Breaking barriers to sustainable costume design: a community-driven approach with German theatres

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The Circular Costume Design Lab (CCD Lab) is a participatory initiative exploring sustainable practices in costume design and making within the German theatre industry. Preliminary research suggested that theatre costume making is a tradition-based craft with limited agency for systemic change. The CCD Lab aimed to understand how tightly knit communities of costume professionals perceive and experience environmental and social sustainability, and how broader social, cultural, and political forces shape their work towards sustainability in state-funded and independent theatres. The CCD Lab consisted of eight online workshops co-developed by two costume makers and researchers in collaboration with two professional associations. The workshops engaged 23 costume professionals over two months. This paper outlines the workshop topics, the methodologies used, and the key learnings derived from the group conversations and activities. The study provides insights into the specific needs and experiences of costume professionals regarding sustainability considerations in theatre settings and highlights the importance of user-centered design and collaboration with stakeholders in effecting positive change in the workplace.

Keywords: theatre costume; sustainability transitions; online workshop; participatory design

1 Introduction

As the lights go down and the curtains are pulled back, the show begins. Years of planning and work invested in the finely-tuned ecosystem of a theatre production culminate in the performance on stage. In the process of creating costumes, decisions are made as abstract concepts and preliminary sketches are translated into concrete, physical objects. Costume design professionals carefully select, source, and procure materials with which to construct the costumes. However, the life of the costume does not stop there. Costumes must be maintained throughout multiple performances and there is a tradition in theatre to reuse costumes, recycle materials, and store costumes until the revival of a production. It is also important to note that theatres dispose of textiles and discarded costumes in landfills.
The topic of sustainability has gained prominence in the cultural industries of Europe and the UK, particularly within the domain of theatre. There are nevertheless many challenges in sustainability transformations for theatre and costume, and little is being done to address the systemic issue of material overuse in production.

In response, we initiated the Circular Costume Design Lab (CCD Lab), a collaboration between two costume makers and researchers, and two professional costume associations. The main aims of the CCD Lab were to work with costume professionals to explore traditions and challenge assumptions about barriers in order to envision sustainable, future practices in costume design and making. The initiative consisted of eight online workshops with costume professionals working in state-funded and independent theatres across Germany. We used participatory methods to decipher how tightly knit communities of costume designers and makers understand and experience environmental and social sustainability. We wanted to uncover how broader social, cultural, and political forces shape their daily work and future visions of sustainability. We hoped that by bringing together this community, the Lab would help to drive behavioural change by empowering costume professionals, theatre institutions and other stakeholders to collaborate more effectively towards environmental and social sustainability. Ultimately, the goal is to create a more sustainable future for the theatre industry through collective action and shared understanding.

In this paper, we report on what we learned from the workshops. We outline the workshop topics and findings from group conversations. We share methods and tools used in the participatory process to illustrate how we involved 23 costume professionals in over 22 hours of workshop time, and how we enabled costume professionals to collaboratively rethink creative and decision-making processes towards sustainability. We conclude by critically reflecting first, on what we learned from participants about current practices and challenges of sustainability in their work, and second, on the process of using online participatory methods to engage a community of geographically and hierarchically disparate theatre professionals. The study provides valuable insights into the specific needs and experiences of costume professionals in terms of sustainability considerations in theatre settings, and has broader implications for the design studies field, as it underscores the importance of user-centered design and collaboration with stakeholders to effect positive changes in the workplace.

2 Sustainability and costume

Sustainability has become a prominent issue in the cultural industries in Europe and the UK. Various independent and state-funded organisations are actively involved in supporting theatres and theatre makers to address sustainability (Kulturstiftung des Bundes, 2023; Theatre Green Book, 2023). While the cultural industries have recognised their responsibility and have established active networks of government, industry, and non-profit organisations working to limit environmental impact, they have largely concentrated on reducing energy consumption, recycling, managing waste and measuring carbon footprints. Recent developments in Germany focus on developing online material databases and so-called material hubs (Kulturstiftung des Bundes, 2023), and on training theatre makers about circular production (Julie’s Bicycle, 2023). The independent theatre scene’s SWAP Lab workshop is an example of such an initiative. From the perspective of the institution, current approaches centre on energy and waste management, including the use of carbon calculators to assess negative impacts of material consumption and processes. From the worker and maker perspective, tactics include self-
organisation (e.g., Nachhaltigkeits AGs, or “sustainability working groups”), developing solutions within departments (e.g., use of green materials), and personal initiatives (e.g., collecting fabric scraps, buying organic soap). Several notable sustainability projects in the German-speaking region are StuFF, Performing for Future and Wiki zu Nachhaltigkeit und Theater (Performing for Future, 2023; SK Freie Szene, 2023; Stuff, 2023).

