people who do apprenticeships are both essential to running and producing the actual thing. So there is no hierarchy between the two where we say okay one is inherently better than the other and you always earn more as someone that has gone to university. It is a lot more about the personal choice of how you like to learn and work that makes the decision.

Gebäude

It's something that I know most people don't pay a lot of attention to because it is nothing that they have a lot of active influence over. But buildings and human-made structures actually have a really big impact on sustainability both on a social and ecological level.

Back in your time, new buildings and the operation of existing ones were responsible for about 30% off all CO2 emissions in Germany. So for me choosing to go into this industry was about considering where I want to have an impact. And luckily we have been able to turn things around where now the entire field is mostly carbon-neutral.

The way that has been achieved is mostly through good decision making including local residents, but also usage of materials and space. So we rethink: What is the most sustainable method to achieve our goal in terms of like, how much material and cost do we invest. How do we make sure that the running of the building is carbon neutral? How do we get people to live a good life in these accommodations? What happens with the materials after the natural-life cycle of the building comes to an end? It's a very holistic approach, that goes beyond just building one house. It involves much more of. How, Why, and what does this mean for it's local but also the global environment and the people in it.

Insulation & Heating

So the first step is always to assess whether an already existing house should be kept, modified or torn down. In most cases the house is kept, since building a new house requires a

lot of materials that then again might come with carbon emissions. And then when we are thinking of insulation, it is a matter of efficiency. Like, if your house is properly insulated, you might only have to heat once a week whereas in super old buildings you turn off the radiator and after 5 hours or so the insides might be almost the same temperature as the outside. But insulation also helps in the summer. So instead of your flat heating up and you having to turn on your air conditioning, insulation essentially acts as a shield that keeps the temperature inside nice and cool. There are even houses constructed in a way where you never have to heat or cool them in the first place, they always have the same temperature of around 20°C to 21°C. We call them passive houses.

Nowadays basically all houses have proper insulation that keeps the energy used for heating and cooling to a minimum. Which saves not only emissions but a lot of money in the long run for anyone living there. But I've been told that a big struggle for that used to be when landlords didn't see the value in adding insulation because for them it's just an investment since they did not have to pay the energy bill, right? So what people did to solve that was they organized and collectively asked their landlords to make the ecologically and ethically correct decision. And if the landlord didn't respond to that, they collectively engaged in rent-strikes until their demands were met. I think the same tactic was applied for things like solar-roofs and district heat pumps and stuff like that.

Energy

Thinking about how to make buildings energy efficient and also about where that energy comes from are the most important steps for making it carbon neutral. And often that boils down to choice of material and some plain old physics. For example, if constructed in the same style, an apartment-building in general will be more energy efficient than a single family home. And that's just because apartment-complexes have a way more efficient surface-area to volume ratio. Which means that there is less space for the temperature to be transferred from the inside to the outside and also the other way around. But it also means that you use less land-space which is really good in urban places like Cologne because it increases population density and because of that makes investments like public transport and district heat pumps way more effective. Because think about it: It makes way more sense for somewhere to be a bus stop or train station if you have let's say 1500 people living there that use it rather than just 25 families in their single homes. A model in which we maximise that idea are the new vertical villages around town.

Plus, every amount of land not used for buildings and sealed surfaces like roads etc, is good for being left to nature and through that storing carbon and increasing biodiversity. So the main question for someone like me that does an apprenticeship in sustainable building is: How do we condense living-spaces while making it still a good experience for all the residents? And I think we have some cool methods right now of how to achieve that.

Vertical Villages

We have a lot of spaces that are either historically very densely populated Noyshat sud or Nippes, and then those that developed into that in recent years like Doytz and Kalk. One of the concepts that we are working with a lot, especially in the newer ones is this idea of creating a vertical village. And what that means is, we construct buildings to be tall and encompass a lot of the spaces that residents would otherwise have to travel to. So thinking about "what if this building also contains a kindergarten, a gym, a supermarket". Things

like that. That cuts down energy cost by reducing the amount of commuting that needs to happen and adds variety to the living experience so that no one needs to feel like they are just living in one of a couple hundred boxes.

The other thing that it allows for is to use the saved space as public space for regenerative purposes. Like parks for example. So you might live quite densely, but it does not feel at all like you're trapped there.

Obviously a building like that is usually quite the big investment, which means that right now, we only have about 40 of those across all of Cologne. And they are all social housing programs funded by the community. So you are able to live centrally, and it is affordable. And because it is not left with the private sector, we have a lot of influence on using sustainable building materials, and adding sustainable tech. Like giving the building the ability to convert rainwater into drinkable water, adding renewable energy production through PV panels, all that stuff. So it will definitely become more popular for further construction in the next couple years I think. They are definitely a popular choice for citizens, so you would often have to fight hard to get one and people rarely ever let go of their apartment once they get to rent it. Which creates a new kind of neighborhood I guess.

Soziales Wohnen

This is one of the methods by which the community ensures that the city is not just carbon neutral but also offers a high quality of life. I myself live in a social housing unit in Ehrenfeld. I know that for some in the older generation that thought is still attached with stigma. Like my dad for example, he does management stuff for sustainable transport and somehow he still has parts of this oldschool mindset of not wanting to accept handouts. And some people apparently used to assume that you would have to live in Plattenbau, but in reality all that it means is that the apartment you live in is either owned by the community or subsidized in the rent. So I don't understand it like that at all. It's part of taking care of each other. So I live in a flat-share in a vertical village and with the reduced rent plus our communal universal basic income and my adjusted apprentice-wage, I only pay about 8% of my available money on rent.

And when I say taking care of each other, that to me means that the "social" aspect of social housing doesn't end with me just getting cheaper rent. But it also comes with me involving myself with my neighbors. For example I help a lot of the elder citizens in my complex out with day to day things and also take on the role of a local advisor to give them more access to digital spaces. Which has become more important for political organizing and referendums and things like that. All of that is actually quite common now I'd say.

Baumaterialien

Yeah I feel like we can't talk about my job without mentioning building materials. Just because they play such a key role for the sustainability of this industry. And I don't mean not building with things like asbestos, but did you for example know that in your time, cement as a building material alone was responsible for 8% of all greenhouse gas emissions? That's because in production you have to burn it at very high temperatures which releases a ton of CO2. So what we try to do is cut out materials like that as much as possible, and look for more sustainable alternatives.

The industry currently prefers anything that is regenerative, meaning that by using wood for example, the tree regrows, and through that we actually capture carbon and use it for building, rather than releasing CO2 through using cement. Or we use natural stone like brick instead of creating an artificial one through the usage of concrete. And we also build with the deconstruction of the building in mind. So if you were to replace the building with something else, how can we treat and arrange the material we used in a way that it can either be reused or recycled into something else? That's a major way in which we try to embed circular-economy principles into our industry.

Transformation über NEU NEU

So as much as I love being able to work on new buildings and thinking about how that transforms the space and experience of the people living there, a big share of what we do is also about coming up with sustainability upgrades for already existing houses. They call that retrofitting. The idea behind it is basically that on a case-by-case basis it can be more environmentally and economically sustainable to upgrade an old house rather than tearing it down, having to recycle all the materials and THEN use new materials to build something new. So for this we have someone at our firm that evaluates the status of each house. How old it is, what the material usage is, what the energy-efficiency looks like, what the financial and cultural worth of it is. And then if we decide to retrofit it, we have conversations with the residents about what that would look like and what they would want to happen, so we can be sure that everyone involved in the project feels okay about what's happening. I think also in general it's very much the theme of our time right now to think about the lifecycle of something and whether it's worth extending it rather than getting something new. Reduce consumption and all that.

Politics

Uhm actually, I'm not suuuuper involved in politics? I hope that doesn't sound weird. So I definitely make sure that my voice is heard, right? Like I vote in referendums and for elections, I go if I get drafted for a citizen assembly, all of that. I just think for me personally I pay more attention to what I can do as a person in this world rather than trying to influence the big picture at all times.

So what I try to do instead is just help out the people around me as much as possible and make sure that the work that I'm doing contributes to the good in the world. And I mean- I'm still fairly new to this industry but I feel like with the career I picked I made a very good choice both on the environmental side and also for my personal sake. This is definitely a job that will never go out of fashion. Also probably a solid investment opportunity if I had the money laying around haha.