The interest in sustainability is reflected in a variety of grey and academic literature. Publications targeted to industry include the Theatre Green Book, which provides theatre makers, including the costume department, with environmentally friendly practices to adapt green standards to theatre buildings and operations (Theatre Green Book, 2023). Publications by the German government-based organisation, Kulturstiftung des Bundes, focus on the circular economy of the cultural sector and climate neutrality with CO2 emissions calculators for theatre houses (Kulturstiftung des Bundes, 2023). In the academic context, recent work in the field of costume studies examines agency and the interrelationship of costume, performer and audience (Hann, 2019; Pantouvaki & McNeil, 2021), or sustainability and theatre design, like Tanja Beer’s publication Ecoscenography (Beer, 2016). These sources look primarily at experimental costume design for theatre and performance. The CCD Lab seeks to bridge the gap between the conceptual realm of costume design and costume studies, and the practical realities of costume production.

Sustainable costume design processes are needed, as Pantouvaki claims in her writing about “costume thinking” (Pantouvaki, 2020). Balancing the dynamics of human relations with nature in the field of costume design means investigating current traditions and making methods (Landis, 2018; Taylor, 2021). In “Modernizing Costume Design,” Annie Holt states that industrialization impacted costume design greatly (Holt, 2021), and this can be seen, for example, with the adoption of the sewing machine and standardized pattern construction. The principles of costume making have changed little to this day. The sustainable transformation of costume design is an investigation into novel assemblages of meaning and the proposal of novel work and material relations (Hann, 2021; James, 2021), including developing and proposing alternative social imaginaries (Dunne, 2013).

3 **Defining sustainability for the CCD Lab**

We understand sustainability, quoting Ceschin and Gaziulusoy, “as a dynamic and systemic property, one that relates to the interactions between the environment, society, technology, culture, and economy” (Ceschin & Gaziulusoy, 2019, p. 4). Within these interrelated systems, ecological and social sustainability refer to the responsible use and management of natural resources and the ability of a community or society to maintain and enhance the well-being and quality of life for all its members in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987).

Social sustainability in the context of the CCD Lab includes the “everyday experiences and knowledge” of stakeholders working in the fields of costume design and making, an emphasis we borrow from Smith’s method of institutional ethnography (Smith, 2005, p. 43). The knowledge stakeholders develop in relation to their work influences their social networks and their agency within an institution. Social sustainability also encompasses the concept of innovation and the external (technological and organisational) decisions made by other stakeholders (institutions) that affect costume professionals. These changes can occur both within and outside the organisation (regulations, policies, etc.).
We are interested in sustainability transitions for costume within theatre and other areas of performance and entertainment. Sustainability transitions go beyond sustainability at local or product-level interventions. As Gaziulusoy and Ryan write, they “require structural changes in society” and involve three types of knowledge: systems knowledge focuses on the “present state of systems” and what needs to change; target knowledge generates proposals for “desirable and plausible” systems; and transformation knowledge builds potential routes between current and future systems (Gaziulusoy & Ryan, 2017, p. S1916). With the CCD Lab, we focused on systems knowledge with the aim of laying the groundwork to address the other forms of knowledge in the future.

4 Organising the CCD Lab

4.1 Origins
The CCD Lab was a temporary, participatory online platform developed by the two authors: Urs Axel Georg Dierker, a sustainability researcher based in the United Kingdom, and Anja Gast, a theatre cutter working for the Volkstheater Munich, Germany. In collaboration with the Gesellschaft der Theaterkostümschaffenden (GTKos) and Szenografie Bund, two German theatre associations, we established the Lab. The GTKos is a non-commercial network catering to costume department staff members in theatres across Germany, Austria, and German-speaking Switzerland. Meanwhile, the Scenografie Bund is a professional association that represents a varied group of artists and designers engaged in the theatre and film industry.

The idea for the CCD Lab came from prior research I (Dierker) had done on sustainability and costume in Finland during my work at the Biobased Colloids and Materials (BiCMat) group at Aalto University led by Prof. Orlando Rojas. There I explored, as visiting designer, different natural materials use for costume design. The work concluded in the exhibition ‘Naturally Dramatic’ shown during Helsinki Design Week 2020. During that time, I founded the collaborative ‘Circular Costume Design’, of which the CCD Lab is a satellite project. Prior to that, I worked as a costume maker for screen and stage in Canada and Germany, which included personal experiences with unsustainable practices. I first approached this topic from the perspective of toxic materials and issues of health and safety within industry, and then shifted focus to look at alternative materials, leading to collaborations with material scientists at Aalto University to develop biomaterials for use in costume design. In a subsequent project linking material scientists with costume departments (Skitter, 2020/21), I observed that costume professionals lack agency in making change towards environmental sustainability due to their limited decision-making power. This experience led me to focus on a systems thinking and community engagement approach towards designing for sustainability and consequently to the CCD Lab. The workshops described here are one step toward finding novel, participatory approaches to engage with communities of costume professionals.

The workshops took about a year to plan and were launched in late 2022. Gast and I met regularly to outline a project where we could connect with other professionals on current developments in the field of costume design and sustainable transformation in German theatre. Together with GtKos and Scenografie Bund, we decided to make the Lab an eight-week event and to promote it so that
participants knew they could drop in at the same time every week. The online meetings occurred every Sunday, the only day that worked for both independent and employed costume professionals.

As sustainability encompasses such a wide field, we established common themes to guide our workshops. The themes we chose stemmed from our personal interests. Gast focused on costume inventory, while my interest was in natural materials. One goal was to analyse and develop concrete solutions for sustainable transitions through group work, based on these topics. This resulted in 8 separate workshop topics (see below and Table 1).

### 4.2 A participatory approach

We realised that we needed to represent the variety of people involved in costume for theatre. This led us to question what the design process means in the context of a costume's life cycle and who has agency over sustainability decisions. The costume designer is usually hired by a theatre for a limited time to lead costume creation for a single production while collaborating with other stakeholders, many of whom work in-house. Other roles also play, or could play, important roles in sustainability transitions. This includes the theatre management, the artistic team (director, set designer), the manager of the costume department, the costume makers and outside stakeholders (e.g., suppliers and specialist costume makers). In this context, the idea of design for sustainability can be seen as distributed. While the costume designer gives direction on look, many stakeholders become “designers” when they make decisions during the creation, use and re-use of the costume (Hodson, 2019). The idea of “distributed design” is therefore relevant to the CCD Lab and its participatory approach as “all” stakeholders involved become designers (Ezio Manzini, 2015, p. 1).

Participatory design is a collaborative, democratic approach that engages stakeholders throughout the design process, resulting in the creation of an end product or service that effectively fits stakeholder needs (Veselova & Gaziususoy, 2022). By using participatory design methodologies for data gathering and collaboration, we were able to bring diverse stakeholders together who might otherwise not have had the opportunity to compare their roles and perspectives. We placed value on the knowledge and experiences of all participants to achieve a more comprehensive and accurate understanding of the full picture of costume making and sustainability.

### 4.3 Recruitment

We chose to make the CCD Lab an online event in order to open the topic of sustainability in costume design to a wider audience. The selection of participants was a factor we had, by design, little influence on. Participation was deliberately kept open to anyone identifying as a costume designer or maker. Recruitment focused on sending invitations almost exclusively through GtKos and Scenografie Bund as they have strong ties to the theatre and costume design industries in Germany. This meant that permanent and self-employed costume professionals in state-funded and independent theatres, as well as costume students, were all invited. To reach a wide audience we also placed calls through costume-related social media groups and personal contacts.