Mutual Aid//Volunteering

Mutual Aid is very much the approach that I prefer when it comes to being involved. Because I think, not everything always has to be political and needs to be discussed on a big stage right? Sometimes it is easier to just do things. There are definitely things that are just right, like tackling climate change and therefore we need to do what it takes to get it done. But I can also have a real impact here and now with the people around me. So I spend about an hour a day helping out elder neighbors in my vertical village with their day-to-day stuff, spending time with them so that they don't feel lonely and linking them to one another. You would be surprised how many of them want to but struggle with making new friends. I also help them out with anything that involves technology or mechanisms

they might not be familiar with.

The way I got into this was through this online platform. It's something that you get taught about in school when it comes to political education. So essentially most people in Cologne right now are on it and you can share if you need help or have help to offer. I found out for myself that more often than not, it's totally fine to take the first step into something without knowing all of the details. People are very open to anyone that wants to get involved because all help is needed and appreciated right? So one doesn't need to feel shy about getting started at all. And a nice side effect of it is, that I myself have made so many new interpersonal connections. It definitely changes your outlook on life. I now have perspectives from older generations that I never considered before. I have friends in all age groups, from all backgrounds and experiences. I guess it's what people call community, right? That for me definitely came from getting involved.

Party-Szene

Haha I'm not sure what to tell you exactly? Well I think it's going great. I do enjoy a nice night out, so yeah I probably party a lot. I enjoy raves a lot but if you're looking for something with more of a guarantee for a successful night, I think right now both Ehrenfeld and Mühlheim are quite good for that. But for me it always feels like Ehrenfeld is more a thing of my parents' generation, so I don't frequent it as much. Apparently they all were very happy though when the community decided to protect clubs as cultural spaces because they lost so many of their old favourites back in their day. So a current favourite of mine is this multi-story queer club which actually is in Ehrenfeld, but my musictaste draws me more towards Mühlheim. And that's not much of an issue to get to because of how the community reworked transport. So you could always get a bus or train home, no matter what time.

Queerness

Queerness is definitely a part of my identity that's very important to me. I mean- I don't think about it everyday because in this time, there's not many super different experiences attached to that anymore I think. I know that that's not the way some of the older queers understand themselves and their experience though. But anyways, I feel like it is still a very integral part of who I am. I identify as queer and poly, so you could say I don't like to limit myself much haha. But yeah, most of the situations where that would be something that I'm aware of is when I actively seek out queer spaces and events like CSD and Schaafenstraße, stuff like that. Oooh and I forgot to tell you, but last month this really cool multi-story queer club opened up in Ehrenfeld, and if you are still around in Cologne in 2050 you should definitely go.

Being Poly

So I am poly, which for me means that I have romantic relationships with multiple people at the same time. Some of those are also in a relationship with each other, others not. And all of that network of relationships you would call a polycute. I feel like being poly and the conversation around it have already been pretty normalized when I grew up. So that doesn't come with any issues for me right now. And while I don't see myself doing it anytime soon, it's kind of nice to know that if I wanted, I could get married to all of my partners in a heartbeat.

Right now, I have three partners, all fairly distinct people in their identity, genders, personality, all of that. And for now it's honestly just going great. The only issue for me is that

because I'm always out doing so many things, I don't always get to see everyone as much as I would like, PLUS I have to split my free time up between three partners.

Exit Dialogue

Alriiight speak to you soon then I guess.. Oh wait, here with the address on this card you should be able to call me from your web-browser too, if you ever feel like talking again. See you!

Dialog Meltem

Bildungswesen:

Education as a whole got a big overhaul, that came with rethinking why and what we teach. So the main insights I can give are for the university context, where apart from organisational stuff around accessibility, communication and pricing admittedly not a lot has changed for the curriculum itself. But a lot of my friends work in primary and secondary education levels and their work now revolves a lot more about assisting the students on their chosen path. Which comes with the option for a lot more electable classes as opposed to an entirely dictated set of courses.