### 4.4 Workshop structure

All events were structured in similar ways. We started with a summary of the previous event and gave the participants time to reflect and comment. We then introduced the next workshop theme in a 10-to-20-minute presentation, with a follow-up reflection. The discussion was transferred to an online whiteboard where it continued in small groups through breakout rooms, and as a whole group. The
average length of an event was about three hours. Participants were encouraged to actively shape the course of the event and they were invited to continue contributing to the Miro board between workshops.

4.5 Tools
We decided to use Zoom as a meeting software and Miro as a collaborative tool for the participatory workshops due to the authors’ familiarity with the programs and their widespread popularity at the time of the event. Zoom was used to run all visual, audio and text-based (chat) communication, to create breakout rooms and to record the events. Miro was mainly used as a point for data collection (links and pdfs for publications) and for running the non-verbal participatory parts (e.g., note taking, arranging information visually). A library section was created in Miro to encourage participants to share any freely available content. We also populated the library with recent publications and other publicly available sources.

4.6 Ethics
Ethical considerations were addressed at three levels. The first was the initial contact with potential participants and the collection of their data. The professional associations sent out invitations and then shared with us the contact information of their interested members. We then sent an email with more information, including a disclaimer stating that workshops would be recorded. The Miro board was password-protected and open to participants for only three months after the event, during which time, data from the Miro board was sharable, meaning all participants could copy entries. Any third-party content was retrieved from public sources. In the workshops, participants were informed again about being recorded and reminded about data security and privacy when using the online whiteboard.

5 Eight workshops
The following workshop summaries give an overview of each topic, how we ran the sessions and what we heard from participants.

5.1 Workshop 1: opening of the online laboratory
At the first workshop, we introduced the project and the Miro platform. We aimed to provide participants with a technical and substantive overview of the project and to address any potential questions. For the introduction, we drew on data from the publication "The Environmental Price of Fast Fashion" (Niinimäki et al., 2020). We contextualized our discussions in relation to the international textile industry because the production of theatre costumes depends on industrially produced goods. As costume designers and creators, we are therefore also partially responsible for the negative impact caused by the textile industry.

This discussion was followed by a presentation of the digital tools used in the CCD Lab. It became apparent that digital technologies could pose a hurdle. As a result, a Miro introduction workshop was offered before the next meeting. Another change was to start subsequent meetings fifteen minutes earlier to address technical questions.

5.2 Workshop 2: virtual work: collaboration
The first regular meeting focused on how collaboration within the CCD Lab should proceed. The idea was to create a forum for questions related to diversity, equality and inclusion.
Costume designer Sonja Heller gave an introductory summary on the topic of social sustainability. The publication "Gender Equality & Diversity in European Theatres" (2021) by the European Theatre Convention (ETC) was also presented (Casalini & Sepulchre, 2021). Afterwards, ideas were collected in small groups on how to enable all participants to have an equal opportunity to contribute to the CCD Lab. Discussions centered, for example, on the differences between professions (e.g., costume makers earn less than colleagues in other departments), but also between the independent scene and state-subsidized theatres.

The practical results of this week's focus aimed to better integrate participants into a participatory event process. Ideas were collected on how to "loosen up" conversations and balance different technical knowledge levels.

5.3 Workshop 3: sustainability in costume design: contradictions and realities
The weekly focus was "Costume Activists: Who does what regarding sustainability and costume design?" Participants mapped out personal interests on the topic of sustainability and costume design: what do I want to know and what can I offer others?

Discussions at this event went in two directions:

- Firstly, we discussed the difficulty of acquiring new knowledge, such as information on sustainable materials and processes, the environmental impact of certain products and the potential value of eco-Labels.
- Another discussion explored how the rich knowledge existing in costume production and maintenance could be used to promote sustainable practices. A specific topic was old, almost forgotten craft techniques such as weaving. The question was whether and how traditional production methods can be reintegrated into current practices.

Practical outcomes focused on how existing knowledge could be better shared, such as through the Wikipedia page "Wiki on theatre and Sustainability" by the Performing for Future network.

5.4 Workshop 4: sustainability working groups at the theatre: an in-house "climate council"?
The discussion revolved around existing groups and organisations that deal with sustainability and costume design to understand how ideas about sustainability and costume design are organised in theatres.