Hochschule

So I have worked at TH Köln for more than 20 years now, but I think most of the things I can talk about also go to the University of Cologne and other colleges in town. Change here has not so much just been about what we teach, but also mainly about how we teach. Yes, we have a whole variety of new courses that came along with new developments in the digital landscape, but we have also restructured the majority of our old courses in a way where they now include a narrative of sustainable practice and a quality-assurance panel that checks the student's projects in that manner. We also encourage all students to engage in open source projects with other universities and students from across the globe, to make sure ideas and innovation developed at TH Köln are something that communities all around the world can benefit from. Because in the end, we are part of a global system and profit from everyone else doing well and vice versa. Through that we ensure that students and graduates of our institution have the knowledge around their positionality and the practical skills to ensure that the impact their work is creating on the world will be a net positive. Or net negative if we are speaking about carbon emissions haha.

Other than that, a lot of attention went into making our university and campuses more inclusive towards students of all backgrounds. That means making communication and timetables more accessible and breaking down tough to read theory into easy language. It also means rethinking what disability means in terms of more invisible struggles such as chronic illness, mental health issues or learning disorders and neurodivergence such as ADHD and autism. Compared to 2021, it might seem as if our disability service is overrun and that the student body is suddenly struggling with many more things than ever before but that is actually not the case. It is just that the understanding and language around these issues have changed, and people now allow themselves to live openly with whatever they are experiencing. So we don't have more people struggling, we have more people making sure their needs are heard. Most people no longer feel like they need to hide and push through in an effort to appeal to the curriculum. Now, the question instead turns into: How can we ensure the ways of how we teach our curriculum cater towards all the diverse and individual experiences and affordances that our student body has.

Wissensvermittlung & Lernen

The restructuring of learning goes hand in hand with the community's new understanding of our positionality as people in a vulnerable system, both socially and ecologically. So a new core of the curriculum is now teaching around environmental and social wellbeing, understanding your impact on yourself, others and the world around you. Gosh I made that sound way more heady than it needs to be. Essentially students have classes where they volunteer in mutual-aid, animal-care, gardening projects etc etc, that go along with time in the classroom where they get to learn about the theory and mechanisms behind

what they are experiencing. This has been the new way for about 20 years, meaning that we've had about 10 years of graduates with this new curriculum. And so far it has been a great success.

I think one of the other core things that has changed is the way digitalisation has influenced our ways of learning. I remember that already in the 2010s a lot of my classmates used youtube explanations over textbooks to study for their exams and while as always institutions have been slow to adapt, by now a lot of changes have come through. For primary and secondary education levels for example, a lot of the learning now comes through interactive storytelling in the form of collaborative digital games. Teachers now have access to a variety of different digital teaching resources that they can pick from in accordance to their teaching style, while students can choose different topics that they are interested in investigating and pursue them as much as they like. And a key development in that area is that every teacher now has two "professional development days" per month, where they get paid training and coaching to keep up to date with modern methodology, pedagogy and digital skill sets.

There is also a lot more sensitivity around different learning styles as well, which came as a side effect of inclusion, which forced teachers to rethink their methodology in the first place and then reassess the value of the new methods also for their original student-body. It turns out that being aware of the students' needs is a lot more productive for learning than just trying to make every student fit in the same box and punishing them if they can't fulfill that role. As a side effect of this, homework essentially got removed from all primary and secondary education.

Renewable Energies

Collectively these have been major game-changers on a systemic level, meaning switching from coal and gas to solar, wind, hydro and hydrogen. And I have to emphasise how much of a game-changer because I remember from my own experience that a lot of people in 2021 didn't know this, but the energy sector in your time is responsible for more than 30% of all national carbon emissions. So for Cologne, a huge step was made when a citizen initiative got RheinEnergie to agree on being entirely renewable for its production of energy and heating by 2035. And that then only actually happened, because people actually held the organization accountable to the roadmap they agreed on. So you could definitely say that it was people pushing companies and the city council that brought the change. And that also became clear to everyone once DIY energy production and storage really became more available to people. So now you will see almost all suitable places hosting some kind of energy-capture technology, be it solar, wind or hydro and also have the technology to store energy for less sunny times. And this change correlated with switching the energy network to a microgrid where everyone can be producer and consumer at the same time, essentially democratizing the energy sector to an extent while adding to the general grid stability. And all of that while energy is cheaper than ever. It was both ecologically and economically right to do it.

-> How did that happen

Exit fossil fuels

In my opinion, the summer of 2022 was the breaking point. I think I must have been around 30 and at that point, people in Cologne had experienced a second summer of major flooding in their region and what people had interpreted as a "once in a century event" was suddenly understood as the new norm. Basically communicating the idea of climate change in a

more direct way than scientists like myself ever managed to do. And that was still the best-case scenario people had, the thought back then was that it could only get worse from there. It was a collective effort of people changing their systems of governance to have a more direct influence on local politics that truly made the change happen. Which really built on a lot of the momentum that movements in your time have created. So groups and causes like FridaysForFuture, Hambi Bleibt, Ende Gelände. All of them made it clear that we have alternatives to this madness and must implement them now to avoid disaster. Just changing the rules slightly resulted in things like solar roofs being incredibly easy and affordable to install on most roofs. And through that also came new rules for industrial energy production and distribution.

Solar

So both solar and wind are two of the main supplies for renewable energy in this region. Solar especially turned out to be incredibly useful, as generally speaking, it can be implemented on a scale as small as 1 ½ square meters but it can also be scaled up to large industrial solar farms. That is solar via PV panels that we are talking about.

And in contrast to something like a coal plant, you can quite literally just disassemble the entire installation and set it up elsewhere if necessary, making it extremely adaptable to any kind of development in the area. So it is essentially the opposite of how fossil fuels operated, where mega-corporations used to tear down entire villages and left the region scared after they extracted all the resources.

Essentially, if you look around, you will find solar on about 20% of the roofs of all houses built before 2025, which is as good as any spot that is suitable for solar generation in the first place and then every house after has essentially been designed with having optimal lighting conditions for solar generation and passive heat insulation. Another concept that came through collective decision making and new construction standards. And these PV roofs are owned by whoever the homeowner is. For a lot of new social housing, that is the city itself. But in concept and today also in reality, this democratizes energy production in a way that has not been possible before. A lot of people are now entirely self-sufficient and independent from big energy suppliers, and in some cases can even feed energy back into the system and earn money through that. Energy-Storage has been and still is crucial for that to be possible. And because of that, the solar industry is now bigger and also more decentralized than fossil fuels ever were. With local large-scale manufacturers of PV panels and also this entirely new job, the people here call them "solar-clerks". Which is essentially someone who installs and maintains solar roofs and ensures they retain their productivity levels throughout their lifetimes. I mean theoretically, people could do all that themselves but it is quite the techy job of course.

Wind

This is the other main contributor to our total share of renewable energy production, next to solar. And it has similar reasons for the why: both wind and sun are resources that are very available in this region. But also wind has a significantly lower cost of production and implementation which means that you can get a return on investment a lot sooner than with big-scale tech like geothermal or dams such as hydro-electric power plants or even nuclear power plants. Right now we have plenty of windfarms that are placed mostly in the fields of the countryside where agriculture is conducted. A big part of why farmers and communities are okay with that happening is because they get financial compensation from the profit generated by these wind plants. I remember there used to be a lot of discussion in your time around wind turbines being an eye-sore and people not wanting to live near them.

And even some ridiculous arguments that they kill birds. But after a while it turned out that people much more prefer to live near a wind turbine than being resettled altogether because a certain fossil fuel megacorp chose to dig for coal where your house used to be. And then there are also small horizontal wind turbines that can be installed on roofs and windy spots even in urban areas. They didn't receive quite the attention as solar with essentially having PV panels on almost every suitable roof, but do definitely contribute to the overall energy production and help with diversifying the energy sources that the city can tap into. Which is also great for the stability and productivity of the community's microgrid.

Hydro

So hydro for us people in Cologne admittedly plays a smaller role in energy production than wind and solar, but in an entirely renewable energy system like ours, every contributor matters, no matter how small their contribution is. Theoretically we could generate a much larger share of our total production through building a massive hydro-electric power plant in the river Rhine. Sort of like a giant dam. But there are multiple reasons for why we chose against that. On one hand, it would be a very high financial investment compared to the low installation costs for wind and solar. But the main reason is because it would disturb the ecosystem and freight shipping pathways on the Rhine on such a scale that both of them could potentially collapse. So what we do instead is this technology called in-stream hydro. So in your day this is still quite the new concept, but by now it has been refined and is being used in most of the big European rivers. The difference between these and a dam is that in-stream hydro is essentially just a number of small turbines that turn through the constant water flow. And since the Rhine is quite the fast flowing river, this makes it great for this sort of energy creation. Because of its small size it doesn't disturb any of the shipping and fish and other animals can pass through the turbine without taking any harm. So hydro like this is still dependent on water flowing, which increases production during floods, but since the Rhine never truly stops flowing, it is one of the few ways of renewable energy production that is highly reliable in generating electricity at all times. Which adds greatly to the stability and supply within our microgrid.