Three main approaches emerged:

- New sustainability structures established in theatres by theatre management or individual employees.
- New sustainability structures developed from the perspective of costume designers who bring sustainability ideas to a theatre or are asked by theatres to comply with certain sustainability parameters.
- New sustainability structures, starting from projects and organisations that identify with theatre work. These help theatre professionals, including costume makers, to think sustainably, convey knowledge, and support theatres in their transformation.

The practical outcomes of this meeting also focused on knowledge transfer.
5.5 Workshop 5: maintaining, reusing, repurposing: circular economy in the costume stock

The topic was costume inventory. We wanted to take a closer look at the already sustainable principle of costume reuse in theatres as an example of a circular economy. How can the costume inventory be used more diversely and effectively, and what digital structures are helpful? What makes a well-maintained and high-quality inventory, and what possibilities does the inventory offer as a source of inspiration for costume designs? To exchange experiences, goals, and successes, we brought together costume designers, inventory managers, and software developers. Lisa Bronzkalla reported on her experiences with inventory digitization for the cruise boat company, TUI Cruises, where she developed software for the company's growing inventory over several years. In addition to specific discussions on digitization, such as various software providers and programming, the event also addressed tips for speeding up digital costume registration procedures. In addition, discussions focused on the necessary staffing for digitization, as well as for proper inventory management.

Other practical results of the event included:

- New systems for exchanging costumes between theatres and the independent scene.
- The importance of cleaning and maintaining costumes and the desire for environmentally friendly pest control measures.
- The need for a well-sorted inventory that can fulfill more diverse aesthetic requirements.

5.6 Workshop 6: natural materials and costumes: a brave new world?

Two themes were discussed on the topic of natural materials:

- What properties must materials have to be relevant for existing costume production processes?
- What new processes for processing natural materials are relevant for costume workshops?

This led to questions about the definition of "natural material" and the ingredients and manufacturing methods involved. One definition was that natural materials must be biodegradable. Further discussion distinguished natural materials broadly in two groups: On the one hand, raw materials grown from plants and animals, and synthetic materials that are artificially produced from plant-based sources. Raw materials are unprocessed materials that are directly obtained from nature, such as cotton from the cotton plant or wool from sheep. On the other hand, synthetic materials, also known as man-made materials, are produced through chemical processes using plant-based sources, such as bamboo, to create materials like rayon. Another topic was "greenwashing," the idea that materials are labeled as natural or biomaterials but contain a mixture of biodegradable and non-biodegradable substances.

The question about the production of natural materials led us to the idea of influence, control, or agency that we, as costume professionals, have over the production process of materials and costumes. This led us to the topic of relationships with materials (human/non-human), a complex issue that sharpens our perspective on our relationships with materials and how we handle them (lifecycle).

One practical proposal from this week was creating in-person workshops on natural materials for costume professionals.
5.7 Workshop 7: Review: key learning from previous workshops on costume stock and natural materials
At this event, the findings of the past two workshops were presented and discussed. The idea of "preservation and decay" of materials in the sustainable conception of costume design ran as a common thread throughout.

One question that drove the discussion was how long-lasting costumes should be. This conversation highlighted the importance of theatres preserving materials, which can be stored and maintained, for example, in a costume stock, as traditionally practiced. On the other hand, considerations were made about the creative and technical possibilities of decay or recycling and the biodegradability of materials for stage costumes.

The results of the review were used to prepare for the final workshop.

5.8 Workshop 8: overview and outlook on sustainable activism in the costumes
A four-hour online workshop concluded the project. We summarized the themes of the CCD Lab and returned to the question of "decay and preservation - how long-lasting should costumes be?" We defined decay in the context of design for the recycling of costume parts that are only used temporarily, and we defined preservation in the context of durability and reuse.

The workshop was divided into three parts:
- Materials - the various material groups used in costumes and their ecological footprint now or in the future.
- Craft processes - traditional, established, and new manufacturing processes that are relevant to costumes. We examined which techniques are currently being used in costume workshops and what traditional and new techniques are necessary to support sustainable work processes in the future.
- Knowledge transfer - inter-institutional and public knowledge transfer. We discussed ways to create an overarching structure of knowledge transfer for both state-subsidized organisations and the independent scene.

Immediate results of the workshop included the desire to support existing projects such as the Wikipedia page "Wiki on Theatre and Sustainability" and to offer knowledge transfer through video or in-person workshops.

6 Findings: the state of sustainability in costume for theatre
We had many exciting discussions with costume designers in Germany. These conversations showed that ideas for sustainable costumes in theatre are still in their early stages and that there is a discrepancy between the desire to work sustainably and the possibilities of doing so in the context of daily work.

Two areas of criticism emerged:

1. The first issue addressed the need for stronger unity among costume workshops and theatre as institutions towards sustainable transitions to create:
• Clear guidelines for sustainability as an anchor point in guidelines from government agencies (e.g., project funding requirements).

• Stronger networking, also of a financial nature, between state-funded institutions and the independent scene (e.g., material mediation and circular economy).

• Clear and transparent guidelines from theatre management regarding material procurement, ordering, and manufacturing processes for costume departments.

2. The second issue relates to knowledge transfer and exchange within a costume department, as well as between costume departments of different theatres and independent theatres:

• The discussions showed repeatedly how much knowledge of sustainable manufacturing processes already exists in costume departments.

• Current processes often limit sustainable work for costume designers and makers, who are constrained by decisions outside of their control.

• Discussions have also revealed a deep desire on the part of costume designers and costume makers to explore and learn about new ideas, techniques and materials.

• Finally, there was a consistent emphasis on better networking between the independent scene and state-funded institutions.

The CCD Lab has shown that these points are already being addressed by many different actors. It was refreshing to see how sustainable thinking and action are being tackled in various forms on different levels. The CCD Lab has also shown that there is still much ahead of us.

6.1 Findings: community engagement
Organising the eight workshops gave us insights into how to engage communities of practice in discussions of sustainability. In our case we brought together experts from diverse backgrounds and locations and used participatory design methods to collaborate in an online setting.

6.2 Participation
We had a total of 23 participants (Table 1). On average, each online meeting had eight participants, and two participants attended all eight events. Nine participants (which is approximately 39% of all participants) visited the workshops more than once. The people who came more than once were from a wide range of backgrounds, from an established costume director working in a state-funded theatre, to young costume professionals working mainly in the independent scene. The pattern with which people attended seemed unpredictable. One reason may have been digital literacy – participants encountering technical difficulties did not participate in later sessions, despite the offer of individualised help. Another reason was that many costume professionals were working. We received emails and calls from interested costume professionals, mostly self-employed, who could not attend due to work commitments. This gives a glimpse into the precarious employment of costume professionals who need to work on Sundays. Conversely, those who did attend volunteered two to four and a half hours of their time, indicating a strong interest and dedication to the topic.

Out of the nine participants who attended at least two workshop sessions, seven were costume designers and two were costume makers. One participant was a costume student, while seven were either beginning or mid-career costume designers, and one was a costume director. In each workshop, participants represented a mix of independent and employed costume professionals, spanning a wide range of ages from young adults to veterans of their field.
<table>
<thead>
<tr>
<th>Date</th>
<th>Workshop</th>
<th>Duration</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>02.10.2022</td>
<td>Opening of the online Laboratory</td>
<td>2h 15 min</td>
<td>12</td>
</tr>
<tr>
<td>09.10.2022</td>
<td>Virtual work: collaboration and networking in the CCD Lab</td>
<td>4h 15 min</td>
<td>6</td>
</tr>
<tr>
<td>16.10.2022</td>
<td>Sustainability in costume design: contradictions and realities</td>
<td>1h 43 min</td>
<td>6</td>
</tr>
<tr>
<td>23.10.2022</td>
<td>Sustainability working groups at the theatre: An in-house “climate council”?</td>
<td>1h 44 min</td>
<td>6</td>
</tr>
<tr>
<td>30.10.2022</td>
<td>Maintaining, Reusing, Repurposing: Circular Economy in the Costume Stock</td>
<td>3h 20 min</td>
<td>8</td>
</tr>
<tr>
<td>06.11.2022</td>
<td>Natural Materials and Costumes: A Brave New World?</td>
<td>3h</td>
<td>8</td>
</tr>
<tr>
<td>13.11.2022</td>
<td>Review: essences from the themes of costume stock and natural materials</td>
<td>1h 56 min</td>
<td>12</td>
</tr>
<tr>
<td>20.11.2022</td>
<td>Overview and Outlook on Sustainable Activism in the Costumes</td>
<td>4h 40 min</td>
<td>7</td>
</tr>
</tbody>
</table>