Nuclear

That would have been an option, but actually Germany phased out nuclear at the end of 2022 as agreed after the Fukushima nuclear disasters in 2011 and it never really got picked up since. The main reasons for that were that in contrast to renewable energy sources, nuclear is attached to great safety risks and to this day still no final solution for nuclear waste storage exists. But also the cost of implementation and return on investment are not nearly as profitable and easily introduced as with wind and solar. So even in your day and age, renewables are already two to three times cheaper than nuclear per kWh, and while the cost for those just continued falling ever since, nuclears price development just could not keep up. So it was both an economic and a safety-hazard decision not to revive the nuclear power sector.

Some of my colleagues recently made major news in the cold fusion sector though by being the first team to create a net positive cold fusion in terms of energy input versus output. This is groundbreaking, since this would allow for completely risk-free nuclear energy and solve any energy-concerns human kind might have, if further research into the scalability and profitability prove to be successful. I'm very excited for what the future holds for us in that regard.

Netztechnologie/Microgrids

What I mean when I say microgrid is the network of electronic connections between sup-

pliers, storage and consumers on a communal level. So I am specifically speaking of a community microgrid. Our microgrid is connected to the macrogrid, the next larger scale, that connects communities and other consumers within our region with one another. The benefit of having a good setup for a microgrid is, that in case a blackout happens on the macrogrid, the microgrid can shut off its connection to the macrogrid and essentially sustain itself for an extended period of time without being affected by the blackout in any other way. That adds greatly to the overall grid-stability.

The microgrid of Cologne right now is theoretically entirely self-sustaining, meaning that we produce as much or more energy on a communal level than the community uses. And since we produce our energy not in one centralized power station but through a gigantic number of contributors of different scales and methods of generation, blackouts are near impossible to happen. So if one solar farm suddenly stops working, that is not an issue because the people affected by the outage can instantly get access to a different source of energy. And obviously energy-storage greatly adds to that and allows to have a constant output that equals the average of fluctuating levels of input.

But we essentially went one step further, where we did not just decentralize the source of energy generation, we also democratized the energy market by for example allowing every building with a PV roof to feed access energy back into the system and earn money through that. So you as a single individual can theoretically become an energy-producer that makes money from their investment into PV panels. Truly one of the only forms of sustainable passive income if you ask me. A lot of the technology for energy-production is collectively owned though, in an effort to guarantee that everyone, no matter the income, can have a base-level supply of energy to manage their day to day lives. So people basically only pay for what they consume on top of that threshold.

Energy-Storage

So energy storage was deemed absolutely essential to the change from fossil fuels to renewable energies. And people were definitely right. That is because in contrast to something like coal that you can burn on demand, humans have little to no control over how sunny or windy it is during any given day. We combat this by storing excess energy generated on highly productive days so that people can tap into that energy-reservoir on days with low productivity. So if you were to go into your cellar right now in the year 2050, you would see a new installation next to your electricity meter, which is your energy storage and consists either of a lithium-battery or a small hydrogen fuel cell, depending on how recently it got installed there.

And it works similarly for large-scale communal storage facilities as well. So the technologies here are either big complexes of multiple lithium-batteries or fuel cells for any storage implemented after 2040. There is also a third technique that exists, which makes use of some pretty basic physics: You use your energy to carry a massive weight up in latitude where it stays until you need to access that energy again. Then you simply release the weight and capture the energy produced by it traveling down through gravitational force. But that's a technique that is mostly used in regions with varying latitudes like the Eiffel and not in Cologne itself.