Total time: 22h 57 min
23 participants total
9 attended more than once
2 attended every time

6.3 Diversity of participants and knowledge of sustainability
The depth and range of topics discussed in the workshops were influenced by the diversity of participants, their knowledge and expertise. This contributed to the workshops’ strength, as those with significant work experience and a willingness to share played a particularly valuable role. The participants’ backgrounds also impacted their comprehension of sustainability. All participants had explored sustainability in the context of their work through a variety of approaches, including waste minimisation, substitution of harmful materials with non-toxic alternatives, and identification of material reuse opportunities. Additionally, they had engaged with colleagues and other stakeholders to discuss the issue. Despite these efforts, however, there was an underlying sense of frustration or helplessness regarding the topic, which was rarely expressed openly during the workshop. During the discussions, it became apparent that the participants were keenly interested in comprehending the significance of sustainability in their respective fields. However, they found that the process of gaining meaningful knowledge in this area was challenging.

Although all agreed that sustainability pertains to processes and materials, one participant's extensive knowledge on the subject brought about a deeper understanding within the group. For instance, when the topic of time was discussed in relation to costume production, the costume designer spoke in abstract terms, whereas the costume director provided a more detailed account of how the costume workshop is organised over time to accommodate the costume designer's preference for certain styles. This instance of knowledge transfer between the designer and costume department management revealed the importance of bringing diverse stakeholders together because their understandings of how things work can vary. By discussing sustainability from different perspectives, new ideas can emerge.
Having costume designers in the majority shifted discussions away from the original idea to focus on making and the life cycle of costumes. All costume designers were self-employed and working on a project basis. The perspective of being external to a theatre institution, rather than employed in-house, influenced their view of costumes, as did the size of the theatre where they worked. The designers regarded costumes as objects of interest up until the premiere, but not necessarily beyond that point. For the institution and costume professionals working there on an ongoing basis, the “life” of a costume continues as an object that needs to be cleaned, repaired, altered, and stored. Apart from the costume director, who was deeply ingrained in the institution, there was a lack of first-hand experience following costumes throughout their lifecycle.

6.4 Hierarchies and dependencies
The most challenging discussions addressed the systemic view of sustainability. It became apparent that the hierarchies and lengthy decision-making chains in theatres often hinder initiatives and discourage stakeholders from attempting further action. Participants’ experiences highlighted the significant challenges associated with a predominantly freelance workforce, where dependencies on work often limit the potential for change. Ultimately, the power to effect change appeared to rest with employed key stakeholders in theatre.

6.5 Facilitating conversation over two hours and two months
Engaging participants in conversation proved challenging at times, which led us to assume more of a monologue role on occasion. Conversely, the breakout sessions seemed to energise the participants, and the summaries that emerged from these smaller group discussions revealed a diverse range of perspectives on the same topic.

A critical issue arose concerning the better use of individual session findings to tie together disparate approaches to sustainability. Although each session included a recap of the previous one and participants were asked to summarise findings in their own words, the significant time gaps between meetings and the changing composition of participants posed a challenge in linking the sessions together. This was partly due to the workshop’s design, where each session was regarded as an individual and autonomous unit.

6.6 Digital tools
The digital tools we selected were generally well received. As a result of the surge in online meetings during the pandemic, using Zoom posed no difficulty. Although some had not used an online whiteboard before, the majority expressed acceptance for Miro. After the first workshop, one participant encountered difficulties logging into Miro. Consequently, we offered an introduction session for Miro and started opening the Zoom rooms 15 minutes early to accommodate technical issues and questions. Participants’ experiences of receiving this assistance were difficult to evaluate, and further investigation is needed. Overall, the digital format had two distinct advantages: participation was not location-dependent, and information was accessible to participants at any time. Interestingly, digital inclusion became a critical topic as participants discussed pathways for change in their work environment and how to foster knowledge building with digital tools.
7 Discussion and conclusion

The CCD Lab was created to bring together costume professionals from independent and state-run theatres. We invited participants to explore together, through online discussion, how costume making can become more sustainable, and to access information and create content on their own time via an online whiteboard. For two months, the CCD Lab was a place where a total of 23 participants could explore, build, and shape content on sustainability in costume design alone and in groups.

The CCD Lab provided valuable insights into the challenges facing sustainability in costume design and the theatre industry, and the values that costume professionals in different positions and stages of their careers attach to sustainability in their work. We observed that costume professionals consider the sustainability of their local environment during the design and creation phases, but their considerations do not penetrate deeply into more systemic change for costume-making processes. Discussions revealed that ideas for sustainable costume design and making are still in their early stages, with a gap between the desire to work sustainably and the practical challenges of doing so. Two key issues emerged: the need for stronger unity among costume workshops and theatres towards sustainable transitions, and the importance of knowledge transfer and exchange within costume departments. Clear sustainability guidelines and transparent procurement processes are lacking, and there is a deep desire to learn about new sustainable ideas and materials. The CCD Lab showed that many stakeholders are addressing these points at various levels in their work.

Organising the workshops also gave us insights into engaging communities of practice in discussions of sustainability. On the one hand, attendance seemed unpredictable, with 39% attending more than once and some people attending all sessions. Technical difficulties and work commitments may have contributed to this fluctuation. On the other hand, those who attended showed strong interest in the topic, choosing to dedicate hours of their free time to the workshops. Discussions were made stronger by the wide range of professional roles, types of employment (contract and full-time for independent and state-funded theatres), levels of experience and locations represented by participants. Productive discussions showed the potential for future collaboration and knowledge exchange, but they also revealed how certain roles can bias the discussion based on limited perspectives of the costume design and making process. Workshops illustrated that hierarchies and dependencies within theatres limit sustainability actions. The workshop structure provided a space for participants to explore various approaches to sustainability. However, the need to effectively connect individual session findings to create a cohesive understanding proved to be a challenge. This highlights the need for alternative strategies in future workshops.

The findings and outcomes of the workshop can serve as a starting point for further discussions and actions aimed at promoting sustainable practices in the field of costume design and theatre. Findings will inform the development of in-person workshops for an upcoming FEDORA-funded project, “Sustainable Costumes,” a collaboration between two European opera houses.

In order to rethink costume design in response to the climate crisis, it is essential to understand and rethink current costume production models, taking into account supply networks, value chains, and life cycles. While current responses to sustainable transitions in the entertainment industry have focused on environmental aspects, talking to costume professionals showed that these changes are
important but limited. Critical and speculative perspectives towards costume design must be further expanded, including social dimensions of change.

8 Afterword

Several projects were developed after the initial CCD Lab, to unravel the implications of introducing changes in costume design in praxis. The ideas discussed in Workshop 6 on natural materials and the question of influence, control, and agency, led to two practical workshops. Gast collaborated with a German master dyer to create a natural dye course for costume makers, focusing on an educational approach to teach technical knowledge. Meanwhile, Dierker designed a course on biomaterials for design students and costume professionals at the Karlsruhe University of Arts and Design (HfG Karlsruhe). This course focused on exploring the limits of responsibility costume designers and makers have during the design phase of a production by mimicking the life cycle of wearables made of cellulose soft materials. Both of our courses were designed with the aim of exploring specific findings of the CCD Lab regarding natural materials and the responsibilities of costume designers and makers. In addition, we organized and conducted a workshop on co-design thinking for costume professionals at the general meeting of GTKos in Augsburg, Germany. Six costume professionals in management positions in costume departments participated in a four-hour workshop. The workshop delved into sustainability definitions and the essence of knowledge transfer in costume and theatre productions from a managerial perspective in larger theatres across Germany. These projects showed the rising interest of costume professionals in the diverse topics of sustainability at the level of the institution and its extended networks. Further research is needed to better understand how changing work structures can bring shared and extended responsibilities, as well as novel ideas of agency, for designers, practitioners and artists throughout the lifecycle of costumes.

References


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