Efficiency

Basically the name of the game in order to make the most out of our energy generated is efficiency. And that goes multiple ways, both for the generation and for the usage of electricity. So for generation that would mean putting in effort to calculate the most profitable spots and angles for things like PV-Panels and wind turbines. But it also means making sure that your technology itself is producing as much energy as possible per resources

invested and space that it occupies. And that essentially means that a majority of what people in my field work on is the constant development of new ways and methods to make renewable energies more efficient in its energy output. And if I might say so, I feel like we're doing a fairly good job at that. So for comparison: the average perovskite solar cell had an efficiency of only 3.8% in 2009, that went on to 29% in 2020, and we are now working on versions that promise up to 47% efficiency. Which means we can potentially produce more than 12 times the amount of energy with the same scale device as the original version.

And then the other angle to it is efficiency in energy usage. Which mostly boils down to the factors of only using the energy when needed and making sure that no energy gets lost to unnecessary or poorly designed components. So a real life example for that would be a bus vs a standard sized car. Moving 3 tons of steel in order to transport a 70kg individual is a lot less efficient than moving a 10 ton steel bus that has a capacity of 40 or 50 passengers.

And that then still loses more energy to the friction of the rubber-wheels on concrete than a train loses running through the friction of steel wheels on steel tracks.

So you probably see that there are a lot of calculations that go into all of this, which is why any field that deals with things like sustainable transport systems has boomed ever since the community chose to pay attention to such things in order to combat the climate crisis efficiently. So I guess for someone in your shoes getting in on the train early might be a wise career choice. Pun intended :D.

Collective Decision Making

Collective decision making on a communal level is for sure the power house between most of the changes for ecological and social sustainability that we achieved. Things like referendums and citizen councils where any person living in Cologne can have a say, have empowered a lot of the people within my community that previously did not have a voice in this system to finally participate in a just and equal manner. What adds to that is that you no longer require a German or EU-passport to vote in council elections. So all of the sudden, most of my friends that came here as workers and refugees finally get to be treated as equals on a political level. And that brought so much change with it. Because in the end, who knows better how to govern a community than the people that live and interact within it. And now people make sure to not only involve themselves once every four years at best, but rather whenever they feel that they have an opinion, something to contribute or think that something needs to change.

The name of the game is delegating responsibility where possible. Allow neighborhoods and districts to make decisions that only affect them for themselves. Set up conversations with stakeholders if any of them need to be involved. All of that definitely speeds up decision making, and through that ultimately change making. We wouldn't have been able to get where we are now if we still had to feed every decision through the overstrained mess that was the old city council.

Feminismus

I do consider myself a die hard feminist, yes. And because of that I'm both proud to see how far we have come while also still acknowledging how much work there is to do. So while collective decision making and democratizing the workplace have been great ways of ensuring that institutional injustices like the gender-pay gap were ruled out of existence, especially the interpersonal relationships on an individual level are harder to influence for preventing abuse and such. Because of that I think that it was very important that the city made sure to create and financially assist inclusive safe-spaces and aid groups where people of different identities can be sure to get the support they need.

And as a muslima, I do recognize that especially the feminism of non-muslim women has too often been used as a tool to police on our behalf what we are allowed to do and how we understand ourselves. But also in that regard we made progress, which came from me and my sisters denying our identities as women to be hijacked for anti-muslim rhetoric. Our understanding of a community in 2050 is to make sure that no one gets left behind. And when I think back to songs like "unser Stammbaum", it appears to have been like that for the last 50 years for most colognians. Only that it is now backed by communal decision making to ensure where possible that that is actually the case. And with that I believe that for most people also their understanding of themselves as a person have changed. Identity is usually understood as something that is a lot more fluid, created from a variety of sources and up for new influences. Which I think is beautiful, because it allows for understanding yourself as a dynamic being that can grow however it wants as long as the circumstances allow it. And that we can make sure.

Accessibility

This is a big one. For me personally, but also because it encompasses so much about the changes that we have experienced in the last 30 years. So I am a person that uses a wheelchair, and I remember that in 2021, most discussions around accessibility started and ended pretty much with this specific group of people. People would slap a ramp at a building and call it accessible. But throughout the years, our language and understanding have changed to a place where now most people in this time understand that every human has different levels of accessibility requirement and accommodation. For me that might mean that things in day to day life are within a reachable distance, don't obstruct my path in a way my wheelchair can't handle etc. But for someone with a panic disorder, which you cannot see from afar, accessibility means a whole different thing. For them, accessibility might be a lot more about how people interact with them, having a safe space where they can seek shelter and cope with their emotions or even bringing a support animal with them. As a feminist, it was and still is over the highest priority to me that changes that are made in order to ensure ecological sustainability and carbon neutrality also come with the social side of considering who is included and who is excluded by what someone might be proposing.

And I feel very fortunate to be able to say that a lot of these discussions can happen thanks to our more democratic and direct ways of decision making. For example, citizen assemblies have been a great way to get people with different experiences to talk to each other, whose paths might never have crossed and thoughts might never have cross pollinated. And through things like that, we don't just raise awareness, we ensure that those with specific accessibility requirements finally get their voice heard.

Transport

In my opinion there is no comparison between the transport of 2050 and the transport of your time, 30 years ago. The first stepping stone for that was taken when a citizen-referendum essentially banned all vehicles that aren't used for essential services from entering the city. To make this a functional decision, this went hand in hand with investing a lot of resources into restructuring public transport. I remember clearly how people used to laugh about how unreliable the KVB is, that is unthinkable today. For me as a professor of renewable energies, I obviously welcomed that change, because public transport is not only a lot more energy efficient, but also way easier to switch to renewable energies in its entirety than if you try to get a million people simultaneously to swap to electric vehicles. For me, public transport is my main way to cover distances that go outside of my direct neighborhood. But for most other people, bikes play a major role in getting around. Which

I guess must be a lot nicer without having to share the road with cars anymore.

A core part of that transition towards a reliable and fair public transport system for me came with new accessibility requirements. Meaning that you cannot have a station that is inaccessible to me in my wheelchair. So stations got redesigned where all trains now have their entrance at ground level and require a functional lift and/or ramp with regular maintenance. It is mind boggling for me how long the KVB got away with having stations that wheelchair-users simply cannot enter or exit. But luckily that is no more. And with these autonomous shuttles driving around, in a lot of cases you don't even have to worry about finding a train station in the first place. It's really a blessing because they just pick you up and drop you off wherever you need to go. It frees me up to participate in public spaces in a way that I simply couldn't just 20 years ago.

Community-Support

Especially in personal manners, these are developments to living in Cologne that I have really enjoyed witnessing. I mean colognians have always been a mostly welcoming crowd and that is a big part of the region's culture and identity. But ever since people started to get more involved in communal decision making, that came with so much more involvement in the community and neighborhood in general. This idea that everyone has different skills and needs that can really benefit from sharing with each other is something that I feel quite passionate about. And as an academic I can't help but notice the correlations to the forming of society as something essential in the development and distinguishment of humans as a species. It is nice to see that we apparently are finally managing to get back to this after more than two centuries of capitalist induced isolation and individualisation from one another. By which I don't mean that you cannot be an individual, but just this lie of having to be self sufficient is something that people finally don't believe in anymore. So while other people in my community might help me out more with physical tasks, I have a lot more time on my hand than someone that might have to raise children and have good knowledge of how institutions work and how to navigate them and gladly share these things with anyone that needs a resource like this.

That being said, I'm also a person that really values her own personal space, so it is not like you would have to involve yourself at every opportunity possible. It's more about understanding yourself as entangled in this system and thinking about what you need for empowerment, and how you can empower others. Quiet the feminist and humanist motive if you ask me.

Religion/Islam

So while I was raised muslim and still identify with it as a culture I feel akin to, I don't really practice prayer and things like these too much. I do like to involve myself into the community's spaces though and take on some organizational roles and help distribute aid to those in need. I do feel like I have a specific experience and perspective within Islam that not everyone shares, but to me that is also the beauty of a culture and religion like this, that there is not just one true interpretation of what it means to be and exist as muslim. And that is also something that I think the general society has finally come to understand. That we as muslims are not monoliths, and no matter what, have just as much right to our beliefs, identities and spaces as anyone else that lives here.

If you would like a different and maybe more involved and intersectional perspective on the state of being muslim in Cologne right now you might want to call Kais though, here let me give you his number (looks through phone)